# ARTISTIC DESIGN RESEARCH ON POST-FUNERAL FLORAL WASTE BASED ON EMOTIONAL AND SYMBOLIC NARRATIVES

By
Miss Litao CHEN

A Thesis Submitted in Partial Fulfillment of the Requirements
for Master of Fine Arts Program in Design
Silpakorn University
Academic Year 2025

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MissLitao Chen

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| By | Miss Litao CHEN |
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| Advisor | Assistant Professor Dr. Khajornsak Nakpan |

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Miss Litao CHEN : ARTISTIC DESIGN RESEARCH ON POST-FUNERAL FLORAL WASTE BASED ON EMOTIONAL AND SYMBOLIC NARRATIVES Thesis advisor : Assistant Professor Dr. Khajornsak Nakpan

Against the backdrop of sustainable design and material regeneration becoming increasingly important in the fields of design and art, the rapid growth of the floral industry and various ceremonial activities has led to a continuous increase in flower consumption, accompanied by the growing problem of floral waste disposal. Existing research has mainly focused on material technologies and product functionality, while paying limited attention to the specific contexts in which discarded flowers originate. In response to this gap, this study focuses on post-funeral floral waste, a category of material that, although discarded after ritual use, still retains emotional, symbolic, and cultural significance.

Grounded in the principles of sustainable design and the circular economy, this study constructs an analytical framework based on three dimensions: context of origin, material properties, and reuse pathways. Drawing on material aesthetics and the concept of mono no aware, it explores how post-funeral floral waste can be transformed into commemorative design objects that extend both the material life and emotional significance of funeral flowers.

This research adopts a practice-led mixed-methods approach, including theoretical analysis, empirical research, material experimentation, and design practice. Fieldwork was conducted in Kunming through interviews and questionnaires to investigate funeral floral usage, disposal practices, and public attitudes toward reuse. Low-energy material experiments were then carried out using flowers commonly found in funeral ceremonies, and selected materials were applied in the design of commemorative products such as fragrant bead bracelets, incense sticks, and incense holders.

The findings indicate that post-funeral floral waste should not be understood merely as ordinary organic waste, but as a form of contextual material with ritual origin, emotional attributes, and symbolic value. Through low-energy processing and appropriate design strategies, such materials can be transformed into commemorative objects that align with public expectations under certain conditions. The study also finds that public acceptance of this type of reuse is conditional, particularly in relation to emotional appropriateness, cultural sensitivity, and contextual respect. These findings confirm that the symbolic and emotional value of funeral flowers can be extended through sustainable design and suggest the potential for their integration into

future memorial and funeral service systems.

More importantly, this study highlights the design potential of culturally and emotionally sensitive materials and provides a reference for research on post-ceremonial material reuse, emotional design, and sustainable commemorative practices. At the same time, it proposes a shift from material recycling to meaning regeneration, whereby design transforms contextually discarded materials into emotionally and culturally sustainable systems.

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Litao CHEN

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# Chapter 1

## INTRODUCTION

### 1.1Research Background

In recent years, sustainable design and material regeneration have become central concerns in the fields of design and art. Urban flower consumption continues to increase, particularly for one-time use in ceremonial contexts such as openings, celebrations, and memorial services. Consequently, floral waste has become a significant environmental and design-related issue, attracting growing attention toward sustainable reuse.

Existing research on floral waste reuse can generally be categorized into three main approaches:

(a) Physical recycling pathways, such as composting and soil amendment, which are widely implemented at municipal and institutional levels;

(b) Biochemical conversion pathways, including anaerobic digestion for energy and fertilizer production; and

(c) Creative reuse pathways, which transform floral materials into value-added materials or artistic products through low-energy processes.

However, most existing studies treat floral waste as a homogeneous category, with limited attention to the contextual origins of discarded flowers. In particular, post-ceremonial floral materials-especially those used in funerary contexts-remain underexplored despite their strong emotional and symbolic significance.

This research addresses this gap by focusing specifically on post-funeral floral waste as a distinct category of design material. Unlike everyday decorative flowers, these materials possess unique characteristics: they are purpose-driven, temporally limited, immediately discarded after ritual use, and deeply embedded with symbolic meanings such as farewell, mourning, and remembrance. Their disposal is not due to material deterioration, but rather the conclusion of their ritual function.

From the perspective of design research, this condition presents an important opportunity: materials that are “physically viable yet culturally terminated” can be reinterpreted and reactivated through design.

At the same time, the funeral service industry is undergoing transformation. Younger generations (post-80s and post-90s), who possess stronger design awareness and emotional sensitivity, are increasingly influencing decision-making processes. Additionally, environmental policies and restrictions on traditional practices (e.g., open burning) are driving a shift toward more sustainable and personalized funeral services.

International trend research (WGSN, Future Consumer 2027: Emotions) indicates that emotional value will become a key driver of consumption. In this

context, emotional design is no longer supplementary but becomes a core dimension of design strategy.

Therefore, this study positions post-funeral floral waste not merely as recyclable material, but as a culturally and emotionally encoded material system, which can be transformed through design into meaningful, sustainable outcomes.

### 1.2 Research Questions

How can post-funeral floral waste be systematically transformed into commemorative design artifacts through low-energy material processes, in ways that preserve and extend their emotional and symbolic significance while supporting sustainable material practices?

### 1.3 Research Objectives

1. To study and analyze the cultural, symbolic, and emotional attributes of post-funeral floral materials and distinguish them from general floral waste.
2. To investigate and evaluate low-energy material transformation processes and define their design potential and limitations.
3. To develop a design translation system that converts material properties and cultural meanings into commemorative design outcomes.
4. To assess the feasibility, acceptability, and application potential of the design outputs within real funeral service contexts.

### 1.4 Research Hypotheses

1. Post-funeral floral materials retain identifiable emotional and symbolic values that can be translated into design parameters.
2. Through low-energy processing methods, these materials can meet basic public expectations in terms of hygiene, aesthetics, and emotional acceptability.
3. Design prototypes developed from these materials can achieve user acceptance and demonstrate feasibility for integration into funeral service systems.

### 1.5 Research Significance

Against the backdrop of sustainable design and material regeneration becoming core issues in the fields of design and art, the vast majority of research on floral waste still treats “flowers” as generic organic solid waste. This approach emphasizes technology, utilization rates, and material properties, while paying little attention to distinguishing their contextual origins and the emotional and symbolic attributes they carry. This study specifically isolates “Post-Funeral Floral Waste” because these materials possess dual characteristics: they remain “materially usable” yet are “contextually terminated after a single use.” Their disposal stems not from physical deterioration but from the conclusion of a ritual—a critical blind spot in existing research. Consequently, this study's significance manifests in six key aspects.

### 1.5.1 Filling the Research Gap on “Contextually Discarded Flowers”

This study is the first to discuss “Post-Funeral Floral Waste” as a distinct category. By establishing an analytical framework across three dimensions—“source context, material properties, and reuse pathways”—it advances research on floral waste from treating it as “generic organic waste” to recognizing it as “material imbued with cultural context.” This addresses existing research shortcomings, such as insufficient attention to post-ceremonial flowers and inadequate contextual differentiation.

### 1.5.2 Bridging “Emotion × Sustainability” in Design

Unlike simple composting or anaerobic digestion, redesigning Post-Funeral Floral Waste must simultaneously satisfy emotional acceptability and ecological acceptability. This study demonstrates that through low-energy material transformation and appropriate aesthetic guidance, originally “disposable” ceremonial floral materials can re-enter domestic or commemorative settings as enduring objects for sustained viewing, use, touch, and preservation.

### 1.5.3 Grounding Material Aesthetics and “Mono no aware” Aesthetics in Concrete Material Contexts

Much discourse on mono no aware—the “beauty of impermanence” or “beauty of fading”—remains confined to theoretical aesthetics. This research integrates it with material aesthetics, repositioning it within a highly concrete—and even slightly sensitive—material context: funeral flowers. It demonstrates that a material's origin is inherently part of its aesthetic value: precisely because it stems from “farewell,” the reborn object can be perceived as “memorial.” This offers a new perspective for other “contextually derived discarded materials” in future applications.

### 1.5.4 Providing a Feasible Green Pathway for Funeral Services and Cultural Creativity

The proposed process—“low-energy material processing + small memorial design + user feedback validation”—can be integrated into personalized, narrative-driven funeral products. This approach aligns with China's current policy and market trends toward open-flame restrictions, eco-friendly burials, and green farewells, while offering funeral homes, florists, and cultural creatives new service-oriented product concepts. It demonstrates that the lifecycle of funeral flowers can be extended rather than terminated.

### 1.5.5 Guiding the Public from “Disposable” to “Perceiving the Contextual Life of Materials”

By preserving and re-presenting floral materials' visual, tactile, olfactory qualities and ritual information, this research enables the public to intuitively perceive that what is discarded is not merely plant matter, but a relationship that once existed

and a social emotional act. This “perceptible cycle” helps the public understand concepts like the circular economy, low-carbon living, and natural imperfection at a daily level. It transforms abstract environmental ideas into tangible, preservable experiences, thereby fostering more proactive environmental engagement.

#### 1.5.6 Expanding Academic Discussions in the “Material × Emotion” Intersection

Employing a practice-led mixed-methods approach, this study integrates literature analysis, field research, material experimentation, and design prototype evaluation into a unified pathway. It proposes a methodological paradigm for studying “contextual waste”: first defining the source context, then conducting material experiments, and finally returning to validate user/cultural acceptance. This approach brings together three previously fragmented fields—affective design, sustainable design, and funeral culture studies—under a unified framework. It also provides a reference framework for future research on material reuse derived from social rituals, festive cultures, and religious activities.

### 1.6 Conceptual Framework

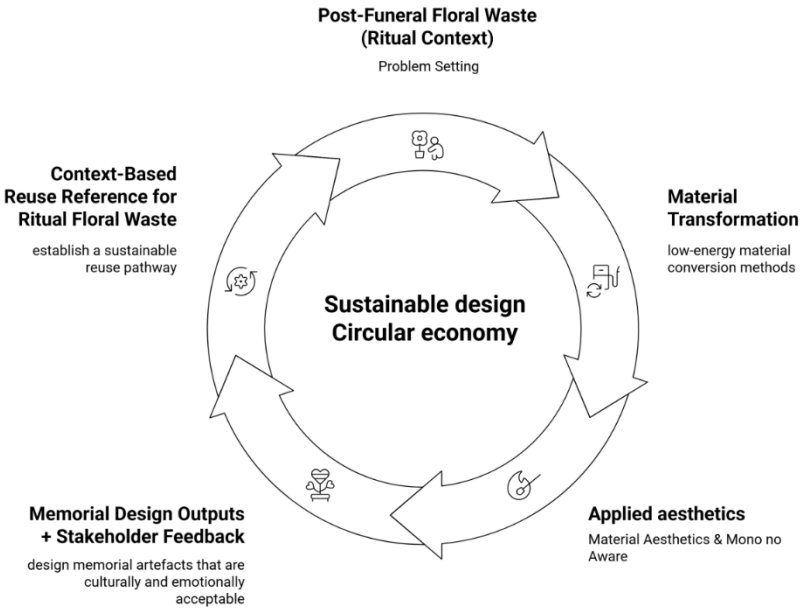
This study begins with post-funeral floral waste. It is grounded in sustainable design and circular economy thinking. The study uses low-energy methods to reshape these materials. It also draws on material aesthetics and the sensibility of mono no aware as the main guide for design. In this way, the study turns discarded floral materials into commemorative design outcomes.

The framework also includes stakeholder feedback as a key part of the study. This feedback helps link material transformation with social acceptance, service design, and new forms of value. Responses from bereaved families, potential users, and related practitioners help the study judge whether this kind of transformation is emotionally proper, culturally acceptable, and meaningful in specific settings. What matters here is not only the reuse of materials. Just as important is the possibility of creating new memorial service options, along with new emotional, cultural, and economic value.

The study also looks at whether this kind of transformation can work and be accepted within particular cultural contexts. By doing so, the study hopes to offer a useful reference for the reuse of post-ceremonial floral materials and other types of context-specific waste.

**Figure 1**

*Literature Review Framework*




*Note:drawn by the author*

## 1.7 Scope of the Research

### 1.7.1 Geographic Scope

This study is primarily situated within the context of contemporary Chinese funeral practices, focusing on Post-Funeral Floral Waste commonly seen in urban settings (e.g., wreaths, floral baskets, and floral decorations for farewell ceremonies). To connect the research with international discussions on sustainable funeral practices and green funerals, relevant global trends will be referenced where appropriate; however, the core design interventions and empirical data remain grounded in China's cultural and ritualistic context. The field site is selected at Kunming's Dounan Flower Market—one of the world's major floral trading hubs. Its diverse floral varieties and high morphological inclusivity provide the primary sampling source for commonly used funeral flowers (such as white chrysanthemums, lilies, and white roses). This geographical and industrial context ensures both the adequacy of material samples and a comprehensive cultural framework for the study.

### 1.7.2 Scope of Content

This study focuses on “post-funeral floral waste” as its primary research material, examining the symbolic and emotional significance carried by flowers used in mourning rituals and exploring their potential transformation into sustainable memorial carriers. While broader issues like funeral waste management and funeral

system evolution remain significant, this study deliberately narrows its scope to focus on the intersection of “sustainable design—emotional design—circular economy” within the context of funeral floral reuse.

### 1.7.3 Population Scope

The primary participant groups include:

(1) The general public in Kunming, members of the community who have attended, or are likely to attend in the foreseeable future, memorial events such as funerals/memorials, is used to gain a generalized attitude about the emotional resonance and cultural acceptability of post-funeral floral reuse;

(2) Funeral service providers and floral practitioners responsible for ceremonial flower arrangements and management, who can offer professional insights on feasibility, process integration, and service embedding;

(3) Design experts and researchers, who will evaluate and advise on material innovation, aesthetic characteristics, and sustainable design potential.

The scope of this study does not extend to all categories of floral waste nor encompass non-funeral religious/ceremonial floral uses. Instead, it deliberately focuses on “flowers after the funeral” and their directly related stakeholders to ensure research focus and contextual relevance.

## 1.8 Research Methodology

This study adopted a practice-led mixed-methods approach grounded in sustainable design and circular economy principles. It incorporated material aesthetics and mono no aware aesthetics as frameworks for defining aesthetic orientation and contextual meaning, ensuring material reuse not only fulfilled functional and environmental requirements but also addressed emotional and cultural needs within funeral contexts. The research followed a progressive “theory-empirical evidence-materials-design” pathway divided into four steps:

Theoretical Analysis Phase

This phase involved targeted literature review on the symbolic meaning and usage contexts of funeral flowers, domestic and international case studies of floral waste reuse, and relevant theories such as affective design and material-driven design. It clarified the cultural coordinates and research gaps of this study, and laid the theoretical and contextual groundwork for subsequent field investigations, material experiments, and memorial design.

Empirical Research Phase

This phase conducted interviews and surveys with funeral service providers, floral practitioners, and the public in Kunming as the primary research field. It investigated the actual types and frequency of funeral floral usage, post-use disposal methods, and the emotional attitudes, acceptance levels, and aesthetic preferences of different stakeholders toward “funeral floral reuse/redesign.” It provided empirical evidence from both user and industry perspectives to inform design transformation.

Material Experimentation Phase

This research selected common floral materials from funeral scenes in Kunming as experimental subjects, including yellow and white chrysanthemums, lilies, carnations, and white roses, and conducted various low-energy and repeatable material transformation experiments around their reuse possibilities. The experimental methods mainly included natural/controlled drying, wax sealing and saponification preservation, gelatin-glycerin natural adhesive system experiments, and handmade papermaking combined with paper mulberry fibers, in order to explore the material properties and transformation potential of different floral materials during the regeneration process.

Based on the preliminary exploration of material transformation, this research carried out preliminary classification, organization, and display of the transformation results of different materials, and collected feedback from the advisor and experts through an overall material exhibition. According to the issues raised in the feedback regarding material durability, safety, and application boundaries, the research further carried out supplementary systematic testing of various materials, including combustion performance and air quality impact, mildew resistance, heat/temperature resistance, strength, pH value, and color fastness, and conducted a comprehensive evaluation combining visual, tactile, olfactory, and structural stability dimensions. Through the above experiments and tests, the applicable presentation methods, performance characteristics, and application boundaries of different materials were further clarified, and provided a basis for material selection and product transformation in the subsequent design practice.

Design Practice and Evaluation Phase

Based on the feasible materials screened out through the preliminary material transformation exploration, material classification and display, and subsequent material testing, this research adopted the emotional narrative emphasized by “Mono no Aware” as a theoretical framework, and further transformed discarded funeral flowers into commemorative design prototypes, ultimately forming a commemorative product combination consisting of incense sticks, incense holders, and fragrant beads. During the design process, different materials were matched with corresponding product forms and usage contexts according to their physical properties, flammability, and safety boundaries, which enabled them to fulfill practical functions and emotional expression within commemorative and sacrificial contexts. Subsequently, these designs were evaluated through prototype exhibitions and small-scale user testing.

**1.9 Definition of Terms**

(1) Sustainable Design

Refers to a design approach that comprehensively considers environmental, social, and cultural sustainability throughout the design process. This study emphasizes achieving material recycling, low-energy conversion methods, and ecological responsibility in the reuse of funeral floral arrangements.

(2) Circular Economy

Refers to a development philosophy and practical pathway that decouples economic activity from environmental pressure by extending material lifecycles, enhancing resource efficiency, and reducing waste generation. In this study, the circular economy manifests primarily through: reintegrating floral arrangements—which would otherwise be discarded after funeral ceremonies—into the usage system via low-energy, repeatable material conversion methods. This transforms them from “single-use ceremonial items” into “long-term, emotionally valued commemorative products,” thereby achieving resource reuse and value recreation.

(3) Emotional Design

Refers to a design methodology that treats emotional responses as a key outcome. By organizing elements such as form, material, and context, it guides users toward positive emotional evaluations of the product. In this study, it specifically denotes emotional support within the funeral context—ensuring that reused ceremonial flowers retain their association with mourning, farewell, and remembrance.

(4) Post-Funeral Floral Waste

Refers to floral materials removed, cleared, and treated as waste after funerals or memorial ceremonies. These materials often remain physically intact but are deemed useless once their ritual function concludes. This study treats them as a potential design medium with symbolic and emotional significance.

(5) Material Aesthetics

A theoretical perspective that emphasizes the intrinsic aesthetic and meaningful values carried by the perceptual characteristics and contextual sources of materials. The theory asserts that materials are not neutral factors of production, but rather expressive media involved in the construction of meaning. In this study, the ritual source of the post-funeral flowers is seen as an integral part of the language of the material: even if subsequent processing alters the appearance, the source guides the interpretation of the work and influences design decisions.

(6) Mono no Aware Aesthetics

An aesthetic perspective originating in Japan that emphasizes sensitivity to impermanence and appreciation for fleeting beauty. In this study, it serves as an aesthetic-narrative contemplative lens guiding the translation of ritual symbolism into material and design expressions, rather than a specific operational method.

# Chapter 2

## Literature Review

Driven by the principles of sustainable design and material regeneration, contemporary design has transcended mere creation of form and function, increasingly becoming a vital practice that guides sustainable lifestyles and reshapes ecological ethics and social values. This paper examines post-funeral floral as its subject, constructing an analytical framework centred on ‘source context—material properties—reuse pathways’ to explore the feasibility of sustaining their emotional and commemorative value through low-energy, low-chemical-intervention regeneration processes.

The purpose of this chapter is to establish the theoretical context, subject matter foundation, and aesthetic underpinnings for this research.

Firstly, from the perspective of sustainable design and the circular economy, we trace its developmental trajectory and practical shifts within the design field, thereby clarifying the social and ecological context upon which this study is grounded.

Secondly, it analyses the limitations of existing research on floral waste. Most studies continue to treat flowers as ordinary organic solid waste, overlooking their social context and emotional attributes. This identifies research gaps, examines the contextual specificity of funeral floral materials, and reveals their symbolic significance across ritual, cultural, and emotional dimensions, thereby providing a cultural foundation for material reuse.

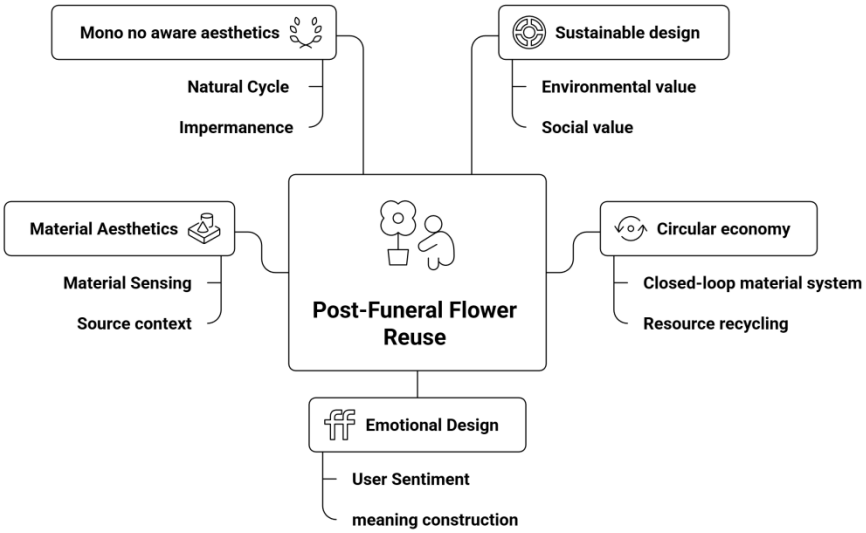
Thirdly, integrating affective design theory, it elucidates how design, within the “affect-material-memory” triad, achieves the reawakening and perpetuation of emotions through reflective design practices. This transforms redesign into a process of extending and reconstructing emotional memory;

Finally, material aesthetics constructs a bridge between physicality and cultural narrative, while the “mono no aware” aesthetic integrates these dimensions philosophically. By embracing the cyclical beauty of nature, it furnishes a tender and humanistic narrative context for the redesign of funeral floral .

Through the foregoing discussion, this chapter systematically establishes the theoretical framework and aesthetic context for the present research, providing a robust theoretical foundation for subsequent explorations into the emotional transformation and practical redesign of funeral floral .

**Figure 2**

*Literature Review Framework*




*Note:drawn by the author*

## 2.1 Application of Sustainable Design and Circular Economy Principles in the Design Field

With the increasing depletion of global resources and the persistent intensification of ecological pressures, sustainable design and circular economy principles are playing an increasingly vital role in contemporary design (Ceschin & Gaziulusoy, 2016; Velenturf & Purnell, 2021). Design is no longer merely a means of creating form and function, but is progressively becoming a significant force in guiding sustainable lifestyles and driving societal value transformation (Baldassarre et al., 2020). The acquisition, utilisation, transformation, and regeneration of materials form the core elements within the design system. This process not only concerns the efficient use of resources but also reflects designers' comprehensive consideration of ecological ethics, cultural continuity, and emotional value (Ceschin & Gaziulusoy, 2016; Moreno et al., 2016). Therefore, exploring pathways for integrating sustainable design with the circular economy is not only a practical strategy for addressing environmental crises but also a vital direction for redefining design responsibility, extending the meaning of materials, and constructing future design paradigms (Blomsma & Brennan, 2017; Velenturf & Purnell, 2021).

### 2.1.1 The Evolution of Sustainable Design and Ecological Responsibility

Sustainable design has emerged as a pivotal direction within the 21st-century design landscape, centred on balancing environmental, economic, and social

responsibilities throughout a product's entire lifecycle. Ceschin and Gaziulusoy (2016) systematically traced the developmental trajectory of sustainable design, noting that the field has progressively expanded from early product- and technology-centric approaches to encompass systemic, social, and affective dimensions. They emphasised that sustainability constitutes a systemic property rather than an attribute of individual elements, requiring multi-scale, systemic methodologies for its realisation. Furthermore, Baldassarre et al. (2020) propose that sustainable design theory extends beyond environmental concerns and energy conservation to prioritise social innovation, business model innovation, and collaborative ecosystem design. This shifts design focus from functional orientation towards meaning and experience-driven approaches.

Sustainable Practices in Art Design, Cultural Creativity, and Waste Management

Within art design and cultural creativity, sustainable design has become a vital manifestation of cultural responsibility and social innovation. Research indicates that reuse and regeneration strategies in waste management not only effectively reduce environmental burdens but also foster innovation and the emergence of novel business models. Mashudi et al. (2023) emphasise that waste management must integrate environmental, social, and economic objectives, achieving resource efficiency and environmental sustainability through the synergy of innovative technologies and policies. Zakhilwal et al. (2024) further note that waste management under the circular economy paradigm drives resource recovery, remanufacturing, and industrial collaboration, establishing itself as a pivotal pathway to sustainable development.

### 2.1.2 Circular Economy Theory and Implementation Pathways

The circular economy is an economic development model centred on extending material lifecycles, enhancing resource efficiency, and minimising waste generation. Compared to the traditional 'linear economy' – characterised by the 'extract-manufacture-use-discard' model – the circular economy emphasises maintaining the high value and efficient use of products, components, and materials within the economic system for as long as possible through reuse, repair, remanufacturing, and recycling. This approach maximises resource conservation and minimises waste generation (Blomsma & Brennan, 2017; Zhu et al., 2022). This paradigm not only alleviates resource depletion and environmental pressures but also fosters synergistic sustainable development across economic, social, and environmental dimensions (Velenturf & Purnell, 2021).

Within the framework of the circular economy, product design is regarded as a pivotal element in achieving resource closure and extending material lifecycles. Through strategies such as optimising material selection, adopting modular design, and facilitating disassembly and repair, designers can effectively enhance product sustainability and resource utilisation efficiency (Moreno et al., 2016; Sumter et al., 2020). For instance, incorporating considerations for recyclability and

remanufacturability during the design phase not only reduces waste generation but also facilitates subsequent resource circulation (Huang et al., 2022).

Within the framework of the circular economy, product design is regarded as a pivotal element in achieving resource closure and extending material lifecycles. By optimising material selection in the field of artistic design, the application of circular economy principles is becoming increasingly widespread. Designers are transforming waste into artworks or products of cultural and economic value through innovative materials, regenerative art, and circular fashion, thereby fostering a profound integration of art and sustainable development (Zhu et al., 2022). Moreover, the fields of architecture and urban design actively adopt circular economy principles. Through material reuse, modular construction, and reversible design, they extend the service life of buildings and materials, thereby reducing resource consumption and environmental burdens (Stoiljković et al., 2023).

In summary, the circular economy not only provides a theoretical foundation for the efficient utilisation of materials and resources, but also charts a course for sustainable innovation practices in fields such as art and design. Its core value lies in achieving a win-win outcome for economic growth and environmental protection through systematic design and interdisciplinary collaboration (Velenturf & Purnell, 2021; Moreno et al., 2016).

### 2.1.3 Case Studies of Sustainable Design and Circular Economy Principles in Art and Design

In recent years, circular economy and sustainable design principles have found extensive application within the art and design sector. Their profound influence is evident across diverse domains, from material research and product creation to spatial design and socially engaged projects. These concepts not only provide new methodological foundations for artistic practice but also drive a shift in design values – moving beyond mere “object creation” towards fostering “ecological and cultural symbiosis”.

During studies and life in Thailand, the researcher observed numerous local Thai brands excelling in sustainable and circular design. These brands not only practise environmental principles in material selection and production processes but also, through high-level design aesthetics and cultural narratives, imbue sustainable products with both artistic merit and market appeal. The following will explore, through several specific case studies, the application pathways and aesthetic value of sustainable design and circular economy principles within art and design practice.

Case study

(1)Pipatchara

During their studies and life in Thailand, the researchers first encountered Pipatchara brand bags in a shopping centre. Initially captivated by their exquisite silhouettes and distinctive woven structures, they were unaware of the design background at the time. Upon later learning that the brand centres on sustainable

design and circular economy principles, their appreciation for the creations deepened—this aesthetic appeal stems not only from visual form but also from the inherent depth and responsibility of the design philosophy itself.

Pipatchara is a Thai fashion label established in 2018 by sisters Pipatchara and Jittrinee Kaeojinda. The brand champions the core value of 'blending craftsmanship with sustainable thinking', emphasising 100% hand-woven macramé techniques and localised production. Its products primarily utilise plant-based fibres and recycled materials, collaborating with multiple local communities across Thailand to ensure production processes embody both environmental responsibility and social value. This craft-based circular production model not only reduces industrial waste but also creates sustainable employment opportunities in rural areas, exemplifying the circular economy concept in design practice.

**Figure 3**

*Pipatchara's bags and clothing*

*Note: source-https://www.sohu.com/a/742878241_121119289*

(2)Tlejourn

In Thailand's sustainable design practices, Tlejourn stands as a highly representative case study. Established through collaboration between the Environmental Education Centre (ECC Thailand) and coastal communities in the southern region, the brand aims to address marine plastic pollution through design solutions. The brand's core philosophy involves reprocessing discarded flip-flops and marine debris washed ashore by waves into new soles and footwear products, thereby achieving material regeneration through a "pollution-to-resource" cycle.

Tlejourn's production system adheres to closed-loop design principles. Collected discarded flip-flops undergo cleaning, shredding, and low-energy compression moulding before being reshaped into new wearable products. Beyond reducing material waste and carbon emissions, the brand creates social value through community-engaged production. Coastal residents—particularly women—gain employment and skills training opportunities within this process. This model

organically integrates environmental restoration, social empowerment, and material innovation, embodying the profound convergence of sustainable design and the circular economy.

**Figure 4**

*Women display the Tlejourn slippers they have made.*

*Note: source-https://www.sohu.com/a/742878241_121119289*

From an artistic and design perspective, Tlejourn's practice demonstrates the power of material re-narration. Through creativity and craftsmanship, the designer redefines “waste” as “purposeful material”, reshaping perceptions of “discarded” and “beautiful” in both visual and tactile dimensions. Its design language is concise, natural, and imbued with artisanal texture. Tlejourn's case illustrates that within the circular economy framework, design transcends mere waste reduction to become a creative practice connecting ecological, social, and cultural values.

Beyond the aforementioned representative brands, Thailand's domestic design scene boasts numerous studios and labels that blend ecological responsibility with creative aesthetics. Take the renowned Thai brand Qualy, for instance—a design house centred on the core concept of ‘sustainable living’. It specialises in crafting everyday objects from recycled plastics and regenerated materials, advocating environmental stewardship and circular consumption through a design language that marries humour with functionality. Sustainable design in Thailand extends beyond professional brands or art institutions, gradually permeating the city's everyday culture and public life. Observers at Bangkok's creative markets and independent design exhibitions note a growing number of designers and artisan brands employing recycled materials to craft jewellery, apparel, and homewares. Though modest in scale, these works reflect Thai society's widespread embrace of ‘reuse’ and ‘ecological aesthetics’. Evidently, sustainable and circular design principles have transcended niche design discourse to become a deeply ingrained trend representing contemporary values.

Examples of sustainable and circular economy initiatives abound from a global perspective.

(3) Ultra Boost Concept Shoe

Take Adidas × Parley's 2015 Ultra Boost concept shoe, featuring an upper crafted from recycled ocean plastic and fibres sourced from illegal deep-sea drift nets (‘ghost nets’). Its upper material utilised yarn and filaments recovered from marine waste and deep-sea fishing nets, demonstrating the application of recycled materials in product development within the fashion and sporting goods sectors.

**Figure 5**

*Ultra Boost Concept Shoe*

*Note: source-http://www.circularocean.eu/opportunities/adidas/*

(4) Print Your City - “XXX bench”

The Amsterdam Print Your City project employs locally sourced plastic waste as raw material, utilising large-scale 3D printing to create the recyclable urban seating solution ‘XXX bench’. Each individual bench contains approximately the same volume of material as the annual plastic waste generated by two Amsterdam residents, thereby reinforcing the narrative and educational intent of ‘local recycling – local manufacturing – local usage’.

**Figure 6**

*‘XXX bench’*

*Note: source-https://www.printyour.city/products*

(5) HowBottle

HowBottle, a Chinese domestic enterprise, utilises post-consumer plastic bottles (PET) as raw material. Through processes of cleaning, crushing, melting and spinning, it produces rPET yarn. This yarn is then applied in the design and mass production of bags, apparel and daily accessories, targeting mass consumption as a sustainable fashion brand. This establishes a circular pathway from "plastic bottles to fibres to consumer goods" alongside public education initiatives.

**Figure 7**

*HowBottle - Laptop Backpack*


*Note: source-https://howbottle.co/collections/new-collection?page=2*

Similar cases abound, and these practices collectively demonstrate that sustainable design and the circular economy have become established conventions and prevailing trends within the art and design sector. Material reuse has been integrated into standardised processes, realised through localised recycling, visualised presentation, and scalable products/services.

Against this backdrop, this paper employs post-funeral floral materials as its source, utilising low-energy, minimally chemically-intervened processing methods to transform them into design vessels imbued with commemorative and emotional value. This approach not only aligns with the aforementioned trend but also fills a research gap in floral material redesign with ceremonial contextual origins.

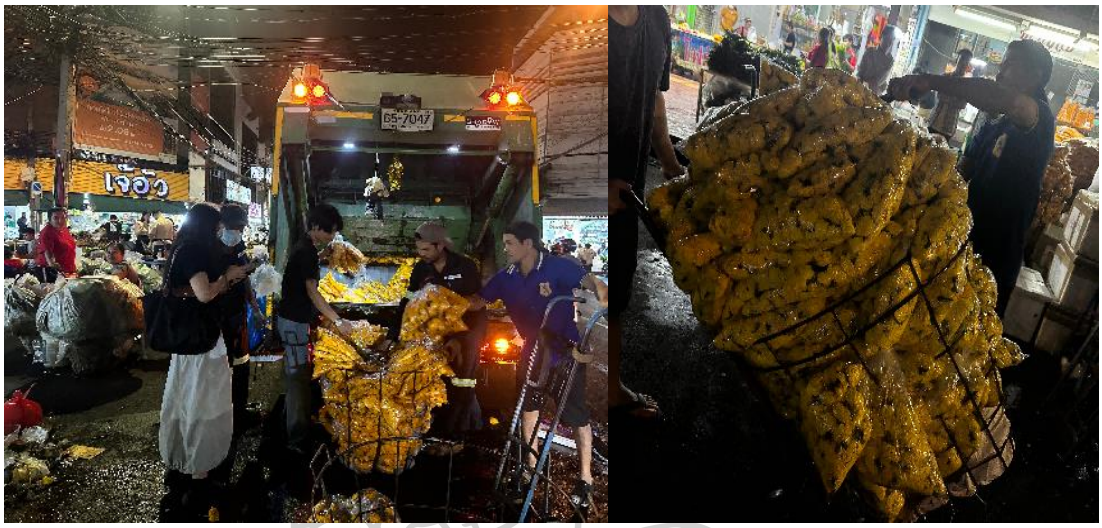
### 2.2 Current Research Status and Limitations in Floral Waste Recycling

The floriculture industry is a quintessential "emotion-driven" sector, with consumer demand closely tied to festivals, celebrations, and various ceremonial occasions. Since the 20th century, the expansion of cold chain logistics, greenhouse cultivation, and global trade has spurred rapid growth in floral production and distribution, establishing a multi-centre production pattern. This expansion has been

accompanied by a parallel increase in both floral consumption and waste generation, drawing heightened attention to the issue of floral waste.

**Figure 8**

*Waste Disposal at Pak Khlong Flower Market, Bangkok, Thailand On January 21, 2025, sanitation workers at Bangkok's Pak Khlong Flower Market dumped large quantities of marigolds—no longer fresh and originally used for religious offerings—into garbage trucks, reflecting the mass disposal of floral waste.*



*Note: Photo taken by the author*

Traditional methods for disposing of floral waste, such as landfill or incineration, often result in environmental pollution. In recent years, with the promotion of ecological conservation and circular economy principles, the resource utilisation of floral waste has diversified to include composting, organic fertiliser production, biochar manufacturing, handicrafts, papermaking, energy recovery (e.g., biogas, ethanol), and wastewater treatment.

However, existing research predominantly treats floral waste as generic biomass, with limited consideration given to the specific social contexts in which it is discarded. Particularly overlooked are post-ceremonial flowers, which carry distinct emotional and symbolic significance. This paper addresses this gap by initiating research into the reuse and redesign of floral waste within this particular context.

### 2.2.1 Case Studies on the Current Status of Floral Waste Reuse

Indian Regions

India, with its diverse religious traditions, particularly temple worship practices, extensively employs flowers as offerings. Vast quantities of floral materials used in religious ceremonies are frequently discarded directly into water bodies or open environments after fulfilling their symbolic purpose. This disposal method poses significant threats to ecosystems and public health (Gupta et al., 2023). It is estimated that millions of tonnes of floral waste are discarded annually in India, with disposal volumes peaking during festive periods (Srivastav & Kumar, 2020). These discarded

flowers not only exacerbate water and soil pollution but also create conditions conducive to the proliferation of pathogenic microorganisms (Gupta et al., 2023). India possesses extensive literature and case studies on discarded floral waste management, with increasingly mature practices that offer rich reference points for this research.

HelpUsGreen

In India, the social enterprise HelpUsGreen collects discarded temple flowers and transforms them into eco-friendly incense bricks, natural dyes, and bio-compost. This initiative not only reduces pollution in the Ganges River but also provides employment opportunities for hundreds of low-income women (HelpUsGreen, 2022)

**Figure 9**

*Help Us Green Promotional image*

*Note: source-Sustainable Incense from Temple Flowers | Help Us Green H.E.R.B.S. installation - Studio Nienke Hoogvliet*

Avacayam

The Society for Child Development in India, through its "Trash-to-Cash" initiative, collects floral waste discarded by temples and hotels in Delhi and repurposes it into skin-friendly color powders used during Indian festivals. The participants—youth with intellectual disabilities—gain a calming experience and vocational skills during the production process, enhancing their economic independence.

The flower petals are sorted by color, crushed, dried, and turned into Rangoli powders and Holi color powders, which are marketed under the brand "Avacayam." The brand has achieved an annual growth rate of 150% and has become a supplier to Walmart.

**Figure 10**

*Help Us Green Promotional image*


*Note: source-https://materialdistrict.com/*

Additionally, an Indian research team utilised marigold (Tagetes) floral waste to green-synthesise nanomaterials, developing them into self-healing hydrogels for anticancer drug delivery. This bio-value-added pathway not only advances pharmaceutical innovation but also pioneers high-tech applications for floral waste (Dalei et al., 2024)

At India's Sangli Ganesha Temple, researchers blended floral offerings with anaerobic digestion slurry/cow dung for earthworm composting (Eisenia foetida). The resulting compost demonstrated superior growth parameters in ornamental plants, validating the closed-loop 'floral offerings → compost → horticulture' system (Gurav & Pathade, 2011).

Other Regions

Beyond India, numerous examples of floral waste reuse exist worldwide.

In Maharashtra, K.W. College collaborated with Fergusson College to convert temple floral waste into organic fertiliser through vermicomposting. This initiative enhanced soil fertility, reduced chemical fertiliser usage, and generated supplementary income for farmers.

In Spain, researchers employed green extraction processes to transform saffron by-products into polyphenol-rich functional compounds. These were encapsulated within chitosan/alginate hydrogels for application in food and cosmetic sectors. This approach achieves high-value utilisation while reducing agricultural waste (Cerdá-Bernad et al., 2023).

The materials science company Pangaia has developed a plastic-free, vegan down alternative called FLWRDWN by combining wildflowers with bio-based polymers. This material offers insulation, breathability, and low allergenicity, and is fully biodegradable.

**Figure 11**

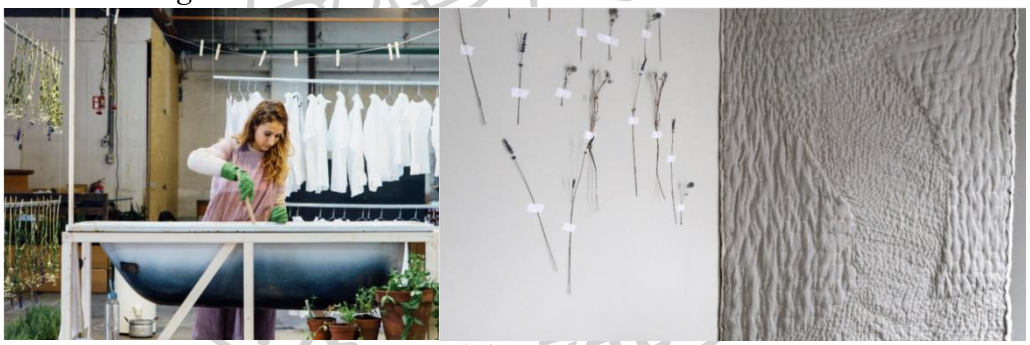
*Promotional image*

Note: source-https://materialdistrict.com/

Dutch designer Nienke Hoogvliet and her studio focus on researching sustainable materials, extracting natural plant dyes from herbal flowers for use in textile and furniture dyeing projects. Her work advocates for a renewed understanding of the relationship between humans and natural materials.

**Figure 12**

*Promotional image*



*Note: source-shttps://www.nienkehoogvliet.nl/portfolio/h-e-r-b-s-installation/*

Current practice demonstrates that floral waste possesses vast scope and potential for reuse, serving not only as an ecological resource but also as a medium for social innovation and cultural expression. Its value spans material regeneration, community economics and cultural narratives, offering diverse avenues for sustainable design.

### 2.2.2 Insufficient Focus on "Situational Waste" in Existing Research

Although floral waste management has garnered increasing attention in recent years, existing studies predominantly concentrate on the environmental hazards of floral waste, resource recovery technologies, and their contribution to sustainable development. However, there remains a marked lack of attention towards "situational waste"—particularly post-ceremonial flowers. As evidenced by the aforementioned case studies, most approaches treat floral waste as ordinary organic refuse, emphasising its biodegradability, pollution risks, and resource recovery pathways such as composting, activated carbon production, dye extraction, or biofuel generation.

Yet these studies frequently overlook the distinctive socio-cultural attributes of ceremonial flowers.

Flowers bear symbolic meaning and spiritual value in religious, memorial, and wedding ceremonies. Upon the conclusion of such rites, these floral instantly lose their “sacred” or “ritualistic” status, becoming discarded as waste. The disposal of post-ceremonial flowers stems not from physical or chemical deterioration, but from the termination of the ritual context.

Existing research rarely delves into the socio-psychological mechanisms behind this ‘contextual waste’ or its implications for waste management practices.

Addressing this gap, this study focuses on the reuse of flowers following funeral ceremonies. Such reuse must not only ensure environmental performance but also acknowledge the emotional and symbolic dimensions inherent in the source material.

## 2.3 Contextual Specificity and Design Value of Funeral Flowers

### 2.3.1Funeral Culture and Ritual Context

Funeral floral represent one of the most symbolically charged and emotionally potent applications of flowers. Their significance extends far beyond mere “environmental waste” management, being intrinsically linked to collective memory and cultural continuity. Consequently, understanding the cultural origins and emotional functions of funerals is a necessary prerequisite for assessing the redesign value of funeral floristry.

As one of humanity's earliest social rituals, funerals have been inextricably tied to religious beliefs and the construction of social order since their inception. Anthropological research indicates that early societies responded to death through burial, grave goods, and collective rituals. These practices served not only as farewells to the deceased but also as means to consolidate group cohesion (Howarth, 2007). Within religious contexts, funerals are often regarded as “rites of passage” to the afterlife, fulfilling functions such as purification, spiritual deliverance, and the appeasement of departed souls (Bell, 1997). This dual religious-social nature renders funerals pivotal nodes for upholding societal norms and values. Simultaneously, funerals constitute intensely condensed spaces of emotion and symbolism: through actions like floral offerings, recitations, and moments of silent mourning, bereaved individuals find psychological solace, social recognition, and support within collective rituals (Howarth, 2007). Consequently, the objects employed in funerals—flowers, candles, paper offerings, and the like—are imbued with profound symbolic significance, reflecting distinct cultural understandings of life and death.

### 2.3.2 Residual Materials After Funeral Rituals

Funeral rituals are not only processes of emotional expression and symbolic action, but also highly materialized practices. Death, burial, and commemoration usually rely on specific objects, offerings, decorative items, and spatial arrangements. As a result, when the ritual comes to an end, various material traces are often left

behind. Previous studies have pointed out that memorial objects and ritual items associated with death are not merely secondary accessories; rather, they serve as important media through which grief, remembrance, and social relationships are expressed and made visible (Engelke, 2019). For this reason, flowers, candles, paper offerings, and other ritual objects remaining after a funeral should not be treated simply as ordinary waste, but should instead be understood as "post-funeral residual materials" carrying cultural context and emotional meaning.

In Chinese funerals, common ritual materials include fresh flowers, funeral wreaths, elegiac couplets and ribbons, incense and candles, joss paper, cloth items, and other paper-based offerings. Research has shown that these objects are closely connected with filial ethics, ancestor worship, and beliefs about the afterlife. They are therefore not merely practical items, but forms of ritual consumption with clear social and cultural significance (Cao, 2023; Xu, 2022). In Thai Buddhist funerals, floral decorations, ceremonial banners, cremation structures, and other visual elements similarly function as expressions of impermanence, merit-making, and the transformation between life and death. Funeral settings also involve flowers, decorative components, and various material elements associated with cremation structures (Hall, 2015; Hall, 2021). From this perspective, both Chinese and Thai funerals leave behind a range of identifiable material remains, including flowers, wreaths or garlands, ribbons, incense and candles, paper offerings or devotional items, as well as temporary materials used in the arrangement of the funeral space.

Among these residual materials, flowers and floral decorations are particularly representative. In both Chinese and Thai funerals, they are highly visible and carry strong symbolic meaning. They are commonly used to create an atmosphere of mourning and to express respect, yet at the same time they are marked by a very short period of use. For this reason, they often become one of the most typical forms of post-funeral residual material. Compared with other ritual remains, flowers combine natural material qualities, symbolic meaning, emotional projection, and the potential for material transformation. They are therefore especially suitable as the focus of further research. Based on this, the following sections will concentrate on post-funeral floral waste and examine its potential for transformation as a contextual material.

### 2.3.3The Role of Floral Materials in Funeral Ceremonies

Why are flowers used in funerals? When did this practice begin? What significance do these floral tributes hold? Where did this now-commonplace custom originate? Tracing its roots reveals a fascinating history.

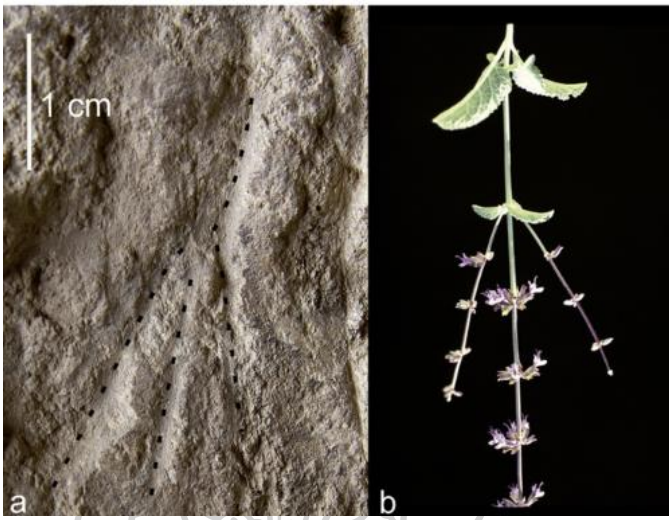
Tracing the Origins

The tradition of employing fresh flowers in funeral rites to express mourning can be traced back to prehistoric times. Archaeologists have uncovered floral remains in burial sites of the Natufian culture (c. 13,700–11,700 BCE) in the Middle East, representing the earliest known instances of flowers used in funerary contexts. These graves contained preserved stems of aromatic flowers like sage and abundant plant

microfossils, indicating that humans at that time used fresh flowers for grave decoration and imbued them with social and spiritual significance (Nadel et al., 2013).

**Figure 13**

*(A) Impressions of flowering stems in the grave of Homo 25 and Homo 28, marked by dashed lines. (B) Flowering stems of Salvia judaica, presented in the same scale and orientation as the impressions in the grave.*




*Note:source- from Nadel et al. (2013), PNAS, 110(29), 11774–11778. https://doi.org/10.1073/pnas.130227297*

Earlier evidence comes from the Shanidar Cave in Iraq, where researchers discovered substantial pollen deposits in Neanderthal burials. This suggests that Palaeolithic humans may have placed floral bouquets in graves, though their primary purpose likely lay in masking the odour of decaying bodies rather than serving as symbolic memorials (Pomeroy et al., 2020; Solecki, 1977; Hunt et al., 2023).

With advances in embalming techniques, the role of flowers in funerary practices gradually shifted from utilitarian to symbolic. Modern archaeological and ethnographic studies reveal that flowers were not only employed to mask corpse odours but also became ritual offerings expressing the cycle of life, mourning, and social relationships (Ives, 2021). During the Victorian era of the 19th century, Western funeral wreaths acquired particularly rich symbolism, with each flower and colour representing specific meanings—pink roses signifying tender love, white lilies embodying purity and the soul's rebirth (Ives, 2021).

In classical Western culture, wreaths held unique symbolic significance during funerals. The ancient Greeks were the first to employ wreaths in burial rites, their circular form representing the cycle of life. Early Christians wove wreaths from evergreen plants, symbolising the soul's eternal purity and transcendence over death (Ives, 2021).

Traditional Chinese funeral culture historically lacked the custom of presenting floral wreaths, typically relying on white cloth banners and paper offerings .The concept of floral wreaths as funeral paraphernalia emerged in the late Qing dynasty,

gradually gaining popularity under Western influence. The first documented use of floral wreaths in Chinese funerals appeared in the 1909 Shanghai Daily News. Their nationwide adoption accelerated when the Republic of China government incorporated them into official funeral protocols in 1912 (Standaert, 2008). By the mid-to-late 20th century, floral wreaths and memorial plaques had undergone localised and professionalised development in China, becoming pivotal visual symbols of modern funeral culture.

In summary, the tradition of funeral floristry has evolved from utilitarian to symbolic, and from indigenous to cross-cultural exchange. Regardless of cultural context, flowers universally embody shared sentiments of mourning and remembrance.

The Symbolic Significance of Funeral Flowers and Collective Memory: Continuity and Change from a Cross-Cultural Perspective

As symbols of mourning and remembrance, funeral flowers hold profound collective memory and intangible cultural heritage value across diverse global cultures. Specific floral species acquire an “instantly recognisable” mourning symbolism through repeated use in funeral and commemorative rites. This symbolic formation stems from the persistent recurrence of flowers within social rituals, enabling people to naturally associate them with grief and remembrance within particular cultural contexts (Christensen, 2023; Walter, 1996).

In China, the mourning symbolism of white chrysanthemums has only gradually taken root in modern times. Originally emblematic of purity and longevity, chrysanthemums have, under the influence of Western notions of the “flower of the graveyard”, progressively become the predominant floral expression of grief in public commemorations such as the Qingming Festival and national days of mourning. The repeated reinforcement of this visual symbol has cemented the white chrysanthemum's position within the nation's collective memory.In Western cultures, white flowers such as lilies and roses carry symbolic meanings of purity, the repose of souls, and resurrection. These associations trace back to ancient artistic and religious traditions and have been continually reinforced in modern public mourning events (Christensen, 2023;)

Funeral floral and associated rituals serve not only as vehicles for emotional expression but are also regarded as significant intangible cultural heritage. For instance, Hong Kong's traditional wreath-making craftsmanship has been inscribed on the intangible heritage register, while Jiangxi's ‘scattering flowers’ custom combines floral offerings with chanting, evolving into a folk art form expressing philosophical reflections on life. These practices demonstrate how flowers transcend mere ornamentation within funeral culture, becoming multifaceted symbols of emotion, belief, and identity (Christensen, 2023).

**Table 1**

*Cross-Cultural Symbolism of Funeral Flowers*

*Funeral flowers are not merely decorative elements but symbolic anchors of collective memory and emotion across cultures.*

| Region / Cultural Context | Structure and visual form | Common Funeral Flowers | Contemporary Symbolism (incl. mourning & remembrance) | Image source |
|---|---|---|---|---|
| China |  | White & Yellow Chrysanthemums | Mourning, sorrow, solemnity; honoring and remembering the deceased | Xiaohongshu-ID 637404650 |
| Japan |  | White Chrysanthemums (often with lilies, orchids) | Mourning, solemnity, respect; commemoration and remembrance of the deceased | https://www.dreamstime.com/funeral-ceremony-decorated-wreaths-flowers-funeral-hall-wat-pho-phueak-funeral-ceremony-decorated-image407847636 |
| Thailand (Buddhist) |  | White Orchids, Lilies, White Chrysanthemums | Solemnity, remembrance, respect; mourning and ceremonial commemoration | https://www.dreamstime.com/funeral-ceremony-decorated-wreaths-flowers-funeral-hall-wat-pho-phueak-funeral-ceremony-decorated-image407847636 |
| Western (Christian) |  | White Lilies, Roses, Carnations, (Chrysanthemums in parts of Europe) | Purity, resurrection, peace for the soul, love & respect, comfort; remembrance of the deceased | Xiaohongshu-id 593738198 |

*Note: drawn by the author*

Cross-cultural comparisons reveal that while funeral floral vary in type and form across regions, the cultural logic of "conveying grief through flowers" holds universal resonance. White flowers represent purity and the repose of the soul across multiple

cultures, while chrysanthemums, as the “flower of death”, hold symbolic significance in both Central Europe and East Asia. Different cultures express their religious beliefs, aesthetic concepts, and philosophies on life and death uniquely through floral choices and ritual presentations (Christensen, 2023).

In summary, funeral flowers serve both as visual symbols and as conduits for conveying social emotions and cultural memory. Their cross-cultural resonance and local variations in symbolic meaning collectively form a shared aesthetic and spiritual language through which humanity confronts mortality.

In summary, funeral flowers are not merely ceremonial adornments or visual accompaniments, but rather a composite medium embodying cultural symbolism, social sentiment and aesthetic philosophy. They constitute both a materialised form of collective memory and a perceptible language of emotion. Whether representing national mourning through China's white chrysanthemums or symbolising spiritual purification via the Western white lily, their core function lies in providing psychological solace and spiritual connection for individuals and communities confronting death through the natural medium of flowers. In other words, the value of flowers in funerals extends beyond their symbolism and ritualistic role to their mediating function between ‘the living and the departed’ and ‘tradition and the present’.

Amidst rapid societal transformation and funeral reforms in the modern era, traditional funeral floristry faces challenges of formalisation, disposability, and environmental burden. Yet precisely due to its profound cultural heritage and symbolic resonance, funeral floral harbour immense potential for redesign. By reinterpreting and transforming their symbolic meaning, material properties, and emotional function, this traditional medium can be revitalised with new cultural vitality in contemporary contexts—both addressing the practical demands of sustainability and perpetuating humanity's spiritual expression in confronting mortality. This provides a robust cultural and emotional foundation for subsequent ‘redesigns of funeral floristry’.

### 2.3.4Transformation of the Funeral Service Industry and the "Emotion × Sustainability" Trend

Generational Transformation in Funeral Services: The Convergence of Personalisation, Narratives and Emotional Aesthetics

Within post-pandemic consumer culture, “emotion-driven consumption” has emerged as a pronounced trend. Research indicates that contemporary consumers—particularly those born in the 1980s, 1990s, and even Generation Z—increasingly prioritise ‘emotional value’ over purely functional attributes when selecting goods and services (WGSN, 2027). Faced with societal environments marked by loss and uncertainty, this generation tends to seek emotional solace and meaning-making through consumption.

This trend is also evident within the funeral services sector. The age demographics of the deceased and those arranging funerals for loved ones differ from traditional eras, driving a shift in funeral perspectives. Compared to the standardised, functional funeral processes of the past, the new generation of bereaved families places greater emphasis on personalised expression, narrative experiences, and aesthetic design.

Case Study: Trends in Customisation and Aestheticisation within Contemporary Funeral Services

Kunming Funeral Service Providers

In recent years, China's funeral service sector has undergone marked transformation driven by urbanisation and consumer culture. Traditional funeral institutions have progressively evolved from sole providers of funeral rites into service providers integrating emotional support, personalised customisation, and aesthetic experiences. Taking Kunming City in Yunnan Province as an example, online searches reveal that multiple funeral service enterprises now offer diverse customised services alongside traditional offerings (such as cremation, viewing arrangements, and transportation services). For instance, some institutions provide a selection of urns featuring varied designs, materials, and craftsmanship; bespoke funeral attire and wreath styles; as well as customised memorial items and remembrance event planning. Furthermore, official documentation from Kunming Municipal Funeral Home indicates its floral services are categorised into 11 distinct types, encompassing wreaths, baskets, corsages, and farewell floral. This demonstrates the local funeral industry's transition from ‘standardised procedures’ towards ‘diversified experiences,’ reflecting contemporary consumers' growing emphasis on ‘personal expression’ and ‘emotional warmth.’

Chinese Funeral Service Brand - Gui Cong

Researchers were initially drawn online by its visual appeal. The brand employs a quiet and gentle visual language throughout its aesthetic, while its physical stores feature brightly coloured displays – a departure from the sombre palette typically associated with traditional Chinese funeral parlours. The brand's extensive product range encompasses traditional physical items such as urns and burial garments, alongside comprehensive services including bespoke farewell planning, grief counselling, and memorial ceremony design. Both its product design and philosophy align closely with contemporary consumer aesthetics. Its core ethos is ‘to comfort the living and release the departed through beauty and warmth,’ transforming funeral rites from purely sorrowful occasions into healing commemorative experiences through the fusion of visual artistry and emotional warmth. In its design practice, the brand actively collaborates with cross-disciplinary creators such as fashion designers and floral artists for the design of burial garments and floral wreaths. By introducing contemporary design language into traditional funeral contexts, it imbues mourning with expressions that are more humanistic and aesthetically resonant.

**Figure 14**

*Gui Cong at Every Archive's London Design Festival event EVERY ARCHIVE's inaugural issue of its eponymous pan-cultural bilingual magazine, RITUS, was launched in London on 18 September. The publication participated in the London Design Festival from 18-23 September, presenting the exhibition Ritual in Progress.*

*Note: source-Guicong brand on Xiaohongshu social platform - ID: guicongbrand*

The emergence of such brands, alongside the diverse funeral service systems offered by undertakers in the Kunming region, fully reflects the current transformative trend in funeral consumption culture. Compared to the standardised, functional funeral procedures of the past, a new generation of bereaved families places greater emphasis on personalised expression, narrative experiences, and aesthetic design. They seek to convey unique memories and emotional attachments to the deceased through integrated design encompassing visuals, spaces, and artefacts. This shift signifies a structural evolution in funeral services from mere 'ceremonial execution' to 'emotional care', while also validating the regeneration and renewal of contemporary Chinese funeral culture within an 'emotional × sustainable' framework. Such transformation not only alters public perceptions of death rituals visually and psychologically, but also provides fertile ground and consumer motivation for future innovations in funeral floral and memorial design.

The Shift Toward Sustainable Values in the Funeral Industry

With rising global environmental awareness, the sustainable transformation of the funeral industry is gaining increasing prominence. Traditional burial and cremation practices have come under growing scrutiny because of their energy demands, pollution potential, and pressure on land resources (Franco et al., 2022; Nosi et al., 2024). This has prompted the sector to re-examine the relationship between humanity and nature and to seek more environmentally friendly and lower-carbon alternatives. Green burial has thus emerged as a global trend, centred on

the principle of returning to nature with a minimal ecological footprint after life's conclusion, while generally avoiding preservatives, metal coffins, and other synthetic materials (Nosi et al., 2024). Common forms include: Natural Burial, which involves the direct interment of remains in woodlands or grasslands so that decomposition may proceed naturally and reintegrate the body into ecological cycles (Pawlett et al., 2024); Biodegradable Ashes Placement, which uses biodegradable urns, with ashes interred alongside trees or flowers, or scattered in natural environments, although the environmental effects of cremains and urn materials in soil also require careful consideration (Mordhorst et al., 2022); and Innovative Ecological Methods, such as aquamation and human composting, which are promoted as lower-impact approaches that return organic matter more directly to natural systems (Nosi et al., 2024). The rise of green funerals has also encouraged the development of ecological memorial spaces. Traditional cemeteries are gradually shifting towards parkland and ecological models that integrate burial areas with woodlands and grasslands, allowing them to serve both commemorative and ecological restoration functions. Innovative models such as conservation burial place remains within protected woodland settings without conventional headstones, using trees or native plants as memorial markers, while in some cases part of the revenue is directed towards land conservation (Nosi et al., 2024).

Case Study:

Resting Reef – A UK Undersea Memorial Project Combining Commemoration with Ecological Restoration

British start-up Resting Reef is pioneering a sustainable burial method that integrates memorialisation with ecological restoration. Addressing the high carbon emissions associated with traditional funerals—where a burial generates approximately 833 kilograms of carbon dioxide and a cremation around 400 kilograms, with US cemetery construction consuming up to 1.6 million tonnes of concrete annually (The Guardian, 2025)—the company proposes replacing conventional burial grounds with 'memorial reefs'.

Resting Reef processes remains or ashes via 'aquamation' (alkaline hydrolysis), then mixes the resulting residue with crushed oyster shells and eco-concrete to create memorial structures for underwater placement. These artificial reefs not only accommodate human or pet ashes but also promote marine organism attachment and ecological restoration. Company co-founder Aura Murillo Pérez states: 'Cemeteries should become places where people reconnect with nature and recognise life as part of a larger ecosystem.'

Research and field monitoring demonstrate these artificial memorial reefs significantly enhance marine biodiversity. A pilot project in Bali, Indonesia, revealed 24 memorial reefs attracted 14 times more marine life than surrounding waters, showcasing the potential for integrating commemorative design with ecological restoration. Resting Reef's approach exemplifies the funeral industry's potential shift towards 'commemoration in symbiosis with nature,' offering an innovative paradigm

for green funerals that balances human significance with ecological responsibility (The Guardian, 2025).

**Figure 15**

*esting Reef says its pilot project, in which it placed 24 memorial reefs on Bali's seabed, attracted 59 fish species.*

*Note: source-Reefs made from human ashes could revive British seabeds, says startup | Marine life | The Guardian*

Capsula Mundi—Tree Burial Design Inspired by the Cycle of Life

Capsula Mundi is an ecological burial initiative that serves both as a design experiment and cultural advocacy project, conceived in 2013 by Italian designers Anna Citelli and Raoul Bretzel. The project aims to redefine humanity's perception of death, transforming funerals from an 'end' into a continuation of the 'cycle of life'.

The design centres on a biodegradable egg-shaped capsule. The deceased is laid within the capsule in a foetal position, or their ashes placed in a smaller egg-shaped urn, before burial in the soil. During their lifetime, the individual may select a tree species (such as oak, cherry, or maple) to be planted atop the capsule. Over time, the pod gradually decomposes, with the organic matter from the remains nourishing the tree, allowing the deceased's life to continue in a natural form.

This design philosophy seeks to return death to the natural cycle, using trees to symbolise life's regeneration and the perpetuation of memory. Family and friends may tend to and commemorate the tree throughout its growth, thereby transforming the 'cold, grey landscape' of traditional cemeteries into vibrant 'memorial forests'. This 'tree-as-monument' approach not only eliminates the land and material consumption of conventional burial but also unites emotional healing with ecological sustainability through the symbolism of natural growth.

**Figure 16**
*SAND Biodegradable Urn*


*Note: source-Capsula Mundi Shop » SAND Biodegradable Urn*

Overall, the rise of green funerals represents not merely an innovation in the technology and service models of the funeral industry, but also signifies a profound shift in humanity's perspective on life and nature. With heightened environmental awareness, people are increasingly recognising that death is not the end of life, but rather a return within the natural cycle. As advocated by ecological design, an individual's departure can become nourishment for new life, integrating “death” into the broader ecosystem. Whether through memorial reefs that incorporate ashes into underwater ecosystems or life capsules that allow bodies to nurture tree growth, these practices embody a shared philosophy: that humans are part of nature, not entities opposed to it.

This renewed understanding of the relationship between life and nature transforms funeral rites from mere ceremonies of mourning into ecologically conscious practices rich in ethical and aesthetic significance. In this sense, green funerals not only respond to contemporary society's demand for sustainable development but also, as a symbol of “returning to nature”, convey profound reflections on life's impermanence, material cycles, and the continuity of existence. This gentle and empathetic view of life resonates deeply with the aesthetic spirit of “mono no aware” in Eastern culture – perceiving life's value amidst impermanence and recognising nature's perpetuity through transience.

Thus, the fundamental significance of sustainable funeral practices lies not merely in reducing environmental burdens, but in reawakening reverence for the natural cycles and the interdependence of life. Grounded in ecological ethics and guided by aesthetic empathy, it offers contemporary society a means to re-establish spiritual order between life and death, while also laying the philosophical foundation for the subsequent design context of ‘mono no aware aesthetics’ within this research.

### 2.3.5 Summary of Contextual Specificity and Design Value

Throughout this section, the significance of funeral flowers extends far beyond their physical form. They serve as both a symbolic medium through which humanity confronts death and a vessel for cultural memory and emotional expression. From the discovery of prehistoric burial flowers to the wreath ceremonies of modern funerals, floral usage in funeral settings has undergone a historical evolution from practicality to symbolism, and from individual commemoration to collective remembrance. This process has established funeral flowers as a vital link connecting the living with the deceased, and individual mourning with societal ritual (Howarth, 2007; Christensen, 2023).

In contemporary contexts, the use of funeral floristry no longer adheres solely to ritualistic conventions but has been imbued with more complex emotional and aesthetic functions. Influenced by “emotion-driven consumption”, a new generation of bereaved families increasingly favours expressing grief through personalised, narrative and aesthetically refined approaches. Funeral floral are progressively shifting from standardised displays towards designs embodying ‘therapeutic’ and “commemorative” expressions. This trend not only reflects evolving societal aesthetics but also reveals a psychological need to soothe grief and restore emotional order through ‘gentle beauty’ when confronting mortality.

Meanwhile, the global funeral industry's “sustainable shift” has further expanded the conceptual boundaries of funeral floristry. The rise of green funerals, memorial forests and ecological commemorative design has prompted a re-evaluation of the ecological relationship between life and death. Death is no longer perceived as a rupture in life, but rather as an integral part of nature's cycle—whether embodied in Resting Reef's memorial reefs or Capsula Mundi's life capsules, both exemplify the ‘regenerative philosophy of commemorating through nature.’ Within this context, the symbolism of floral life's transience and rebirth resonates with the ecological ethics championed by sustainable funerals, endowing ‘mourning’ with fresh aesthetic and ecological significance.

Thus, the design value of funeral floral extends beyond mere form and craftsmanship to encompass the cultural symbolism, emotional resonance and sustainable potential they embody. Once the funeral rites conclude, these floral tributes may physically become “waste”, yet their emotional and symbolic significance endures. It is precisely this material manifestation of “emotional residue” and “cultural memory” that offers unique research possibilities for design reuse. By re-examining the symbolic semantics and material properties of funeral floral , and transforming them into new commemorative vessels through contemporary design approaches, we can not only reduce resource wastage but also perpetuate the life perception and natural empathy emphasised by the aesthetics of “mono no aware”.

In summary, the unique context and symbolic attributes of funeral flowers render them a design medium connecting emotion, humanity, and ecology. Exploring their redesign constitutes both a contemporary expression of traditional ritual culture and a practical pathway integrating sustainability principles with emotional aesthetics. This forms the core motivation and theoretical foundation of this research.

## 2.4 Application of Emotional Design in Product Design

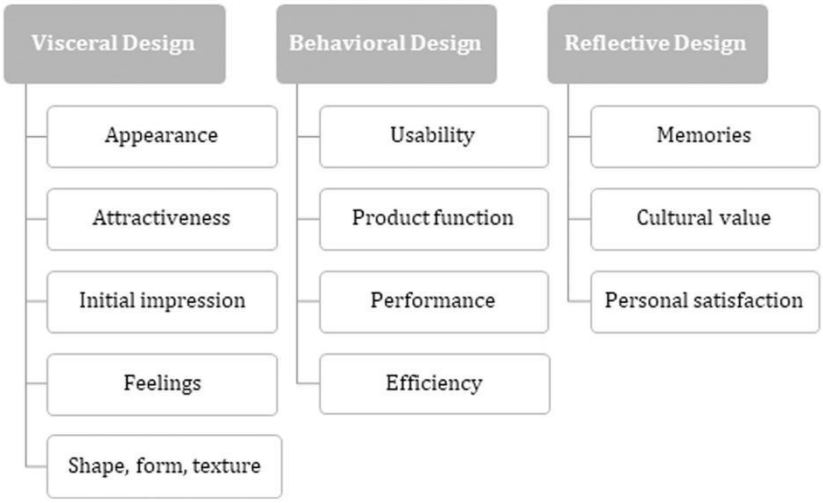
### 2.4.1 Emotional Design Theory

'Emotional Design' is a significant design theory proposed by cognitive psychologist Donald A. Norman in 2004. This theory asserts that design concerns not only functionality and aesthetics, but should also focus on the emotions and psychological responses generated when humans interact with objects. Products are regarded as triggers for emotion; excellent design should evoke positive feelings, strengthen the psychological connection between users and products, and enhance the pleasure of the experience (Norman, 2004).

Within this theoretical framework, Norman categorises emotional experiences into three interacting levels: the visceral level, the behavioural level, and the reflective level. Together, these three levels constitute the complete psychological process through which humans perceive and evaluate design.

**Figure 17**

*Norman's Three Levels of Emotional Design*




*Note: source-https://en.wikipedia.org/wiki/Emotional_Design#In_product_design*

(1) Visceral Level

The visceral level concerns humans' immediate, unconscious sensory reactions to a product. These responses are typically triggered by sensory factors such as sight, touch, smell, and sound, forming people's first impression of the product.

(2) Behavioural Level

The behavioural level centres on a product's functionality and user experience – specifically, ‘what the product does and how it is used’. Design at this level is human-centred, emphasising the understanding and fulfilment of user needs. It embodies the principle of usability – ensuring a product's functions are intuitive, effortless to use, and inspire trust.

(3) Reflective Level

The reflective level concerns a product's emotional and cultural significance. It examines how users develop enduring emotional connections and identification with products through prolonged use. Reflective experiences often stem from personal memories, social contexts, and cultural symbols, intertwining with individual self-identity. Exceptional reflective design fosters profound psychological resonance between users and products, elevating them beyond mere utility to become integral parts of daily life. Norman observes that this level embodies humanity's pursuit of ‘meaning’ and ‘identity’ – we remember not merely the object itself, but the emotional experience of its use, along with the fulfilment and symbolic value it conveys.

In summary, the instinctive level concerns a product's sensory appeal and aesthetic impression; the behavioural level emphasises its functionality and usability; while the reflective level addresses its emotional significance and cultural value.

### 2.4.2 The Application and Significance of Emotional Design in Product Design

Emotional design has gained increasing prominence in contemporary product design, transcending the traditional paradigm centred on functionality and usability. It emphasises creating meaningful experiences that evoke user emotions through multiple sensory cues such as visual, tactile, material, and narrative elements (Yusa et al., 2023). Within this theoretical framework, products transcend mere problem-solving tools to become conduits for fostering emotional resonance and establishing psychological connections (Alonso-García et al., 2020).

Research indicates that emotion serves as a pivotal driver of user behaviour and decision-making. Positive emotional experiences significantly enhance user satisfaction, aesthetic perception, and long-term loyalty towards products (Bhandari et al., 2019; Ghorbanzadeh, 2021). Emotional design fosters an ‘emotional contract’ between users and products through perceptual stimuli and affective responses. Visual characteristics prove particularly crucial, as humans' initial reactions to appearance often carry emotional connotations (Bhandari et al., 2019). A product's semantic and emotional cues—such as colour, shape, texture, and material—directly influence users' psychological associations. Soft, rounded forms are generally associated with warmth, safety, and positive affect, whereas sharp, angular forms are more likely to evoke perceptions of threat, tension, or vigilance (Wang & Zhang, 2016; Bar & Neta, 2006; Blazhenkova & Kumar, 2018).

Furthermore, narrative design enhances users' emotional engagement and attachment by imbuing products with symbolic meaning and contextual stories (Ardjomandi, 2025). Narrative strategies such as nostalgic elements and cultural symbols are frequently employed to evoke users' emotional memories, transforming products beyond mere functionality into vessels for sentimental recollections.

In summary, the core value of affective design lies in establishing deep emotional connections between users and products through affective evocation, experience shaping, and meaning attribution. This approach enhances product appeal, user satisfaction, and brand loyalty.

Case Study

Juicy Salif Lemon Squeezer

Philippe Starck's Juicy Salif for Alessi captivates users' senses with its octopus-like form and metallic sheen, sparking curiosity and delight (Lees-Maffei, 2014). Despite its limited practicality, its distinctive appearance and symbolic significance have elevated it to an emblem of lifestyle and aesthetic taste, embodying the value of the ‘reflective layer’ in affective design (Lloyd & Snelders, 2003; Ji & Lin, 2022). Research indicates that Juicy Salif transcends its role as a kitchen utensil, functioning as an artwork that stimulates users' emotions and self-expression (Koskinen, 2005).

**Figure 18**

*ALESSI JUICY SALIF CITRUS-SQUEEZER*

*Note: source-https://www.swanselect.com/*

Jellycat Soft Toys

Through soft textures, gentle colour palettes and anthropomorphic designs, Jellycat fulfils psychological comfort needs across age groups. Its design strategy instils security at an instinctual level, enhances interactive experiences at a behavioural level, and forges profound emotional bonds between brand and users through narratives of ‘companionship’ and ‘nostalgia’ at a reflective level.Research indicates that emotional brand identities enhance user loyalty and cross-cultural recognition.

**Figure 19**

*Jellycat promotional page Companions for cosy season...*


*Note: source-https://eu.jellycat.com/*

Naoto Fukasawa's Multifunctional Table

Japanese designer Naoto Fukasawa's multifunctional table lamp exemplifies the concept of emotional design in everyday objects. The designer keenly observed the routine actions of returning home and departing — 'placing down keys' and 'picking up keys'. He incorporated a sensor tray into the lamp base: when keys are placed upon it upon returning home, the light automatically illuminates; when keys are picked up to depart, the light extinguishes.

This simple design transforms the luminaire from a mere lighting tool into an emotionally symbolic companion. Switching the light on and off ceases to be a mechanical operation, becoming instead an emotional marker of arrival and departure. It gently reminds one of home's presence, imbuing an ordinary daily action with psychological significance.

From an affective design perspective, this creation establishes an emotional bond between user and object through contextual triggers and behavioural memory. Users interact with the product during unconscious daily routines, reinforcing the 'habit-emotion' psychological loop and making the lamp a symbolic medium for personal rhythms.

**Figure 20**

*Naoto Fukasawa's Multifunctional Table Lamp*

*Note: source-https://www.51design.com/people-news/660.html*

These case studies demonstrate that emotional design, through form, interaction and narrative, endows products with cultural and emotional value beyond mere utility, serving as a vital bridge connecting user experience with brand perception.

Whether it be the “emotional symbol transcending functionality” embodied by Juicy Salif, the emotional connection forged between people and objects through Naoto Fukasawa's multifunctional table lamp, or the “emotional attachment system” constructed at brand level by Jellycat – all reveal the core value of emotional design within contemporary product and brand practice. Emotional design transcends mere aesthetic optimisation of product form or user experience. Instead, it imbues objects and brands with cultural significance and psychological depth through the integrated interplay of form, interaction, and narrative. Its fundamental mechanism lies in evoking and sustaining emotion: design becomes the medium for forging emotional bonds between people and objects, enabling users to achieve emotional identification and meaning projection within material consumption (Norman, 2004; Desmet & Hekkert, 2007).

Thus, affective design functions not merely as an aesthetic strategy but as a socio-psychological mechanism—activating perceptual experiences and emotional memories to transform products into symbolic vessels for individual sentiment and cultural identity. This theoretical foundation provides crucial insights and methodological support for ‘commemorative design’ and subsequent design explorations concerning ‘emotional reactivation’ in the reuse of funeral floral.

### 2.4.3 Transformation Mechanisms of Emotional Design in Funeral Floral Redesign

In this study, the redesign of funeral ceremonial floral focuses not merely on achieving the instinctual level (sensory appeal and visual aesthetics) or behavioural

level (functionality and usability) of the final product. As previously discussed, funeral floral possess a profound contextual specificity and emotional symbolism within their cultural milieu, their significance extending far beyond mere aesthetic or utilitarian value. Consequently, within the framework of affective design theory, the reflective dimension becomes central to this study—it concerns how design can evoke, sustain, and reconfigure the emotional meanings of mourning, farewell, and remembrance embodied by floral .

Within Norman's (2004) theory of affective design, the Reflective Level represents the most profound dimension of product experience. It focuses on how individuals imbue meaning, construct identity, and perpetuate memory through designed objects. Unlike the sensory gratification of the Instinctive Level or the functional efficiency of the Behavioural Level, emotional experiences at the Reflective Level are grounded in reflections upon 'the past, relationships, and symbolism.' Products cease to be mere functional vessels, becoming instead containers for emotional experiences and narrative mediums.

The core design principle at this level lies in how objects bear memory and emotional connections. Within commemorative and ritualistic design contexts, objects often serve a 'relationship continuity' function: through form, material, or symbolism, they enable lost relationships to persist in altered forms (Hallam & Hockey, 2001). Thus, reflective design concerns not merely the 'presentation of beauty,' but the 'preservation of emotion.'

Applying this theory to the 'redesign of funeral floral ' hinges on understanding that design is not about 'repurposing waste,' but about extending the original emotional semantics through design language. Funeral floral are imbued with symbolic meanings of 'mourning,' 'farewell,' and 'commemoration' within the ritual. The significance of their redesign lies in ensuring these emotional values are not erased but instead reawakened within a new material form.

In this process, narrativity becomes the core mechanism for emotional continuity. Through narrativity-driven design, practitioners can situate regenerated objects within a comprehensible and empathetic narrative context. For instance, design may employ material retention (such as the texture of faded, dried petals) or formal metaphor (such as circular, fluid structures symbolising time and cyclicality) to sustain the emotional thread connecting the "regenerated object" to its predecessor—the funeral floral arrangement.

This narrative-driven reflective design not only extends the lifecycle of materials but also perpetuates the lifecycle of emotions. Through interaction with redesigned objects, users re-experience the relationship between "loss" and "memory", thereby gaining a gentle sense of continuity and psychological solace (Desmet & Hekkert, 2007).

This experience constitutes not functional satisfaction, but rather a form of meaning healing achieved through "design intervention"—assisting individuals in repositioning their relationship with loss through the object's rebirth.

From the perspective of the reflective layer in affective design, the reuse of funeral floral transcends mere material reprocessing; it constitutes a reawakening and perpetuation of emotional significance. Through narrative expression and symbolic design language, flowers that originally served a “farewell” function within the ritual continue to embody a “commemorative” role within a new context. In other words, the core of the design lies not in altering the flowers' form, but in enabling the emotions they embody to be seen and experienced anew. This reflective design emphasises the ‘potential meaning’ of objects—that is, through concrete material forms, it sustains the emotional connection between the deceased and the living, providing a humanistic and emotionally grounded framework for understanding the ‘redesign of ritual objects’.

## 2.5 Application of Aesthetic Theory

### 2.5.1 Reconstructing Material Significance through the Lens of Material Aesthetics

#### 2.5.1.1 Overview of Material Aesthetics Theory

Material Aesthetics theory emphasises that materials are not merely the physical foundation of products, but also crucial mediators of aesthetic experiences and emotional expression. Its core lies in the unique intrinsic aesthetic value conferred upon materials by their multisensory perceptual characteristics, combined with the contextual and cultural backgrounds they embody.

Perceptual Characteristics of Materials

The aesthetic value of materials is primarily manifested through their multisensory perceptual attributes. Research indicates that surface properties—such as colour, lustre, texture, and transparency—are perceived via senses including sight and touch, directly influencing subjective evaluations and emotional responses towards materials. For instance, perceptual attributes like smoothness, roughness, warmth, and brightness evoke distinct aesthetic experiences and psychological associations, closely tied to the material's physical properties (Weninger et al., 2024). Furthermore, these perceptual characteristics not only shape a product's aesthetic appeal but also convey subjective qualities such as perceived quality, performance, and modernity (Marschallek & Jacobsen, 2022).

Contextual Origins and Intrinsic Aesthetic Value

A material's aesthetic value is profoundly shaped by its contextual origins and cultural setting. The meanings a material carries within specific historical, social, and cultural contexts imbue it with unique aesthetic connotations. For instance, timber is often associated with natural, warm, and approachable sentiments, while metals symbolise modernity, robustness, and coolness. The cultural attributes and contextual memory of materials can evoke emotional resonance in users, serving as vital conduits for emotional expression and cultural transmission in product design (Marschallek & Jacobsen, 2022). Moreover, the aesthetic experience of materials

extends beyond mere judgements of “beauty”, placing greater emphasis on sensory descriptors and neutral characteristics such as “smooth”, “rough”, or “warm”. These terms exhibit high levels of commonality and distinctiveness across different material categories (Marschallek & Jacobsen, 2022).

Multidimensional Aesthetic Experience Model

Recent research proposes that material aesthetic experience arises from the combined effects of perceptual characteristics, contextual settings, and subjective user experiences. Aesthetic evaluations of materials depend not only on their physical properties but are also influenced by external contexts such as lighting, spatial arrangements, and cultural backgrounds (Weninger et al., 2024).

Case Study

Within the realms of contemporary art and design, materials have long transcended their role as mere physical mediums, evolving into potent vehicles for emotional and cultural expression. Whether through direct aesthetic engagement with the material's inherent perceptual qualities—such as texture, colour, and tactility—or by leveraging its contextual origins and cultural frameworks to convey specific narrative meanings, materials demonstrate formidable expressive potential. Researchers examining a vast array of art and design works have observed that numerous contemporary creations precisely harness this interplay of ‘sensory characteristics—contextual origins—viewer experience’ to evoke emotional and intellectual resonance beyond the visual. Particularly notable are those works centred on material context, which construct meaning through the material's ‘pre-life’ and cultural memory, revealing the humanistic depth and narrative power of materials within contemporary expression.

(1)The Tobacco Project

This project constitutes a cross-cultural artistic endeavour undertaken by contemporary Chinese artist Xu Bing from 2000 to 2011. It has been exhibited at Duke University in the United States (2000), Shanghai in China (2004), and the Virginia Museum of Fine Arts (2011).

Curator John Ravenal described it in the project documentation as a long-term research-based artistic endeavour concerning ‘global trade, bodily dependency, and cultural memory.’ Through the lens of tobacco as a distinctive material, Xu Bing examined the historical logic of capitalist globalisation and the social mechanisms of human desire.

Xu Bing's Tobacco Project examines the global tobacco industry, revealing the dual circulation of material and consciousness within capitalist and globalised systems through the history of the Duke Family's cigarette empire. Employing authentic tobacco, cigarettes, and related archival materials, the artist constructs an installation system that bridges historical narrative and contemporary reflection. This transforms the common consumer product of tobacco into a symbolic medium bearing social memory and cultural critique.

Globalisation and the Metaphor of Colonial Economics

Through examining the Duke family's tobacco trade history, Xu Bing reveals how American capitalism entered the Chinese market via the cigarette industry. This historical episode reflects a phenomenon termed “consumption colonialism”—where capital disseminates cultural and economic logic globally by intertwining material commodities with mechanisms of desire. Within this context, tobacco serves as a dual symbol of cross-cultural exchange and cultural erosion.

Symbols of the Body, Dependency, and Death

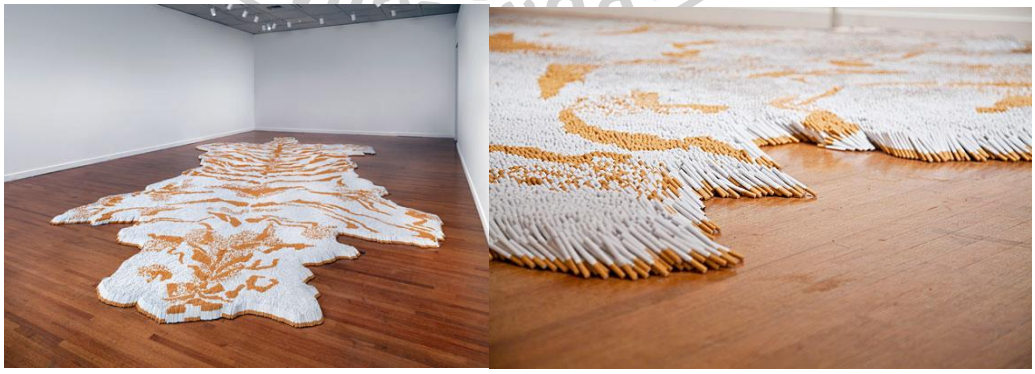
The combustion of tobacco metaphorically represents the consumption of life and the cyclical nature of desire. In the work 1st Class (2004), the artist employs approximately 500,000 cigarettes to form a pattern mimicking a tiger-skin rug, creating a ‘beautiful yet dangerous’ visual experience. The meticulously arranged cigarettes exert a potent sensory allure, yet their essence remains that of ‘substances of addiction and death.’ The scent, hue, and form of tobacco simultaneously evoke dual emotions of pleasure and anxiety at the perceptual level, generating an aesthetic tension between ‘sensory delight and bodily destruction.’

Recontextualisation of Materials

Xu Bing transforms authentic industrial materials (cigarettes) into narrative artistic language, using the materials' inherent context and historical attributes to articulate the complex interplay between global capital, bodily dependency, and cultural violence. This ‘re-contextualisation of materials’ embodies the core tenet of contemporary material aesthetics: materials are not merely the physical foundation of form, but also vessels of meaning and emotion. Within the work, tobacco serves both as a consumer product and a historical relic, becoming a symbolic substance that connects the body, capital, and memory.

**Figure 21**

*500,000 “1st Class” cigarettes, adhesive, carpet Fabrication assisted by Taylor Baldwin, Anna Bushman, Jillian Dy, Michael Muelhaupt, Yi Sheng, Sayaka Suzuki, Yao Xin, and numerous others*



*Note: source-Xu Bing: Tobacco Project, John Ravenal*

**Figure 22**

*Light as Smoke, 2011 Block of compressed tobacco with raised text Tobacco leaf courtesy of Marvin Coghill; fabrication assisted by Michael Muelhaupt*

*Note: source-Xu Bing: Tobacco Project, John Ravenal*

(2) Bordalo II's “Big Trash Animals” series

Portuguese artist Bordalo II's “Big Trash Animals” series employs urban waste, discarded appliances, and plastic and metal debris as primary materials. Through the reconfiguration of animal forms, it exposes the tense relationship between human consumption and natural ecosystems. By transforming “waste” into visually striking “animal” forms, Bordalo II critiques overconsumption, environmental degradation, and humanity's exploitation of nature. The discarded nature of the materials and their urban provenance imbue the works with symbolic significance beyond their visual impact, addressing ecology, resource management, and social responsibility.

This case exemplifies the core tenet of material aesthetics: a material's aesthetic value derives not solely from its physical properties but is profoundly shaped by its contextual origins and cultural framework. Within specific social and cultural settings, a material's “pre-life” becomes pivotal to its expressive meaning.

**Figure 23**

*Bordalo II's "Big Trash Animals" series*

*Note: source-https://www.bordaloii.com*

(3)The Key in the Hand

Artist Chiharu Shiota's installation at the 2015 Venice Biennale featured keys collected from the public, each bearing personal memories. Suspended within an intricate web of red thread, these functional objects were transformed into symbolic materials connecting human emotions and recollections. Chiharu Shiota posits that keys are familiar and cherished objects in our lives, safeguarding significant people and spaces while symbolising gateways to the unknown.

For this installation, she employed old keys contributed by the public—each imbued with accumulated memories and emotions from daily use.

As the artist creates within the space, these memories from diverse individuals intertwine with her own recollections, further connecting with viewers' emotions. This fosters new avenues for mutual understanding and communication.

This demonstrates the contextual origins of materials and their capacity for social narrative. Each key's “pre-life” represents a lived story; when aggregated, they form a network of emotional connections between people.

From a material aesthetics perspective, this recontextualised material origin endows the work with characteristics of “materialised memory” and “visualised emotion”, demonstrating the unique aesthetic value of materials in conveying cultural memory and emotional resonance.

**Figure 24**

*The Key in the Hand (2015) by Chiharu ShiotaJapan -Biennale Arte 2015*

*Note:source-https://artsandculture.google.com/story/the-key-in-the-hand-la-biennale-di-venezia-japan-pavilion/gAVRFJ9xCfj3Jw?hl=en*

(4) Ocean Bottle

Ocean Bottle is an eco-friendly water bottle range launched by the British brand Ocean Bottle. Its core innovation lies not in form or function, but in the social narrative surrounding its material sourcing. The product utilises “ocean-bound plastic”

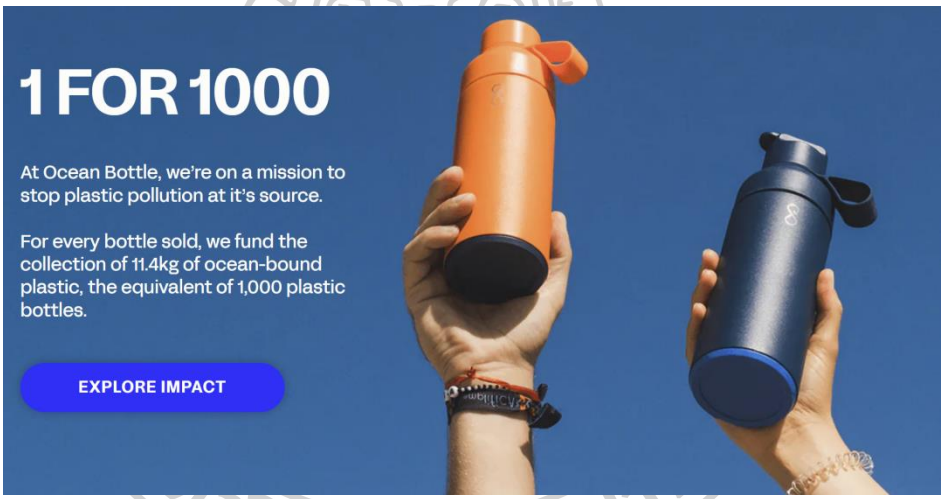
– waste plastic on the verge of entering the sea – as its primary raw material. For every bottle sold, the brand funds the removal of approximately 1,000 plastic bottles' worth (around 11.4 kg) of coastal litter.

This material origin forms the brand's core identity: it transforms an ordinary functional object into an “engaging product” imbued with ethical and emotional significance.

Consumers purchase not merely a water bottle, but through this act participate in the narrative of “saving the oceans”. From a material aesthetics perspective, the Ocean Bottle's aesthetic value also derives from its contextual material origin. The material's “pre-life” – its former existence as marine waste – imbues the product with unique emotional depth, endowing it with the symbolic dimension of “rescued matter”. This origin narrative shapes the consumer's perceptual experience, transforming the product's use into an act of emotional engagement and ethical practice.

**Figure 25**

*Ocean Bottle's promotional poster*




*Note: source-https://oceanbottle.com/*

In summary, material aesthetics not only focuses on the perceptual characteristics of materials but also emphasises their contextuality and emotionality—that is, the intrinsic aesthetic value of materials is shaped collectively by their physical properties, historical origins, and cultural contexts. An examination of case studies such as Xu Bing's Tobacco Project, Bordalo II's Big Trash Animals, Chiharu Shiota's The Key in the Hand, and Ocean Bottle's eco-design, it becomes evident that diverse artistic and design practices reconfigure meaning through materials' ‘pre-life’ and social narratives. Neglected or discarded substances—tobacco, waste, keys, and marine plastic—are transformed during recontextualisation into symbolic vehicles bearing memory, ethics, and emotion. Materials thus cease to be passive structural supports, becoming active carriers of human narratives and emotional communication.

This approach provides a theoretical foundation for understanding the role of ‘funeral floristry’ within material aesthetics—its inherent ritualism and emotional

memory enable flowers, within contexts of “reuse” or ‘regeneration,’ to display not only formal beauty but also to bear the potential for deep emotional continuity and the rebirth of meaning.

#### 2.5.1.2 From Ritual to Rebirth: The Reconstruction of Material Meaning in Funeral Floristry

Within the theoretical framework of material aesthetics outlined above, the significance of materials is no longer determined solely by their physical properties, but rather by the cultural and emotional contexts in which they are situated. In this study, particularly when materials originate from specific ritualistic domains (such as funerals), they transcend ordinary material properties to become symbolic vehicles for emotions and memories. Consequently, this research treats floral from post-funeral ceremonies as ‘ritual materials,’ exploring their aesthetic potential and mechanisms of meaning reconstruction during the redesign process.

From the perspective of material aesthetics, the provenance and context of use of a material are not merely the backdrop to its physical existence, but integral components in the generation of its meaning. In other words, a material's “previous life” and “contextual memory” persistently influence how it is perceived and evaluated, rendering it a vessel for emotion and culture (Karana et al., 2015). This perspective offers a crucial insight for the present study: when materials originate from ritualistic environments, their aesthetic value and emotional potential become inextricably linked to their social context.

Flowers in funeral ceremonies epitomise this very characteristic. Originally employed to convey sentiments of mourning, farewell, and remembrance, their form, colour, and fragrance are profoundly embedded within the ritualistic context. Consequently, when these floral elements are redesigned into new objects after the ceremony concludes, their material properties transcend mere “recycled materials” to become a continuation of emotional semantics—the material's “ritual origin” endows it with unique aesthetic potential.

From the perspective of material aesthetics, this redesign process essentially constitutes a reconfiguration of material meaning.

At the perceptual level, flowers undergo low-energy treatment while retaining certain inherent sensory characteristics—colour, scent, texture—which evoke distinct emotional responses.

At the contextual level, the flowers' “ritual memory” enables them to continue bearing the semantic weight of “commemoration” within the reborn objects;

At the emotional level, the design intervention aims not to conceal their sorrowful origins, but through formal reconfiguration, to transform the material's “farewell” into a symbol of “continuity”, fostering a gentle yet profound emotional resonance.

Thus, the reuse of funeral floral transcends mere sustainability; it constitutes a process of meaning regeneration rooted in the fusion of material aesthetics and

affective design. Within this process, the material's “ritual origin” forms the core of its aesthetic value: design here becomes a process of recontextualising emotion and memory. Through the reconfiguration of form and material, the symbolic significance of the flowers is extended, achieving an affective translation “from farewell to commemoration” within the reborn object.

### 2.5.2 Mono no Aware as Narrative Aesthetic Guidance

This study draws inspiration from the researcher's genuine experience: witnessing flowers discarded after wilting or fulfilling their ceremonial purpose invariably evokes a subtle sense of regret. This sorrow stems both from the fleeting nature of their beauty and the dismay at their being deemed “useless objects.” Flowers are cherished as beautiful and worthy of care during their bloom or use; yet once their function ends, they are swiftly dismissed as worthless and discarded into trash. This is especially poignant in the solemn setting of funerals, where these floral tributes once served as vessels of emotion—witnessing farewells, remembrance, and mourning—only to be discarded immediately after the ceremony concludes. This transformation from beauty to waste evokes a profound sense of life's impermanence and marks the starting point of inquiry: Does their existence truly end here?

This complex emotion prompts researchers to contemplate the relationship between humans, flowers, and time—perhaps the fleeting beauty of flowers is not a symbol of transience, but rather an integral part of life's flow. It is through such experiences that the concept of “mono no aware” in Japanese aesthetics is reinterpreted. Rooted in sensitivity and empathy toward the impermanence of all things, it emphasizes discovering beauty in transience and recognizing the meaning of existence within fleeting moments (Marra, 2010) . Rather than a form of sadness, “mono no aware” is a gentle awareness—an understanding and compassion for the inevitable passing of all things. Flowers, like humans, are part of nature: their blooming and withering, their splendor and return to stillness, all follow the rhythm of life and the cycles of nature. As The Tale of Genji states: “Nothing in this world remains unchanged; life is like the morning dew.” This perception of life's impermanence also forms the foundation of a unique death aesthetic within Eastern culture (Marra, 2010).

From this perspective, the “redesign” of funeral flowers is not a resistance against vanishing, but a continuation of the “beauty of transience.” The significance of design lies not in retaining life, but in sustaining emotion. The aesthetics of mono no aware express precisely this understanding of life's impermanence and nature's cyclical flow—it emphasizes awareness and empathy toward transience, rather than the pursuit of eternity. Though life and all things will eventually dissipate, they leave their mark in human perception, memory, and emotion—making “fading away” itself a form of continuity.

Precisely for this reason, the “understanding of life's cyclical flow” embodied in the aesthetics of mono no aware resonates philosophically with the circular concept of

sustainable design. The former focuses on continuity at the level of life and emotion, while the latter addresses regeneration at the level of materials and resources. Together, they remind us that the value of existence lies not in permanent possession, but in respecting flow and change—allowing both disappearance and rebirth to become part of nature's cycle.

Thus, in this study, the aesthetics of mono no aware serves as a narrative and conceptual foundation rather than a formal strategy. It enables researchers to understand “reuse” through a gentler, more humanistic lens—viewing flowers not merely as recyclable materials but as carriers of memory. Through design intervention, funeral flowers extend their life and emotional value in another form, transforming redesign into an act of “empathy with impermanence” and “homage to the flow of life.”

In summary, the aesthetics of mono no aware in this study serves not merely as an aesthetic reference but as an inspiration for design thinking. Its inherent awareness of impermanence and compassion for nature's cycles offers designers a gentle yet profound perspective—choosing understanding and continuity over concealment and denial when confronting “abandonment” and “fading.”

This mindset further evolves into methodological insights for design: design is no longer merely innovation in form or function, but a narrative reconstruction. By re-narrating the origins of materials, their contexts of use, and emotional memories, reborn objects become conduits for sustaining relationships and perceiving time. Simultaneously, it inspires a design approach that integrates experiential and ethical dimensions—focusing on the symbiotic relationships between humans and nature, emotions and materials throughout the design process, so that the act of reuse itself becomes a gesture of respect and response to the cycle of life.

Thus, the aesthetics of mono no aware offers this study a design perspective imbued with greater human warmth. It transforms the reuse of funeral flowers from a mere matter of material recycling into a profound reconsideration of life, time, and memory.

**2.6 Chapter Summary**

This chapter reviews the relevant theories and reference materials involved in this research, which mainly include sustainable design, circular economy, emotional design, material aesthetics, and the aesthetics of mono no aware. Through the above literature analysis, it can be seen that the reuse of funeral flowers should not be understood merely as a general waste disposal issue, but should be comprehensively understood by combining its source context, emotional attributes, and symbolic significance.

From a macro perspective, sustainable design and circular economy provide the research with foundations of ecological ethics and systemic thinking. Sustainable design emphasizes balancing environmental, social, and cultural values throughout the entire product lifecycle, while circular economy, through closed-loop material

systems and resource regeneration mechanisms, provides a pathway basis for single-use ritual flowers to re-enter new use systems. Together, they constitute the value foundation of this research, repositioning the reuse of funeral flowers not as a mere waste disposal issue, but within a framework of resource continuation, value recreation, and green transformation.

On this basis, this chapter further points out that most existing research still treats flowers as general organic solid waste, with little attention paid to their social context and emotional attributes, and particularly little discussion of the type of floral materials that "become waste only after the ritual ends." "Contextual waste" represented by funeral flowers is discarded not because the material itself has lost its function, but rather because its original context is terminated after the ritual concludes. This means that redesign of such materials is not merely physical reuse at the material level, but also involves the reinterpretation of social and emotional significance. Precisely because of this, funeral flowers are distinguished from ordinary floral waste, possessing more explicit research value and design significance.

Further examining the symbolic meanings of funeral flowers across different cultures and their use in commemorative ceremonies reveals that they inherently carry emotional projections and cultural significance that transcend their material properties. With the modernization of funeral culture and the development of green farewell concepts, the role of design in this field is no longer confined to decorative services, but has gradually shifted toward becoming a medium for emotional expression, memory bearing, and spiritual consolation. Consequently, the reuse practices of funeral flowers present a dual orientation of "emotion × sustainability," responding on one hand to ecological responsibility and material regeneration, and on the other hand to the continuation of emotional value and commemorative function within the ritual.

At a more concrete theoretical level, material aesthetics, emotional design, and mono no aware aesthetics provide further conceptual support for this research. Material aesthetics emphasizes that the perceptual characteristics of materials and their source contexts themselves possess the capacity to generate meaning, which makes the "ritual origin" of funeral flowers not only part of the material properties, but also an important foundation for subsequent design narrative and expression.

Emotional design demonstrates that products should not only fulfill functional purposes, but also respond to users' experiential needs in nostalgia, farewell, commemoration, and emotional sustenance, making design a medium for emotional continuity and meaning construction.

Meanwhile, the aesthetics of mono no aware in this research not only provides an aesthetic orientation but also constitutes a narrative understanding framework. It emphasizes the perception of beauty in impermanence, transience, disappearance, and incompleteness, enabling funeral flowers to be understood not merely as discarded materials awaiting disposal, but as contextual media that carry the process of farewell, the flow of time, and the preservation of memory.

Based on this framework, this research does not pursue strong decorative or highly artificial formal expressions in design representation, but rather inclines toward formal language with natural sensibility that possesses temporal sense, emotional connotation, and narrative significance.

**Table 2**

*Theoretical Framework of This Research and Its Transformation Relationship in the Study*

| Theoretical Dimension | Core Connotation Application | The Role in This Research | Transformation Direction in Design |
|---|---|---|---|
| Sustainable Design | Emphasizing Ecological Responsibility, Environmental Value, and Social Value | Providing a Value Foundation for the Reuse of Funeral Flowers, Illustrating the Practical Necessity of Its Research | Priority should be given to adopting material conversion methods that are low-energy consumption, more environmentally friendly, and sustainably preservable. |
| Circular Economy | Emphasizing Closed-loop Material Systems and Resource Circular Utilization | Providing Pathological Basis for the Transformation of Flowers from One-time Ritual Objects to Sustained Memorial Objects | Prompting materials to re-enter new systems of use, realizing reuse and value continuation. |
| Material Aesthetics | Emphasizing that material perception, source context, and cultural context themselves possess significance. | The explanation of the ritual origins of funeral flowers is not only material information, but also the foundation of design narrative. | Retaining natural texture, plant fiber texture, natural color variation, and traces of origin in design |
| Emotional Design | Emphasizing the relationship between product experience, user emotion, and meaning construction | Supporting the experiential construction of commemorative products, enabling them to serve as a medium for nostalgia, companionship, and | Emphasizing the commemorative nature of products, the sense of companionship, ritualistic significance, and connections with memory and remembrance. |

| | | | |
|---|---|---|---|
| | | emotional sustenance. | |
| Mono no Aware Aesthetics | Emphasizing the natural cycle, the beauty of impermanence and transience, and focusing on emotional perception in the process of disappearance. | To provide an overall aesthetic orientation for this research and constitute a narrative framework for understanding farewell, the flow of time, and the continuation of memory. | Guiding the formal language toward softness, naturalness, and a sense of temporal flow, while endowing the design expression with a gentle commemorative narrative quality. |

*Note:drawn by the author*

In summary, the reuse of funeral flowers is not merely a matter of resource regeneration and material transformation, but also involves multiple dimensions including source context, emotional attributes, narrative expression, and aesthetic conversion. Through the theoretical review in this chapter, sustainable design and circular economy provide value logic and path basis for material reuse, material aesthetics emphasizes the meaning-generating function of material sources and perceptual characteristics, emotional design supports the construction of commemorative experience in products, while mono no aware aesthetics provides direction for the narrative expression and aesthetic orientation of design works. Thus, this chapter establishes a theoretical foundation for subsequent research methodology, material experimentation, and design practice.

# Chapter 3

# Research Methodology

In Chapter 1, the study began with the global context of sustainable design and the circular economy, explicitly identifying funeral flowers as a form of “contextual waste” that had long been overlooked in emotional and cultural research. It posed the core question: “How can design practice transform this waste into sustainable, commemorative objects?” By defining the research subject, proposing hypotheses, and outlining the conceptual framework and methodological approach, Chapter 1 laid a solid foundation for subsequent theoretical development and practical exploration.

Chapter 2 constructed the theoretical foundation of this study by synthesizing multidimensional theories including sustainable design, circular economy, affective design, material aesthetics, and the “mono no aware” aesthetic. It not only identified gaps in existing floral reuse research regarding contextuality and emotionality but also clarified the unique value of funeral flowers as “contextual waste.” Concurrently, relevant aesthetic and design theories provided methodological insights and an aesthetic framework for subsequent material experiments and design pathways.

Therefore, this chapter further focused on how to respond to the aforementioned theoretical constructs and practical questions with appropriate research methods. Given this study's interdisciplinary nature encompassing cultural context, material experimentation, and design practice, this chapter detailed the practice-led mixed-methods approach adopted. Integrating Research-through-Design (RtD) methodology, it constructed a cyclical research framework through field research, material experiments, and prototype development.

Specific content included research design, participant selection, research and experimental tools, implementation steps, data collection and analysis methods. This aimed to demonstrate how this study generated research outcomes with theoretical depth and practical value through the “theory-practice-material-design” process.

## 3.1 Research Design

In contemporary design and art research, “sustainable design” and “material regeneration” have emerged as critical topics. With the rapid growth of the floral industry and the frequent hosting of various social ceremonial events, flower consumption continues to rise, leading to increasingly prominent issues surrounding floral waste disposal. Existing research has primarily focused on expanding material technologies and developing product functions, with limited attention to the contextual differences in floral waste disposal. Particularly, studies on the reuse of ceremonial flowers discarded after use remain scarce.

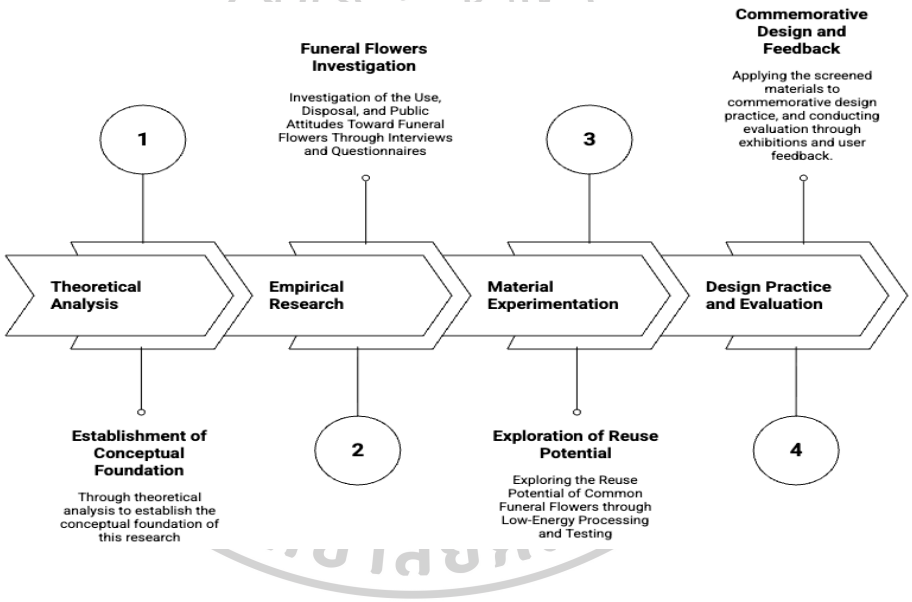
This research centers on a distinct category of floral materials within a unique cultural context: ceremonial flowers. These flowers often serve as ritual symbols, discarded shortly after fulfilling their ceremonial purpose while retaining distinct

symbolic meaning and emotional value. Taking “funeral flowers” as the core case study, this research constructs a three-dimensional analytical framework grounded in sustainable design and circular economy principles: “Origin Context—Material Properties—Reuse Pathways.” Guided by material aesthetics and the “mono no aware” (the beauty of transience) aesthetic, the study further explores how such ceremonial flowers can be redesigned into products with commemorative value, thereby extending their emotional significance.the study further explores how such ceremonially contextual flowers can be transformed through redesign into products with commemorative value, thereby extending their emotional significance.

To achieve this goal, the research adopts a practice-led mixed-methods approach, integrating the Research-through-Design (RtD) methodology, where design practice serves as the key process for knowledge generation.

**Figure 26**

*Overall Research Process of the Study*




*Note:drawn by the author*

The research process is divided into the following four stages:

(1) Theoretical Analysis

Conduct a targeted literature review on floral symbolism in funeral contexts, existing pathways for floral waste reuse, and emotion-driven versus material-driven design methodologies. This establishes the theoretical and contextual foundation for subsequent field research, material experimentation, and memorial product design.

(2) Empirical Research

Conduct field research in Kunming, Yunnan, employing a combination of interviews and questionnaires to systematically understand primary floral usage patterns, flower types and frequency, and typical disposal processes in funerals.

Additionally, gather attitudes and preferences regarding floral reuse from relevant groups including the public and industry practitioners.

(3) Material Exploration Experiments and Testing

Taking common floral materials in Kunming funeral scenes as the object, multiple low-energy-consumption material exploration experiments were conducted. On this basis, fundamental material testing was performed on the experimental materials obtained, including indicators such as combustibility, mold resistance, heat resistance, strength, pH value, color fastness, and air quality impact, in order to assess their potential for reuse and sensory characteristics, and to determine the safe application boundaries of the materials and suitable design presentation methods.

(4) Design Practice and Feedback

The experimental floral materials were applied to memorial product designs. Feedback was gathered through small-scale exhibitions and user evaluation activities to validate their emotional impact, cultural acceptance, and potential application scenarios, providing feasibility evidence for the reuse of ceremonial flowers.

This study demonstrates that through appropriate material transformation and aesthetic expression, post-funeral flowers can be successfully repurposed into commemorative design pieces. This process extends their original symbolic and emotional value, embodies sustainability and circular economy principles, and holds practical potential for integration into funeral service systems. More importantly, the study highlights the unique symbolic and emotional density inherent in ceremonial floral materials due to their ritual origins, providing theoretical references and practical pathways for future redesigns of culturally contextual waste materials.

**3.2 Participants (Population and Sampling) This study employed a purposive**

This study employed purposive sampling strategy because the research involved the cultural context of funeral flowers, public attitudes, and design evaluation, which required selecting participants who could respectively provide contextual knowledge, information on social acceptance, and professional judgment. Based on the research objectives, participants were divided into three categories: funeral florists and service personnel, general public and those with relevant experience, and experts and designers.

**3.2.1 Funeral florists and service providers**

Professionals who arrange, manage, and dispose of flowers in funeral settings. They provide insights into practical constraints, symbolic meanings, and potential feasibility of reuse.

**3.2.2 General public and bereaved participants**

Individuals who attend or organize funeral rituals. Their feedback captures emotional resonance, symbolic acceptance, and attitudes toward sustainable mourning practices.

### 3.2.3 Experts and designers

Academic researchers, design practitioners, and cultural experts. They contribute evaluative perspectives on material transformations, aesthetic qualities, and the symbolic legibility of prototypes.

**Table 3**

*Research Participant Groups*

| Group | Role in Research | Sampling Method | Approx. Sample Size |
|---|---|---|---|
| Funeral florists / service providers | Provide professional insights on flower use, disposal, and reuse feasibility | Purposive sampling | 3 |
| General public / bereaved participants | Evaluate symbolic meaning, emotional resonance, and social acceptance | Purposive & convenience sampling | 400 |
| Experts and designers | Assess prototypes, material qualities, and design strategies | Expert purposive sampling | 3 |

*Note:drawn by the author*

This stratified and purposeful sampling design aims to ensure the study obtains complementary and targeted feedback across three dimensions—practical operation, emotional acceptance, and design evaluation—thereby providing comprehensive and actionable practical guidance for the redesign of funeral floral arrangements.

## 3.3 Research Tools

### 3.3.1 Observation and Field Notes

To gain a comprehensive understanding of the usage scenarios, processing procedures, and cultural contexts surrounding funeral floral arrangements, this study employed non-participatory observation and field notes during its preliminary phase. Multi-site field research was conducted across flower markets, funeral service venues, and floral design studios in the Kunming region. Key observation areas included:

Types and Arrangements of Funeral Flowers: Documenting the frequency, combinations, and arrangement logic of common floral materials (e.g., white chrysanthemums, lilies, carnations, white roses) in actual settings;

Funeral Arrangements and Ceremonial Processes: Observing the functional roles of flowers in funeral ceremonies (e.g., wreaths, baskets, floral columns) and their visual and symbolic significance within rituals;

Post-use disposal methods: Documenting the handling of flowers after ceremonies (e.g., direct disposal, centralized cleanup by staff, partial retention) to understand the normalized logic of “ritualistic discarding”;

Practitioner behaviors and communication: Observing interactions between funeral florists, service personnel, and bereaved families to comprehend differing attitudes toward floral symbolism and potential reprocessing.

All observations were documented through shorthand notes and photography (with permission granted). This field observation phase provided not only intuitive insights into floral application and cultural contexts but also established contextual foundations and real-world case references for subsequent interview outlines, questionnaire design, and material experiments.

### 3.3.2 Interview Guide

This study designed a semi-structured interview guide targeting practitioners directly involved in floral arrangement and disposal within funeral settings. The guide aims to gain in-depth insights into the actual usage of funeral flowers and their potential for reuse across the following dimensions:

Usage Frequency and Process: Frequency of floral use in routine funerals, along with arrangement and cleanup procedures.

Flower Types and Sources: Common funeral floral varieties, color preferences, and procurement channels.

Symbolism and Cultural Practices: The symbolic meanings, taboos, and usage customs of different flowers within the local cultural context.

Disposal Methods and Logic: How flowers are handled after ceremonies and the underlying cultural or procedural reasons.

Perceptions and Attitudes Toward Reuse: Exposure to similar redesign practices, and views on their feasibility and acceptability.

Through this interview outline, the research aims to gather professional insights into the entire lifecycle of funeral flowers and understand practitioners' genuine perspectives on “floral reuse” across contextual, cultural, and operational dimensions.This serves as a critical basis for assessing the feasibility of design transformation pathways.

### 3.3.3 Questionnaire Survey

To understand the attitudes and perceptions of Kunming residents toward the reuse of funeral flowers, this study designed and distributed a structured questionnaire. Data collection was conducted via the online platform “QuestionStar” (link: https://www.wjx.cn/vm/eScTyta.aspx#). The questionnaire covered multiple dimensions, including:

Perceptions and emotional attitudes toward funeral flowers;

Acceptance levels and concerns regarding flower reuse;

Psychological acceptance and cultural evaluation of floral material sources;

Preferences and recognition of different reuse methods (e.g., handicrafts, keepsakes).

Following data collection, the study employs descriptive statistical analysis, one-way ANOVA, and Pearson correlation analysis to systematically examine respondents' overall attitude characteristics, attitudinal differences across groups, and potential correlations between variables.

The findings from this analysis provide reliable data support and public foundation for subsequent material selection, design direction determination, and product development.

### 3.3.4 Evaluation Feedback Forms

(1) Material Feedback Form

During the initial material exploration phase, this study designed a concise public evaluation questionnaire to display and collect feedback on various low-energy-consumption treated floral material samples (e.g., dried flowers, wax-sealed flowers, scented beads, gelatin-based bio-materials).

(2) Product User Feedback Form

A small-scale user test was conducted on the final design outcomes—fragrant bead bracelets, incense sticks, and incense holders.Selected participants were invited to experience and evaluate the products. Through feedback forms, user perspectives on emotional expression, user experience, aesthetic perception, and cultural acceptance were gathered, providing reference data for subsequent design evaluation and optimization.

### 3.3.5 Material Experiments and Testing Tools

To explore sustainable reuse pathways for funeral flower waste, this research conducted multiple low-energy material exploration experiments during the material experimentation phase and performed basic performance testing on the experimental materials. The main experimental and testing tools are as follows:

(1) Drying Experimental Tools (Natural Drying and Controlled Drying)

Tools include ventilation racks, moisture-absorbing paper, desiccants, food dehydrators, and flower pressing boards, which are used to observe the drying speed, morphological retention, and structural stability of different floral materials under natural and artificial conditions.

(2) Experimental Tools for Wax Sealing and Saponification Materials

Materials and tools include beeswax, soy wax, handmade soap base, stirrer, silicone molds, and electric heating pot, etc., used to explore the preservation effects, visual presentation, and tactile characteristics of floral materials after wax sealing or saponification treatment.

(3) Natural Binder and Plant Dyeing Ratio Experimental Tools and Materials

Using gelatin, glycerin, alum (as a mordant), measuring cups, electronic scales, and electric heating pots and other materials and tools, to explore the feasibility of non-toxic and biodegradable natural binder systems in floral material composites, and

to test the dyeing effects and stability of pigments extracted from floral materials under different proportion conditions.

(4) Handmade Paper Production Experimental Tools

Using tools such as paper mulberry fiber, agitator, pulp mixing tank, and papermaking frame, testing the visual effects, strength, and processability of flower materials and plant fibers under different proportions.

(5) Material Performance Testing Instruments

Including air quality detector (detecting PM2.5, TVOC, HCHO, etc., used for combustion safety assessment), portable electronic pH meter (referring to GB/T 7573, used for testing the skin-friendly safety of fragrant beads and plant dyes), electronic fabric strength tester (referring to GB/T 3917.2, used for testing the tear strength of bio-based materials), friction color fastness tester (referring to GB/T 3920), as well as constant temperature drying oven, oven, and constant temperature water bath shaker and other equipment, used for evaluating the safety, stability, and application boundaries of materials.

(6) Experimental Recording Tools

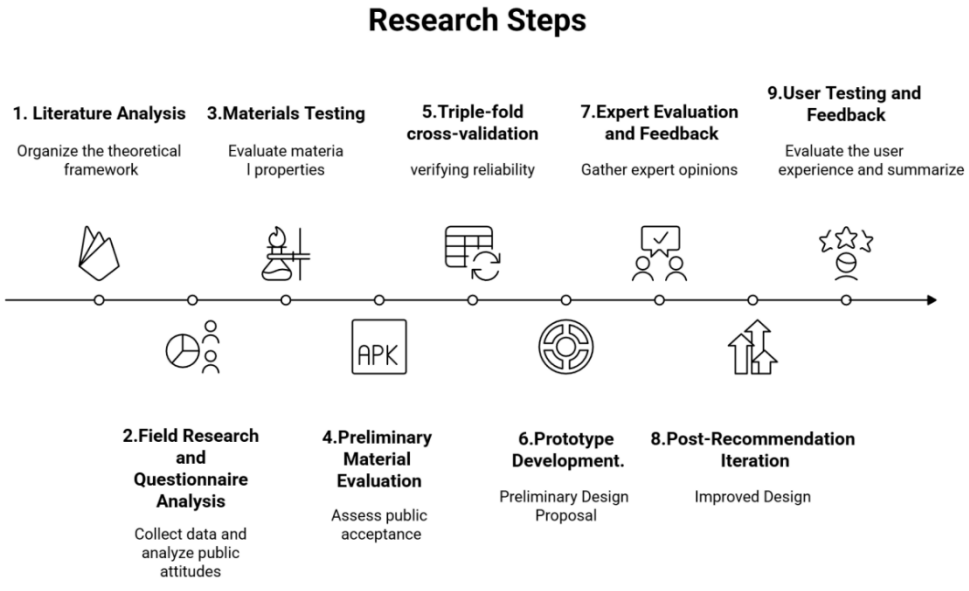
Process documentation was conducted through cameras or mobile phones, and sample storage boxes and label cards were used to record experimental ratios, condition changes, and material states and other information.

### 3.4 Research Procedures

The study was carried out step by step based on the above research tools and following the nine stages below.

**Figure 27**

*Research Steps*




*Note:drawn by the author*

### 3.4.1 Literature Analysis

The theoretical foundation of this study is established through an examination of multidimensional theories including sustainable design, circular economy, affective design, material aesthetics, and the “mono no aware” aesthetic. This framework not only identifies gaps in existing floral reuse research regarding contextuality and affectivity but also clarifies the unique value of funeral flowers as “contextual waste.” Concurrently, relevant aesthetic and design theories provide methodological insights and an aesthetic framework for subsequent material experimentation and design pathways.

### 3.4.2 Field Research and Questionnaire Analysis

Through field research and questionnaire analysis, we systematically examined the current usage of funeral flowers in Kunming and public attitudes toward their reuse. The field research component involved visits to key locations such as Kunming North Suburban Funeral Home, Dounan Flower Market, and Yixianxin Floral Design. Using observation and semi-structured interviews, we gained in-depth insights into the frequency of funeral flower use, types of floral materials, service structures, and disposal methods. Findings revealed that funeral floral arrangements have become highly diverse in form, primarily featuring white and yellow chrysanthemums complemented by lilies, carnations, and other varieties. However, the overall disposal pattern remains characterized by “single-use followed by post-event discard.”

Regarding the questionnaire survey, 400 valid responses were collected, representing diverse demographics including gender, occupation, religious background, and experience with funeral attendance. Analysis revealed widespread public recognition of the symbolic meaning and emotional value of funeral flowers, with openness toward their reuse—particularly preference for transforming them into commemorative and eco-friendly recycled products. Among acceptable reuse conditions, hygiene safety, family authorization, and emotional respect were deemed critical prerequisites. Significant differences in reuse attitudes emerged across variables like gender, religious beliefs, and personal funeral experience, with positive correlations observed between emotional resonance and social acceptance.

### 3.4.3 Material Exploration Experiments and Material Testing

After completing the preliminary classification and characteristic observation of funeral floral materials, this research conducted material exploration experiments and basic material performance testing to assess the feasibility of applying funeral floral waste in sustainable regenerative design and to determine its material application boundaries.

The experimental study selected four types of flowers commonly found in Kunming funeral scenes as research objects, including white/yellow chrysanthemums, white lilies, white roses, and pink carnations, and conducted experiments using various low-energy-consumption materials exploration methods. The experimental

content mainly included desiccation treatment experiments, preservation and embedding experiments, and material transformation experiments. The desiccation experiments observed the differences among different flower materials in morphological retention, color change, and structural stability through natural air drying, desiccant drying, and pressing methods; the preservation experiments attempted to embed flower materials into wax-based or soap-based materials to evaluate their preservation effects and visual performance in different material systems; the material transformation experiments included plant dyeing experiments, traditional fragrant bead making experiments, gelatin-glycerin natural adhesive system experiments, and plant fiber handmade paper experiments, to explore the processing feasibility and material performance of flower materials combined with natural material systems.

Based on the material exploration experiments, this research further conducted fundamental performance tests on the experimental materials, including tests on combustion process and air quality impact, pH value testing, material strength testing, and abrasion fastness testing, in order to evaluate the safety, stability, and durability of the materials, and to clarify their scope of application in subsequent design implementation based on the results.

Through the combination of material exploration experiments and material testing, this phase provides a material foundation for subsequent design practice and offers technical evidence for the reuse of funeral floral waste in commemorative design.

### 3.4.4 Preliminary Material Assessment

In order to further assess the acceptability of material experimental results in practical design, this study conducted a preliminary evaluation of material samples through small-scale field testing. The testing locations included FLOAT Studio in Kunming and Dounan Flower Market, employing a method combining "physical display + paper questionnaire + brief interview" to understand public perception and attitudes toward the reuse materials of funeral flowers and related design samples, collecting user feedback from aspects such as tactile experience, visual presentation, and symbolic meaning.

Furthermore, in the exhibition held in November 2025, a phased material presentation was conducted, during which domain experts performed on-site assessments and provided recommendations regarding material safety, cultural context adaptability, and design expression. Through integrating public feedback with expert opinions, preliminary verification was conducted on the applicability of material application and design direction, providing reference basis for subsequent design practice.

### 3.4.5 Triangulation

To enhance the reliability of research conclusions, this study employed triangulation validation methods during the preliminary data collection and initial

design phases, conducting comprehensive comparison and mutual verification of information from different sources. Specifically, this includes: industry practice information obtained from field interviews, public attitudes and preferences reflected in questionnaire surveys, actual material performance demonstrated through material experiments and preliminary assessments, and design suggestions proposed in expert evaluations and user feedback. Through cross-analysis of the aforementioned multidimensional data, this study further confirmed the critical boundaries of funeral flower reuse in terms of cultural acceptance, material feasibility, design form preferences, and potential concerns, providing evidence for subsequent prototype development, design optimization, and application positioning.

### 3.4.6 Prototype Development

Based on the preliminary questionnaire surveys, field interviews, material exploration experiments, material testing, and initial material assessment, this research entered the prototype development phase. Taking into comprehensive consideration the material performance boundaries, the adaptability to the cultural context of Chinese sacrificial and memorial practices, and the impermanence and emotional expression emphasized by the aesthetics of mono no aware, this research gradually developed three categories of design prototypes: fragrant bead bracelets, incense and incense holders.

During the prototype development process, the focus was on integrating the physical properties of floral materials, their usage methods, and emotional symbolism, so that material transformation not only meets basic functional requirements but also conveys moderate and subtle emotional expression within a commemorative context.

### 3.4.7 User Testing and Feedback

After the completion of the design prototype, this research conducted small-scale user testing to evaluate the product's usability experience, emotional expression, and cultural acceptance in actual use. The test subjects primarily included members of the public who had previously participated in material experience activities, practitioners from the floral industry, and potential user groups with experience related to commemoration or funeral practices.

The testing method adopted a form of "product demonstration + questionnaire completion + brief interview." Participants experienced the designed products developed in this research, including fragrant bead bracelets, incense, and incense holders, on-site, and provided evaluations from the perspectives of visual presentation, material tactile sensation, scent acceptability, cultural context adaptability, and emotional significance.

By collecting user evaluations and feedback during the experience process, this research obtained user perspective information regarding product perception, emotional responses, and usage experience, which provided important reference for the subsequent research conclusions and discussion sections.

### 3.5 Data Analysis Methods

This study employed a combined approach of qualitative and quantitative data analysis methods to reflect the characteristics of Mixed Methods Research. By integrating analysis results from different data sources, a comprehensive evaluation of the acceptability and design potential of funeral flower reuse design was conducted from multiple dimensions, including cultural context, emotional experience, and material feasibility. Additionally, this study adopted triangulation cross-validation methods to compare data from different sources in order to enhance the reliability and explanatory power of the research conclusions.

#### 3.5.1 Qualitative Analysis

Qualitative analysis was primarily conducted through thematic analysis and inductive analysis methods, organizing and coding field interview records, observation notes, expert suggestions, and open-ended feedback from user testing. Through analysis of textual materials, the study summarized the attitudes, cognitive approaches, and emotional responses of the public and relevant practitioners toward the redesign of funeral flowers for reuse, and identified important factors affecting design acceptance, such as cultural context adaptability, emotional expression methods, and material safety.

#### 3.5.2 Quantitative Analysis

Quantitative analysis conducted statistical analysis based on questionnaire survey data. The research employed descriptive statistical methods to analyze the basic characteristics of the sample and overall attitudes, and combined variance analysis (ANOVA) and correlation analysis (Pearson Correlation) to explore the relationships between different variables, such as the effects of factors including gender, religious belief, and funeral participation experience on public acceptance. This analytical section provided data support for the definition of design boundaries, selection of product forms, and identification of potential user groups.

#### 3.5.3 Triangulated Analysis

To enhance the reliability of research conclusions, this study employed a triangulation cross-analysis method to conduct comprehensive comparison and verification of data from different sources. The primary data sources included field interview materials, questionnaire survey data, material experiments and user experience feedback, as well as expert evaluation and recommendations. Through cross-analysis of these multi-dimensional data, this study conducted comprehensive assessment of key influencing factors in the redesign of funeral flowers from the perspectives of cultural context adaptability, emotional expression methods, material application feasibility, and public acceptance.

This cross-validation of multi-source data formed mutual corroboration among practical experience, public attitudes, and professional opinions, which enhanced the

systematicity of research analysis and the credibility of conclusions, and provided a basis for subsequent design summary and research discussion.

### 3.6 Chapter Summary

This chapter systematically expounds the overall research methodology and implementation pathway of this study. In terms of research methods, this study adopts Research-through-Design (RtD) as the core methodology, and combines mixed research methods integrating qualitative and quantitative approaches, conducting systematic research on the issue of funeral flower reuse from multiple dimensions including cultural context, material experimentation, and design practice.

First, this chapter clarified the research design and research objects, and determined the composition of research participants, including funeral florists practitioners, the general public and relevant experiencers, as well as experts in the fields of design and culture. Second, it introduced the main research tools used in the research process, including field observation, semi-structured interviews, questionnaire surveys, material feedback forms and product user feedback forms, and explained the experimental equipment and testing instruments used in material experiments and material testing.

In terms of research implementation, this study proceeded step by step according to the established research procedures, including literature analysis, field investigation and questionnaire survey, material exploration experiments and material testing, preliminary material assessment, triangular cross-validation, prototype development, and user testing. Through this systematic research process, this study conducted a comprehensive exploration of funeral flower reuse design from multiple dimensions, including understanding cultural context, exploring material feasibility, and verifying design prototypes.

Finally, this chapter introduced the data analysis methods adopted in this research, including qualitative thematic analysis, quantitative statistical analysis, and triangulation analysis, to enhance the systematicity of research analysis and the reliability of conclusions.

Overall, the research methodology framework constructed in this chapter provides a methodological foundation for the development of Chapter Four "Research Results and Analysis," and also establishes a research basis for the design summary and research discussion in Chapter Five.

# CHAPTER 4

# RESEARCH RESULTS

## 4.1 Preliminary Research Preparation

Before the material experiments began, this study finished three parts of the early work. The study reviewed the related literature. The study also carried out field observation and interviews in Kunming. At the same time, the study collected questionnaire data from the public. These three parts laid the groundwork for the later experiments and design work. More importantly, they helped the study address the research question from three sides: contextual understanding, public acceptance, and material feasibility.

This early stage did more than provide background information. It also set the limits for the design choices made later. The literature review explained why post-funeral flowers should not be seen as ordinary floral waste. The fieldwork showed how funeral flowers were used and discarded in the local setting. The questionnaire data showed what kinds of reuse the public could accept, under which conditions, and in which forms. Taken together, these results shaped the later stages of material screening, product selection, and form development.

### 4.1.1 Theoretical and Literature Foundation

Prior literature research showed that flowers used in funeral settings carry strong emotional symbolism and cultural meaning. At the same time, their short life cycle stood in contrast to the emotional value they held. The literature also reviewed several ways to reuse post-funeral floral waste in a more sustainable way. These methods included natural dye extraction, composting, pulp recycling, biomaterial use, and circular practices developed by social enterprises. One example was HelpUsGreen in India, which turned discarded flowers into products such as spices and dyes. These studies and cases gave this research a clear theoretical base and practical support for the later material experiments.

At the same time, emotional design theories, such as Norman’s Emotional Hierarchy Model and Chapman’s Emotional Durability Design, gave this study an important basis for thinking about emotional continuity in design.The mono no aware aesthetic also offered a useful perspective. Emotional design theory stressed that design should keep the emotional link between people and objects, so that products can hold their value for a longer time. The mono no aware aesthetic focused on human sensitivity to impermanence and to the beauty found in passing moments. Under these ideas, this study did not look only at the environmental need to reuse funeral flowers. This study also paid attention to the stories and symbolic meaning carried by these materials. In this way, the study tried to extend and deepen the emotional value that flowers can convey.

### 4.1.2 Field Research on Funeral Flower Usage and Disposal in Kunming

To see how funeral flowers are used and dealt with in actual settings, this study carried out field research in Kunming. The main sites were Kunming North Suburban Funeral Service Company, Kunming Dounan Flower Market, Kunming Yixianxin Flowers, and several flower shops in Chajie Flower Market. The study used on-site observation and semi-structured interviews. Through these methods, the study gathered first-hand information from funeral service staff, funeral florists, and flower suppliers.

**Figure 28**

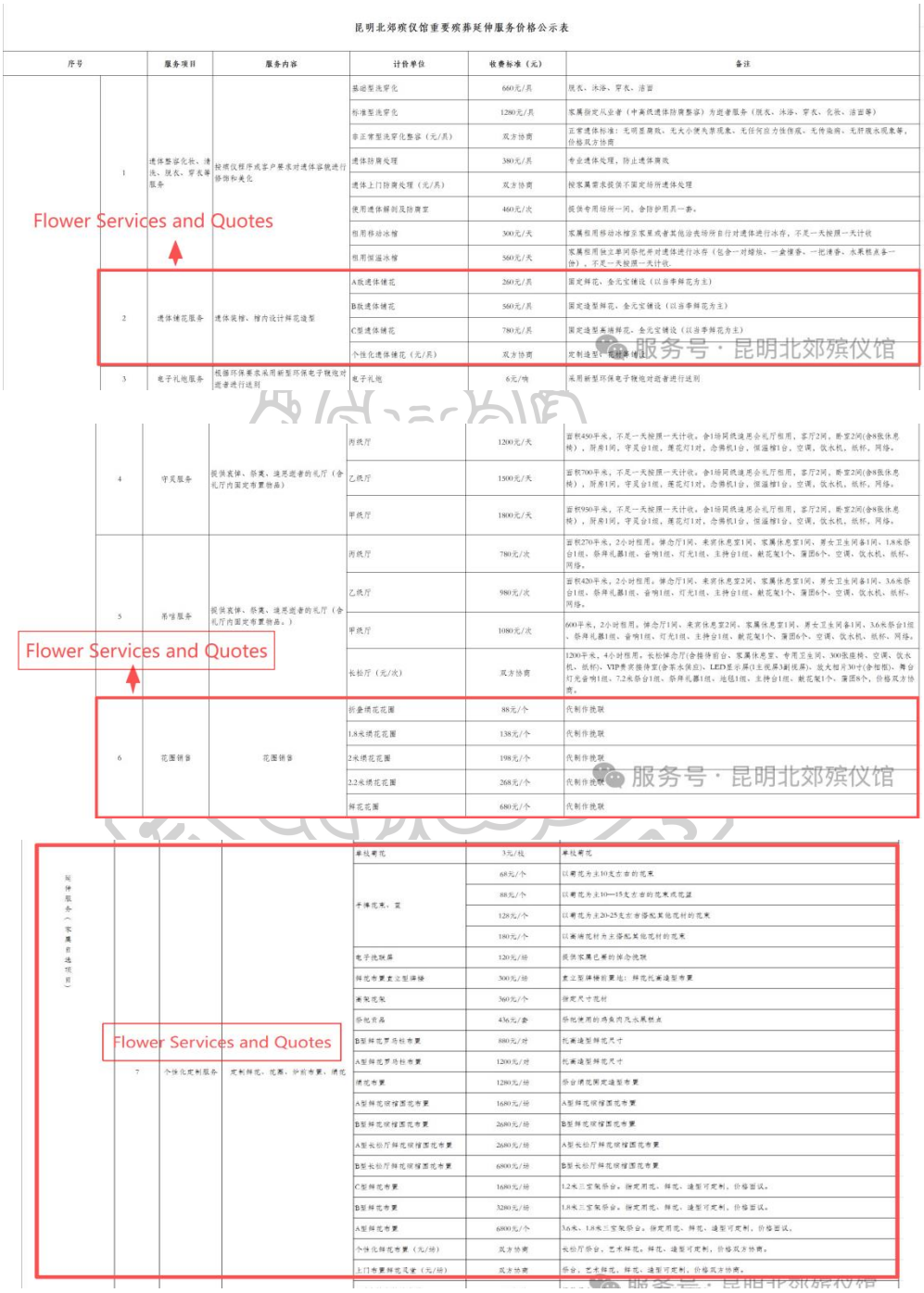
*With Liu Song, staff member of Beijiao Funeral Services Company*


*Note:Photo taken by the author*

The fieldwork found that flowers have become a steady and important part of urban funeral services in Kunming. Funeral flowers are no longer just minor decorations. They now form part of the visual and emotional structure of the ceremony. Interview data from Kunming North Suburban Funeral Service Company showed that floral services have become more varied. The available options include standard wreaths, custom arrangements, coffin flowers, baskets, and on-site floral design. The price range, from 300 RMB to 6,800 RMB, also shows that flowers now reflect different levels of emotional and financial input. This finding suggests that floral use in funerals is not occasional. It is already built into the service system.

**Figure 29**

*Price List for Floral Services at Kunming North Suburban Funeral Service Company, September 15, 2025*



昆明北郊殡仪馆重要殡葬延伸服务价格公示表

| 序号 | 服务项目 | 服务内容 | 计价单位 | 收费标准（元） | 备注 |
|---|---|---|---|---|---|
| 1 | 遗体整容化妆、清洗、脱衣、穿衣等服务 | 按照仪程序或客户要求对遗体容貌进行修饰和美化 | 基础型洗穿化 | 660元/具 | 脱衣、沐浴、穿衣、洁面 |
| | | | 标准型洗穿化 | 1280元/具 | 家属指定从业者（中高级遗体防腐整容）为逝者服务（脱衣、沐浴、穿衣、化妆、洁面等） |
| | | | 非正常型洗穿化整容（元/具） | 双方协商 | 正常遗体标准：无明显腐败、无大小便失禁现象、无任何应力性伤痕、无传染病、无肝腹水现象等，价格双方协商 |
| | | | 遗体防腐处理 | 380元/具 | 专业遗体处理，防止遗体腐败 |
| | | | 遗体上门防腐处理（元/具） | 双方协商 | 按家属需求提供不固定场所遗体处理 |
| | | | 使用遗体解剖及防腐室 | 460元/次 | 提供专用场所一间，含防护用具一套。 |
| | | | 租用移动冰棺 | 300元/天 | 家属租用移动冰棺至家里或者其他治丧场所自行对遗体进行冰存，不足一天按照一天计收 |
| | | | 租用恒温冰棺 | 560元/天 | 家属租用独立单间殡葬用品对遗体进行冰存（包含一对蜡烛、一盒檀香、一把清香、水果糕点各一份），不足一天按照一天计收 |
| 2 | 遗体铺花服务 | 遗体装棺、棺内设计鲜花造型 | A级遗体铺花 | 260元/具 | 固定鲜花，金元宝铺设（以当季鲜花为主） |
| | | | B级遗体铺花 | 560元/具 | 固定造型鲜花，金元宝铺设（以当季鲜花为主） |
| | | | C型遗体铺花 | 780元/具 | 固定造型高端鲜花，金元宝铺设（以当季鲜花为主） |
| | | | 个性化遗体铺花（元/具） | 双方协商 | 定制造型，高端鲜花铺设 |
| 3 | 电子礼炮服务 | 根据环保要求采用新型环保电子鞭炮对逝者进行送别 | 电子礼炮 | 6元/响 | 采用新型环保电子鞭炮对逝者进行送别 |
| 4 | 守灵服务 | 提供装饰、祭奠、逝思逝者的礼厅（含礼厅内固定布置物品） | 丙级厅 | 1200元/天 | 面积450平米，不足一天按照一天计收。含1场同级逝思会礼厅租用，客厅2间，新室2间(含8张休息椅)，厨房1间，守灵台1组，屏花灯1对，冷烫机1台，恒温箱1台，空调，饮水机，纸杯，网络。 |
| | | | 乙级厅 | 1500元/天 | 面积700平米，不足一天按照一天计收。含1场同级逝思会礼厅租用，客厅2间，新室2间(含8张休息椅)，厨房1间，守灵台1组，屏花灯1对，冷烫机1台，恒温箱1台，空调，饮水机，纸杯，网络。 |
| | | | 甲级厅 | 1800元/天 | 面积950平米，不足一天按照一天计收。含1场同级逝思会礼厅租用，客厅2间，新室2间(含8张休息椅)，厨房1间，守灵台1组，屏花灯1对，冷烫机1台，恒温箱1台，空调，饮水机，纸杯，网络。 |
| 5 | 吊唁服务 | 提供装饰、祭奠、逝思逝者的礼厅（含礼厅内固定布置物品。） | 丙级厅 | 780元/次 | 面积270平米，2小时租用。悼念厅1间、来宾休息室1间，家属休息室1间，男女卫生间各1间，1.8米祭台1组，祭拜礼器1组，音响1组，灯光1组，主持台1组，献花架1个，簿册6个，空调，饮水机，纸杯，网络。 |
| | | | 乙级厅 | 980元/次 | 面积420平米，2小时租用。悼念厅1间、来宾休息室2间、家属休息室1间，男女卫生间各1间，3.6米祭台1组，祭拜礼器1组，音响1组，灯光1组，主持台1组，献花架1个，簿册6个，空调，饮水机，纸杯，网络。 |
| | | | 甲级厅 | 1080元/次 | 600平米，2小时租用。悼念厅1间、来宾休息室2间、家属休息室1间，男女卫生间各1间，3.6米祭台1组，祭拜礼器1组，音响1组，灯光1组，主持台1组，献花架1个，簿册6个，空调，饮水机，纸杯，网络。 |
| | | | 长松厅（元/次） | 双方协商 | 1200平米，4小时租用。长松悼念厅(含接待前台、家属休息室、专用卫生间、300张座椅、空调、饮水机、纸杯)、VIP贵宾接待室(含茶水供应)、LED显示屏(1主视屏3副视屏)、放大相片30寸(含相框)、舞台灯光音响1组、7.2米祭台1组、祭拜礼器1组、地毯1组，主持台1组，献花架1个，簿册8个，价格双方协商。 |
| 6 | 花圈销售 | 花圈销售 | 折叠绸花花圈 | 88元/个 | 代制作挽联 |
| | | | 1.8米绸花花圈 | 138元/个 | 代制作挽联 |
| | | | 2米绸花花圈 | 198元/个 | 代制作挽联 |
| | | | 2.2米绸花花圈 | 268元/个 | 代制作挽联 |
| | | | 鲜花花圈 | 680元/个 | 代制作挽联 |
| 延伸服务（可选项目） | | | 单枝菊花 | 3元/枝 | 单枝菊花 |
| | | | 手捧花束，菊 | 68元/个 | 以菊花为主10支左右的花束 |
| | | | | 88元/个 | 以菊花为主10—15支左右的花束或花篮 |
| | | | | 128元/个 | 以菊花为主20-25支左右搭配其他花材的花束 |
| | | | | 180元/个 | 以满堂花材为主搭配其他花材的花束 |
| | | | 电子挽联屏 | 120元/份 | 提供家属已撰的挽念挽联 |
| | | | 鲜花布置直立型簿册 | 300元/份 | 直立型簿册前置地：鲜花托高造型布置 |
| | | | 满架花架 | 360元/个 | 指定尺寸花材 |
| | | | 祭祀贡品 | 436元/套 | 祭祀使用的鸡鱼肉及水果糕点 |
| 7 | 个性化定制服务 | 定制鲜花、花圈、护棺布置、绸花 | B型鲜花罗马柱布置 | 880元/对 | 托高造型鲜花尺寸 |
| | | | A型鲜花罗马柱布置 | 1200元/对 | 托高造型鲜花尺寸 |
| | | | 绸花布置 | 1280元/份 | 祭台绸花固定造型布置 |
| | | | A型鲜花环保帷幕花布置 | 1680元/份 | A型鲜花环保帷幕花布置 |
| | | | B型鲜花环保帷幕花布置 | 2680元/份 | B型鲜花环保帷幕花布置 |
| | | | A型长松厅鲜花环保帷幕花布置 | 2680元/份 | A型长松厅鲜花环保帷幕花布置 |
| | | | B型长松厅鲜花环保帷幕花布置 | 6800元/份 | B型长松厅鲜花环保帷幕花布置 |
| | | | C型鲜花布置 | 1680元/份 | 1.2米三宝架祭台。指定用花、鲜花、造型可定制，价格面议。 |
| | | | B型鲜花布置 | 3280元/份 | 1.8米三宝架祭台。指定用花、鲜花、造型可定制，价格面议。 |
| | | | A型鲜花布置 | 6800元/个 | 3.6米、1.8米三宝架祭台。指定用花、鲜花、造型可定制，价格面议。 |
| | | | 个性化鲜花布置（元/份） | 双方协商 | 长松厅祭台、艺术鲜花、鲜花、造型可定制，价格双方协商。 |
| | | | 上门布置鲜花花束（元/份） | 双方协商 | 祭台、艺术鲜花、鲜花、造型可定制，价格双方协商。 |



*Note:Kunming North Suburb Funeral Service Company official account*

To support the comparative analysis, the researcher also reviewed the official website of Kunming Funeral Home and other related public materials. These sources helped the researcher understand the official pricing of funeral floral services, the composition of floral products, and the range of customization available. This information offered a reference point for the field interview findings. It also further confirmed the trend toward greater variety in funeral floral types, pricing, and services in the Kunming area.

**Figure 30**

*Kunming Funeral Home Voluntary Service Fee Schedule (Services and pricing related to flowers are highlighted in red boxes)*

**昆明市殡仪馆自愿选择服务收费标准公示**

| 序号 | 项目名称 | | 服务内容 | | 计价单位 | 收费标准（元） |
|---|---|---|---|---|---|---|
| 1 | 清洗更衣 | 正常遗体 | 2名工作人员操作，含场地、遗体的清洗、消毒及工作人员的防护卫生服装等。 | | 具 | 380.00 |
| | | 非正常遗体 | 传染病遗体、破裂遗体、腐败遗体，根据遗体情况和丧属需求，2-4名工作人员操作，含场地、遗体的清洗、缝合、修复、防腐等，消毒及工作人员的防护卫生服装等。 | | 具 | 双方协商确定 |
| 2 | 整容化妆 | 正常遗体 | 1-2名工作人员操作，含理发修面、女性梳头、化妆。 | | 具 | 280.00 |
| | | 非正常遗体 | 传染病遗体、破裂遗体、腐败遗体，根据遗体情况和丧属需求，2-4名工作人员操作，含场地和遗体的整形整容、塑形、缝合、修复、防腐等，消毒及工作人员的防护卫生服装等。 | | 具 | 双方协商确定 |
| 3 | 遗体铺花 | | 2-4名工作人员操作，遗体装棺、棺内设计鲜花造型并全铺盖。 | A款（基础款） | 具 | 200.00 |
| | | | | B款（心型、花脚型） | 具 | 360.00 |
| | | | | C款（菊排型） | 具 | 520.00 |
| 4 | 守灵服务 | | 独立套间、休息室、卫生间、冷藏棺、供台、沙发、餐桌、床、电子香蜡等。 | 遗体守灵小间 | 天 | 1,660.00 |
| | | | | 遗体守灵大间 | 天 | 1,860.00 |
| | | | 独立休息室、冷藏棺、供台、沙发、电子香蜡。 | 遗体守灵（油管桥服务站） | 天 | 860.00 |
| 5 | 吊唁服务 | 遗体告别裸厅 | 含租用告别厅、小厅裸厅面积80㎡，容纳20-60人；中厅裸厅面积260㎡，容纳50-200人；大厅裸厅面积680㎡，容纳150-500人。 | 小厅 | 场 | 280.00 |
| | | | | 中厅 | 场 | 460.00 |
| | | | | 大厅 | 场 | 660.00 |
| | | 遗体告别绢花布置 | 含租用告别厅、告别厅绢花布置、休息室、音响设备、小白花等相应悼念设施、设备及司仪主持等服务。小厅面积80㎡，容纳20-60人；中厅面积260㎡，容纳50-200人。 | 小厅 | 场 | 880.00 |
| | | | | 中厅 | 场 | 1,960.00 |
| | | 遗体告别鲜花布置 | 含租用告别厅、告别厅鲜花、盆景布置、休息室、音响设备、小白花等相应悼念设施、设备及司仪主持等服务。小厅面积80㎡，容纳20-60人；中厅面积260㎡，容纳50-200人；大厅面积680㎡，容纳150-500人。 | 小厅 | 场 | 1,080.00 |
| | | | | 中厅 | 场 | 3,160.00 |
| | | | | 大厅 | 场 | 5,880.00 |
| | | 特大厅和告别厅个性化布置 | 根据丧属的需求，告别厅的规模、鲜花种类及数量、花艺设计等双方协商后进行布置。 | | 场 | 双方协商确定 |
| 6 | 鲜花定制 | 钢制鲜花圈 | 选用菊花、百合、多头玫瑰、火龙珠、黄莺、多头菊、散尾、八角叶、杨兰、金鱼草、洋桔梗、巴西叶、剑叶、尤加利、勿忘我、满天星等鲜花及辅助材料制作，用于告别厅、守灵间、车间等场所。 | 直径120cm 高160cm | 个 | 360.00 |
| | | 鲜花花柱（罗马柱） | | 高≥110cm 宽≥60cm | 个 | 260.00 |
| | | 鲜花迎宾花篮 | | 高≥140cm 宽≥60cm | 个 | 260.00 |
| | | 遗像花（一对） | | 高≥40cm 宽≥55cm | 个 | 160.00 |
| | | 鲜花桌花 | | 高≥20cm 宽≥70cm | 个 | 120.00 |
| | | 鲜花捧花 | | 高≥50cm 宽≥50cm | 个 | 100.00 |
| | | 鲜花小花篮 | | 高≥30cm 宽≥35cm | 个 | 80.00 |
| | | 个性化鲜花定制服务 | 根据丧属要求，双方协商进行个性化设计及制作。 | 不固定尺寸 | 个 | 双方协商确定 |
| 7 | 遗物焚烧 | | 焚烧炉维护、清扫、垃圾清运、固废处理。 | | 具 | 100.00 |

*Note:Kunming Funeral Home official website*

As shown in the diagram, the self-funded services of Kunming Funeral Home also covered floral arrangements. The pricing of custom floral services was based on the size of the wreath. The service also offered extra custom options, although those

prices were not listed. The public information further noted that the floral materials included chrysanthemums, lilies, spray roses, snapdragons, and other flowers and supporting materials.

The fieldwork also found that the main flower types were fairly stable. Yellow and white chrysanthemums appeared most often. Lilies, carnations, and roses were also commonly used. In some cases, flower choices changed slightly because of age, family preference, or religious background. This pattern later helped the study choose representative flowers for the material experiments. For this reason, the use of chrysanthemums, lilies, carnations, and roses in the experiments was not random. It came directly from local funeral practice observed in the field.

**Figure 31**

*with Ms. Wang Jiying of Kunming Yixianxin Flowers*


*Note:Photo taken by the author*

**Figure 32**

*memorial wreath created by Ms. Wang Jiyin*

*Note:Image courtesy of Ms. Wang Jiyin.*

**Figure 33**

*memorial wreath created by Ms. Wang Jiyin*


*Note:Image courtesy of Ms. Wang Jiyin.*

**Figure 34**

*memorial wreathstands in non-traditional shapes created by Ms. Wang Jiyin*

*Note:Image courtesy of Ms. Wang Jiyin.*

At the same time, the fieldwork revealed a clear tension. Funeral flowers are handled with care during the ceremony, yet they are often treated as disposable once the event ends. Practitioners repeatedly described funeral flowers as “single-use” items. Families usually do not take them home. Florists also rarely collect them again. In most cases, the flowers are removed and thrown away after the ceremony. This pattern does not exist because the flowers have always lost their physical value. In many cases, the flowers still remain fresh. The reason for disposal is that the ritual has come to an end. This point is important. It suggests that the “waste” status of funeral flowers is shaped mainly by context rather than by material condition alone. This

finding supports the central premise of the study and provides a stronger basis for redesign.

**Figure 35**

*Nana (Funeral Flower Supplier) through numerous yellow and white chrysanthemum blooms.*

*Note:Photo taken by the author*

Field interviews also showed why reuse is still not common. Practitioners pointed to habit, emotional sensitivity, hygiene concerns, and the lack of clear procedures. Some interviewees also mentioned resistance from families and doubts about whether reuse would fit local cultural practice. Even so, the interviews did not show complete refusal. When the interviewees were asked whether reuse might work under suitable conditions, several gave a more open response. They said that reuse could be considered if the flowers were handled safely, if the family gave consent, and if the final form matched the memorial setting. This point matters. It shows that the main barrier is not reuse itself. The real difficulty lies in source legitimacy, emotional sensitivity, and the way the material is transformed.

Taken as a whole, the fieldwork led to three direct design points. One point is that material selection should come from the flower types most often used in funerals. Another point is that redesigned products should remain close to memorial culture, rather than shift into decorative forms with no clear connection. A third point is that any reuse model should clearly address source consent, safe handling, and emotional suitability. These points later became key design criteria, not just background findings.

### 4.1.3 Data Analysis

To better understand public views on the reuse of funeral flowers, this study designed and distributed a structured questionnaire through Wenjuanxing. The questionnaire examined views on funeral flowers, attitudes toward reuse, acceptable sources, reuse conditions, major concerns, preferred forms, and sensory expectations. The study analyzed the data by using descriptive statistics, difference analysis, and Pearson correlation analysis.

The results did not only show whether the public accepted or rejected reuse. The results also clarified three design-related issues. One issue was whether the public saw funeral flowers as meaningful materials. Another issue was under what conditions reuse could be accepted. A third issue was what kinds of products and sensory qualities were more suitable for this context. In this way, the questionnaire results did not stop at numerical description. They directly informed the design strategy that followed.

#### 4.1.3.1 Descriptive Statistical Analysis

The sample showed a fairly balanced gender structure. Female respondents made up 55% of the sample, while male respondents made up 45%. The occupational structure was also quite varied. Corporate employees and managers accounted for 30% of the sample. Students accounted for 25%. The remaining respondents included teachers, government employees, freelancers, service workers, floral workers, and retirees. This mix makes the data useful for understanding wider public attitudes, rather than the views of only one limited group.

Religious affiliation was more concentrated. Most respondents, or 73.8%, reported no religion or said they were unsure. Buddhism accounted for 16.8% of the sample. Taoism and Islam each accounted for 4.3%. Christianity accounted for 1%. This result suggests that the sample mainly reflects a broadly shared funeral culture, rather than a strongly defined religious position. This point also helps explain why products linked to familiar memorial practices, such as incense and candles, received stronger acceptance than products with a weaker ritual connection.

The descriptive results also showed that respondents already saw funeral flowers as meaningful materials. A total of 79.8% of respondents agreed or strongly agreed that the use of flowers in funerals to express mourning and respect is meaningful. An even larger share, 86.6%, agreed or strongly agreed that funeral flowers carry emotional symbolism and are not only decorative. In addition, 62.8% of respondents said that they were familiar or fairly familiar with common funeral flowers. These findings matter because they support the first research hypothesis. The public does not view funeral flowers as neutral plant material. The public already understands them as symbolic and emotional materials. This understanding creates a basis for later design translation.

This result also means that later product design could not separate the flowers from their original context. If the public already reads funeral flowers as emotionally charged materials, then redesign should preserve that emotional meaning in some visible way. In other words, the material source itself forms part of the design meaning. This conclusion also fits with material aesthetics, which holds that the source context of a material helps shape how meaning is produced.

**Table 4**

*Descriptive Statistics for Basic Information*

| project | category | Number （n） | percentage （%） |
|---|---|---|---|
| Gender | Male | 180 | 45 |
| | Female | 220 | 55 |
| Occupation | Student | 100 | 25 |
| | Teacher / Educator | 41 | 10.3 |
| | Government Employee / Public Institution Staff | 39 | 9.8 |
| | Corporate Employee / Manager | 120 | 30 |
| | Self-employed / Freelancer | 40 | 10 |
| | Domestic / Service Industry Worker | 25 | 6.3 |
| | Floral Industry Worker | 29 | 7.3 |
| | Retired | 6 | 1.5 |
| Religious | No Religion / Uncertain | 295 | 73.8 |
| | Buddhism | 67 | 16.8 |
| | Taoism | 17 | 4.3 |
| | Christianity | 4 | 1 |
| | Islam | 17 | 4.3 |
| Whether Experienced a Direct Family Funeral | Yes | 176 | 44 |
| | No | 224 | 56 |
| Using flowers in funerals to express mourning and respect is meaningful. | Average | 79 | 19.8 |
| | Agree | 138 | 34.5 |
| | Strongly Agree | 183 | 45.8 |
| I believe that flowers in funerals are not merely decorations, but also carry emotional symbolism. | Average | 54 | 13.5 |
| | Agree | 139 | 34.8 |
| | Strongly Agree | 207 | 51.8 |
| I am familiar with the use and meanings of common funeral flowers | Strongly Disagree | 11 | 2.8 |
| | Disagree | 48 | 12 |
| | Neutral | 90 | 22.5 |

| | | | |
|---|---|---|---|
| | Agree | 110 | 27.5 |
| | Strongly Agree | 141 | 35.3 |

*Note:drawn by the author*

**4.1.3.2 Multiple-Choice Analysis**

The multiple-choice results made the design direction more specific. In terms of flower recognition, chrysanthemums had the highest recognition rate at 31.9%. Lilies came next at 24.8%, followed by carnations at 19.5% and roses at 12.4%. This result matched the flower types identified in the fieldwork. It also explained why these flowers were chosen as the main materials in the experiments. The decision came from both actual use frequency and public recognition.

The data on acceptable sources also showed that the public was open, but only within certain limits. A total of 48% of respondents said that they could accept reused flowers from the funerals of relatives or friends. Another 30% said that they would only accept flowers from their own funeral or the funeral of an immediate family member. Only 12% said that they could accept unrestricted sources, as long as the source was legal and the handling was proper. At the same time, 10% rejected all forms of reuse. This pattern is important for later service design. It shows that source is a key issue. Public hesitation does not come only from the fact that the material comes from a funeral. Public hesitation is also closely tied to ownership, family ties, and emotional legitimacy. This is why the later service model adopted a single-ceremony closed-loop approach, rather than a mixed-source recycling model.

The concern data helps explain this pattern more clearly. Authorization and privacy ranked first, at 30.8%. Psychological discomfort came next, at 30.5%. Hygiene and safety ranked third, at 28.5%.Cultural or religious taboo accounted for only 10.3%. This result is significant. It shows that the main obstacle is not abstract superstition or rigid taboo. The main obstacle is whether the reuse process feels respectful, safe, and legitimate. This finding directly influenced later design and service planning. It led the study to emphasize family consent, traceable source, harmless treatment, and restrained product expression.

The public also expressed clear preferences for product forms. Eco-friendly materials ranked first at 25.5%. Ritual and memorial objects ranked second at 23.5%. Home decoration ranked third at 17.6%. Installations, education-related uses, jewelry, and functional products all received lower support. This result is important because it connects the emotional origin of the material with the expected role of the product. The public did not mainly expect these flowers to become abstract artworks or fashion accessories. The public showed a stronger preference for forms that could reflect environmental value or continue a memorial purpose. This point is one of the main reasons why this study finally focused on incense products and fragrant bead bracelets rather than purely decorative objects.

The sensory preference results added another key point. Color ranked first at 22.9%. Scent came next at 21.3%. Material texture followed at 20.6%, and symbolic

meaning ranked fourth at 19.5%. These results show that public responses to redesigned funeral flowers are multi-sensory. People do not judge these objects from only one aspect. People care about how the product looks, how it smells, how it feels, and what it means. This result later supported the use of natural low-saturation colors, plant-based textures, and scent-centered product forms.

The data on acceptable additives also influenced the material strategy. A total of 33.3% of respondents preferred complete preservation of the original funeral flowers. Another 30.6% accepted natural auxiliary materials. A further 25% accepted a small amount of natural plant materials. Only 11.1% accepted artificial or industrial materials. This result suggests that later material development should stay close to natural systems and low-intervention methods. The final use of plant powder, wood powder, gelatin, glycerin, and other natural or relatively mild auxiliary materials followed this logic. This choice matched public preference more closely than a heavily industrial material system would have done.

Overall, the multiple-choice results did more than describe attitudes. The data built a direct link between public values and design decisions. The results showed that reuse should remain emotionally respectful, environmentally clear, sensory-rich, and materially natural. The final design direction was built on these four points.

**Table 5**

*Descriptive Statistics for Multiple Choice Information*

| **project** | **category** | **Number（n）** | **percentage（%）** |
|---|---|---|---|
| Common Funeral Flowers | Chrysanthemum | 360 | 31.90% |
| | Lily | 280 | 24.80% |
| | Carnation | 220 | 19.50% |
| | Rose | 140 | 12.40% |
| | Orchid | 18 | 1.60% |
| | Baby’s Breath | 28 | 2.50% |
| | Lotus | 39 | 3.50% |
| | Palm Leaves / Ferns | 43 | 3.80% |
| Acceptable Sources of Reused Funeral Flowers | Only from One’s Own or Immediate Family’s Funeral | 120 | 30.00% |
| | Acceptable from Relatives’ or Friends’ Funerals | 192 | 48.00% |
| | No limitation on source as long as it is legal and properly handled | 48 | 12.00% |
| | Cannot accept the reuse of any funeral flowers | 40 | 10.00% |
| Main Concerns When Considering the | Cultural or Religious Taboos | 41 | 10.30% |
| | Psychological Discomfort | 122 | 30.50% |

| | | | |
|---|---|---|---|
| Reuse of Funeral Flowers | Authorization and Privacy Issues | 123 | 30.80% |
| | Hygiene and Safety Risks | 114 | 28.5% |
| | Explicit Consent from Family Members or Related Parties | 280 | 22.20% |
| | Traceable Source Documentation | 240 | 19.00% |
| Prerequisite Conditions for the Reuse of Funeral Flowers | Non-disclosure of Personal Information of the Deceased or Family Members | 260 | 20.60% |
| | Harmless and Environmentally Friendly Processing | 320 | 25.40% |
| | Supervision and Implementation by Public Institutions or Platforms | 160 | 12.70% |
| | Eco-friendly Materials | 260 | 25.50% |
| | Installations or Artworks | 140 | 13.70% |
| | Ritual / Commemorative Objects | 240 | 23.50% |
| Preferred Forms of Reuse for Funeral Flowers | Home Decoration Design | 180 | 17.60% |
| | Educational or Public Welfare Purposes | 100 | 9.80% |
| | Jewelry / Accessories | 40 | 3.90% |
| | Functional Products | 60 | 5.90% |
| Sensory Experiences That Most Arouse Your Interest or Resonance in Reuse Design | Color | 262 | 22.90% |
| | Touch | 180 | 15.70% |
| | Material Texture | 235 | 20.60% |
| | Scent | 243 | 21.30% |
| | No Distinct Sensory Features, More Focused on Symbolic Meaning | 223 | 19.50% |
| Acceptable Additives or Auxiliary Materials in the Reuse of Funeral Flowers | Completely Preserve the Original Funeral Flowers | 240 | 33.30% |
| | Add a Small Amount of Natural Plants | 180 | 25.00% |
| | Add Natural Auxiliary Materials | 220 | 30.60% |
| | Add Artificial or Industrial Materials | 80 | 11.10% |

*Note:drawn by the author*

#### 4.1.3.3 Comparative Analysis

(1) Gender Difference Analysis

The difference analysis offered more specific evidence about which groups showed a more positive response to reuse. The gender analysis showed a significant

difference. Female respondents had a higher mean score for attitudes toward reuse than male respondents. This result suggests that female respondents may be more receptive to emotionally based and commemorative forms of reuse. Although this finding does not determine the design direction on its own, it still shows that emotional resonance is an important part of public acceptance.

**Table 6**

*Gender Difference Analysis Table*

| Dimension | Gender | N | Mean | Std. Deviation | t | P |
|---|---|---|---|---|---|---|
| Attitude Toward Reuse | Male | 180 | 3.94 | 0.612 | -6.903 | 0.000 |
| | Female | 220 | 4.35 | 0.565 | | |

*Note:drawn by the author*

(2)Difference Analysis Based on Direct Family Funeral Experience

The comparison based on direct family funeral experience is especially meaningful for this study. Respondents who had attended the funeral of an immediate family member scored higher on both emotional comfort and social acceptance. Their mean score for emotional comfort was 3.99, while the score for those without this experience was 3.67. Their mean score for social acceptance was 4.35, while the score for those without this experience was 4.00. This pattern suggests that people with direct experience of mourning may respond more strongly to the emotional value of reuse. They may be more likely to see redesigned funeral flowers as a meaningful extension of memory, rather than as something uncomfortable. This finding later supported the development of products that are closer to real mourning practices and private remembrance.

**Table 7**

*Analysis of Differences in Direct Ancestor Funeral Experiences*

| Dimension | Whether Experienced a Funeral | N | Mean | Std. Deviation | F | P |
|---|---|---|---|---|---|---|
| Emotional Comfort | Yes | 176 | 3.99 | 1.278 | 5.733 | 0.017 |
| | No | 224 | 3.67 | 1.388 | | |
| | Total | 400 | 3.81 | 1.349 | | |
| Social Acceptance | Yes | 176 | 4.35 | 0.755 | 20.150 | 0.000 |
| | No | 224 | 4.00 | 0.775 | | |
| | Total | 400 | 4.15 | 0.785 | | |

*Note:drawn by the author*

(3) Analysis of Differences in Religious Beliefs

Religious belief also showed significant differences. Respondents with explicit religious affiliation generally had more positive attitudes toward reuse than those without religion or with uncertain belief. However, the sample sizes of some groups were small, especially the Christian group. For that reason, this result should be read

as a trend rather than a fixed conclusion. Even so, the broader implication is clear. People who already participate in symbolic or ritual systems may be more willing to accept transformed memorial materials, as long as the final form remains respectful and contextually appropriate.

**Table 8**

*Analysis of Differences in Religious Beliefs*

| Dimension | Religion | N | Mean | Std. Deviation | F | P |
|---|---|---|---|---|---|---|
| Attitude Toward Reuse | No Religion / Uncertain | 295 | 4.07 | 0.443 | 17.310 | 0.000 |
| | Buddhism | 67 | 4.38 | 0.346 | | |
| | Taoism | 17 | 4.64 | 0.203 | | |
| | Christianity | 4 | 4.70 | 0.115 | | |
| | Islam | 17 | 4.40 | 0.292 | | |
| | Total | 400 | 4.16 | 0.447 | | |

*Note. drawn by the author*

These comparative findings matter because they help explain why simple material reuse is not enough. Acceptance increases when emotional meaning, memory, and ritual continuity are clearer. This again points back to the central design decision of the chapter: the final products should not only solve a waste problem. They should also create forms through which mourning, memory, and gentle companionship can continue.

#### 4.1.3.4 Correlation Analysis

Pearson correlation analysis showed significant positive relationships among perceived reuse value, attitudes toward proper handling, emotional comfort, environmental and aesthetic value, and social acceptance. This result is important because it shows that these factors do not operate on their own. They support and reinforce one another.

**Table 9**

*Correlation Analysis Table*

| Variable | Reuse Value | Attitude Toward Proper Handling | Emotional Comfort | Environmental and Aesthetic Value | Social Acceptance |
|---|---|---|---|---|---|
| Reuse Value | 1 | | | | |
| Attitude Toward Proper Handling | .326 | 1 | | | |
| Emotional Comfort | .286 | .263 | 1 | | |
| Environmental and Aesthetic Value | .414 | .367 | .369 | 1 | |

| | | | | | |
|---|---|---|---|---|---|
| Social Acceptance | .359 | .361 | .345 | .425 | 1 |

*Note: drawn by the author*

When respondents believed that reuse had value, they were also more likely to care about proper handling. When respondents saw the handling process as proper and respectful, they were more likely to feel emotionally at ease. When respondents viewed the final result as environmentally meaningful and aesthetically suitable, they were also more likely to think that society could accept it. This pattern shows that social acceptance does not rely on one single factor. Social acceptance grows when ethics, aesthetics, emotion, and environmental meaning work together.

This result directly supports the second research hypothesis. It suggests that post-funeral floral materials can meet public expectations not only through technical processing, but also through safe handling, suitable form, and emotionally appropriate design. This result also explains why the later design stage needed to combine material testing, cultural context, and aesthetic logic, rather than deal with them as separate parts.

In summary, the preliminary research stage produced a clear analytical outcome. Funeral flowers in Kunming are widely used, emotionally recognized, and regularly discarded after the ritual ends. The public does not show strong resistance to reuse. Instead, the public accepts reuse under clear conditions. These conditions include a traceable source, family consent, safe handling, natural materials, and product forms that stay close to memorial culture. These findings provided direct support for later material selection, product screening, and service design.

### 4.2 Material Exploration and Experimental Study

After the preliminary research stage, the study moved into material exploration. The aim of this stage was not only to test whether flowers could be processed. The main aim was to identify which kinds of material change could better support the emotional and contextual logic established earlier. For this reason, this part of the chapter does not treat material performance as only a technical matter. This part looks at material behavior together with sensory quality, symbolic fit, and later product use.

#### 4.2.1 Selection of Floral Materials

Based on the field research and questionnaire results, this study selected four representative funeral flowers for the later experiments: chrysanthemums, white lilies, white roses, and pink carnations. This choice was based on two criteria.One criterion was actual frequency of use in Kunming funeral practice. The other criterion was public recognition. These flowers were not chosen only because they were available. They were chosen because they were culturally legible and emotionally representative within the funeral context of the study area.

This point matters. If the study had chosen flowers with a weaker link to funerals, the emotional and symbolic basis of the design would also have been weaker. By choosing flowers that already carried stable funeral meaning, the study made sure that

later material transformation could begin from a meaningful source rather than from a neutral material. This point directly supports the logic of material aesthetics.

### 4.2.2 Observation of Material Characteristics

Before the formal material transformation began, this study first observed the visual, tactile, and olfactory features of the four floral materials. This step provided a basic sensory reference for the design choices made later.

Chrysanthemums showed a clear visual character and a strong herbal scent. Their petals felt fine and soft in the fresh state, but they became brittle after drying. Lilies had thick petals, a strong fragrance, and relatively high moisture content. Roses had full flower forms and soft petals, but their scent became weaker than expected after separation and drying. Carnations showed a layered form and a strong visual structure, but they had almost no obvious scent. These differences matter because they suggest different paths for later transformation.

For example, lilies and chrysanthemums provided stronger scent signals, so they were more suitable for experiments related to smell. Carnations showed more stable color and form, so they were more suitable for dyeing and visual expression. Floral stems and rhizome fibers also showed stronger structural value than petals alone. This feature later became important in the making of holders and bio-based materials. In other words, the sensory observation stage had already started to connect material properties with later product possibilities.

The observations also showed that these flowers generally had low-saturation and light-toned visual qualities. This feature later matched the formal direction of the final products quite well. It supported a visual language that was restrained, natural, and quiet, rather than strongly decorative. This point also remained consistent with the later use of mono no aware in the design stage.

(1) Chrysanthemum (White / Yellow)

Family and Genus: Asteraceae · Chrysanthemum

Botanical Morphology: The chrysanthemum belongs to a perennial herb group. Its flower head is made up of ray florets and disc florets. Its stem grows upright. The stem also has clear nodes and a slightly woody texture.

**Figure 36**

*Overall Form of Chrysanthemum*

*Note:Photo taken by the author*

**Table 10**

*Sensory Observation of Different Parts of Chrysanthemum*

| Structure | Photo | Visual | Tactile | Olfactory |
|---|---|---|---|---|
| Flower |   | White or yellow in color, with a large flower head and densely arranged petals | Soft and elastic when fresh; becomes brittle and easily broken after drying. | Distinct herbal aroma with a strong chrysanthemum scent. |
| Petal |  | Slender and thin with a light color; curls after drying. | Smooth and delicate | Slight herbal scent when fresh; the aroma fades after drying. |
| Stem and Root |  | Stem is green; leaves are lobed.。 | The stem is flexible, and the leaf surface is slightly rough; becomes fragile after drying. | Leaves emit a typical chrysanthemum scent. |

*Note:drawn by the author*

(2) Carnation (Pink)

Family and Genus: Caryophyllaceae · Dianthus

Botanical Morphology: The carnation belongs to the perennial herb group. Its stem grows upright. Its leaves are linear. Its petals have ruffled or serrated edges.

**Figure 37**

*Overall Form of Carnation*

*Note:Photo taken by the author*

**Table 11**

*Sensory Observation of Different Parts of Carnation*

| Structure | Photo | Visual | Tactile | Olfactory |
|---|---|---|---|---|
| Flower |  | Full flower shape with distinct layers and a soft pink color. | Petals are soft and elastic. | Almost no scent |
| Petal |  | Inverted egg shape with strong ruffles, serrated or wavy edges | Fine ruffles, smooth, medium thickness, leaves marks when pressed, slowly recovers | Almost no scent |
| Stem and Root |  | Green and glossy with distinct nodes. | Surface is smooth, with a firm and elastic texture | Slight grassy scent |

*Note:drawn by the author*

(3)Lily (White)

Family and Genus: Liliaceae · Lilium

Botanical Morphology: The lily belongs to the perennial herb group. Its stem grows upright. Its leaves are lanceolate. Its flowers are large, funnel-shaped, and fragrant.

**Figure 38**

*Overall Form of Lily*

*Note;Photo taken by the author*

**Table 12**

*Sensory Observation of Different Parts of Lily (White )*

| Structure | Photo | Visual | Tactile | Olfactory |
|---|---|---|---|---|
| Flower |  | Large and open flower shape; perianth is pure white with a delicate texture. | Thick and elastic. | Strong and pleasant fragrance. |
| Petal |  | Broad oval to lance-shaped, pointed and slightly curled tips | Cool, smooth, slightly waxy, thickest, bends back after folding, juicy when pressed | Light lily scent |
| Stem and Root |  | Stem is green and upright, with lanceolate leaves and a glossy surface. | Firm texture with a smooth and flexible surface. | Slightly fresh herbal scent. |

*Note:drawn by the author*

(4) Rose(White)

Family and Genus: Rosaceae · Rosa

Botanical Morphology: The rose belongs to the perennial shrub group. Its stems have

thorns. Its leaves are pinnately compound. Its petals overlap one another. Its flowers are white and fragrant.

**Figure 39**

*Overall Form of Rose*

*Note:Photo taken by the author*

**Table 13**

*Sensory Observation of Different Parts of Rose(White)*

| Structure | Photo | Visual | Tactile | Olfactory |
|---|---|---|---|---|
| Flower |  | Full flower shape, white in color, with a delicate texture. | Soft | Light rose fragrance. |
| Petal |  | Broad oval petals with rounded tips, slightly wavy edges | Not very smooth, average texture, dents easily, average rebound, edges curl naturally | Almost no scent |
| Stem and Root |  | Stem is green and upright with small thorns | texture is firm and flexible. | With a hint of grassy scent. |

*Note:drawn by the author*

### 4.2.3 Material Experimentation and Transformation Processes

The material experiments focused on three main directions: dehydration, preservation, and material transformation. These three directions matched three practical design questions. One question was how to keep the flower form stable. Another question was how to preserve floral traces or carry them into new materials. A third question was how to turn floral materials into workable systems for later product development.

#### 4.2.3.1 Dehydration Experiments

The drying tests compared natural air-drying, desiccant drying, and pressing. The aim was to examine how each method influenced form, color, texture, and structural stability.

Natural air-drying was simple and inexpensive, but its results varied by flower type. Roses and carnations usually kept their shapes more effectively. Chrysanthemums and lilies, especially those with larger blooms and higher moisture levels, were more likely to lose their layered forms. Light-colored flowers also showed fading or yellowing more clearly. This suggests that natural drying was useful, but only for certain kinds of materials. It was more suitable for smaller or denser flowers. By contrast, it was less suitable for flowers with large blooms and high water content.

Desiccant drying showed better results in maintaining three-dimensional form and color. This finding matters because it indicates that flowers can keep their shape more effectively when moisture is removed in a more controlled manner.The method therefore has stronger value when the design needs to retain recognizable floral traces.

Pressing produced flat samples, but it did not work well for thick and moisture-rich flowers such as lilies, roses, and carnations. Their petals warped, faded, or lost shape. This means that pressing has limited value for this study if the goal is to preserve memorial presence through clear material traces. Still, pressing can provide flat samples for paper-based studies and visual reference.

The comparative result is clear. Different flower types do not respond equally to the same drying method. Therefore, material selection for later products could not rely on one general drying process. The study needed to match drying method to flower type according to the later design purpose.

(1) Natural Drying Method

Floral materials were placed in a well-ventilated, shaded environment to air-dry naturally for 7-10 days, and changes in form and color were documented periodically. This method simulated the natural dehydration process, allowing observation of morphological shifts and color fading with minimal human intervention.

**Figure 40**

*Schematic of Natural Drying*

*Note:Photo taken by the author*

(2) Desiccant Adsorption Method

This technique employed desiccants to dehydrate floral materials. Experimental materials included floral desiccants, sealable containers, and fresh flowers.

Flowers were placed in the container and completely covered with desiccant to ensure no direct exposure to air. Subsequently, the container was stored in a dark, dry environment to allow natural dehydration.

To accelerate the drying process, microwave-assisted heating was employed for expedited treatment.

**Figure 41**

*Samples of desiccants and floral materials used*


*Note:Photo taken by the author*

(3) Pressing Method

The pressing method was employed to dry selected floral materials on a flat surface. The experiment utilized pressing boards, absorbent paper, and heavy weights as primary materials.

Petals or flowers were placed between absorbent paper, secured in a pressing board, and positioned under a weight to maintain steady pressure. The pressing cycle lasted approximately 7-10 days.

**Figure 42**

*Poorly pressed white lilies and white chrysanthemums*

*Note:Photo taken by the author*

#### 4.2.3.2 Preservation Experiments

This experiment tested how floral materials behaved when embedded in scented candles, incense bricks, and amino acid soap. The study compared fresh flowers and dried flowers in these systems.

The result was consistent across most samples. Fresh flowers changed more obviously when they met high-temperature wax. Their colors faded more easily, and their forms were more likely to collapse or brown. White chrysanthemums showed especially clear color change. Dried flowers performed better. They kept their shape more stably and preserved color more effectively. This means that dried floral materials are more suitable than fresh ones when the design needs stable visual presentation in solid encapsulation systems.

Fresh petals did show relatively better preservation in amino acid soap than in wax-based systems. However, even here, the long-term stability of fresh floral traces remained weaker than that of dried flowers. This means that soap can be a possible preservation carrier, but it is not the strongest route for the main commemorative direction of this study.

This experiment has two design implications. One implication is material. Dried flowers should be prioritized in later wax-based and solid memorial products. The other implication is symbolic. When the product needs to preserve visible floral traces, the preservation system must support continuity of form rather than rapid visual loss. Otherwise, the emotional reading of the material source becomes weaker.

**Figure 43**

*Preparation of Materials and Tools Before the Experiment*

*Note:Photo taken by the author*

Before the experiment, the floral materials were cleaned and categorized. Measuring scales, an electric pot, soy wax, white beeswax, amino acid soap base liquid, and fragrance oils/essential oils were prepared as experimental materials.

**Figure 44**

*Soy wax and amino acid soap base during the heating process*


*Note:Photo taken by the author*

During the heating phase, scented candles use a 1:1 ratio of soy wax and white beeswax; scented bricks use pure soy wax; amino acid soaps are primarily soap base.

**Figure 45**

*Pouring Process*

*Note:Photo taken by the author*

The floral materials were placed into the mold, and melted wax or soap solution was then poured in. Fragrance was added during the process, and the mixture was left to cool and harden.

**Figure 46**

*After demolding*

*Note:Photo taken by the author*

#### 4.2.3.3 Material Transformation Experiments

The material transformation experiments examined four directions: plant dyeing, incense making, natural adhesive blends, and handmade paper. These tests were important because they shifted the study from simply preserving flowers to reshaping them into new material systems.

Plant Dyeing Experiment

The plant dyeing experiment showed that yellow chrysanthemums and carnations had relatively good pigment extraction performance. The dyed fabrics displayed soft and low-saturation colors, and the overall visual effect appeared natural and quiet. This result is meaningful because it suggests that funeral flowers can still carry a language of color even after their original form has disappeared. At the same time, the findings indicate that dyed fabric is more suitable as a supporting material form than as the primary carrier of memorial meaning. Its visual effect is gentle, but its link to funeral ritual is still less direct than that of incense or commemorative objects.

**Figure 47**

*Cotton-linen fabric dyed with chrysanthemum petals*

*Note:Photo taken by the author*

**Figure 48**

*Cotton-linen fabric dyed using carnation petals*

*Note:Photo taken by the author*

Carnation petals and yellow chrysanthemum petals were chosen as the dye materials, and the dyeing process used a simple boiling extraction method. The tools for the experiment included an electric heating pot, filter cloth, a glass beaker, a graduated measuring cup, and alum.

The petals were added to clean water and heated until boiling. The mixture was then kept over low heat for about 20–30 minutes, after which it was filtered to obtain the dye liquid. The dye bath was left to cool before the next step.

The cotton or linen fabric was first soaked in an alum mordant solution for about 30 minutes to improve color fastness. After rinsing, the fabric was placed in the dye bath and heated for about 15–20 minutes so that the color could be absorbed more fully.

The fabric was then taken out, rinsed well with cold water, and hung up to dry.

**Figure 49**

*Color of the fabric after drying*

*Note:Photo taken by the author*

Application Experiment of Floral Materials in Traditional Incense Making

Among the material transformation paths explored in this study, incense-making showed a stronger connection to memorial use than dyeing, handmade paper, or some

bio-based materials. This path did not depend only on the visible shape of the flower. It carried the material into scent, touch, and use over time. For this reason, the study treated incense-making as one of the main directions in the transformation stage.

The study examined this path through two kinds of products. One type was non-combustible incense beads. The other type was combustible stick incense. The study also kept Chinese traditional stick incense separate from the practical trial of South American-style stick incense. This distinction was necessary because the two systems differ in material logic, scent composition, and forming process.

During the literature review, the researcher found examples from India in which fresh flowers left after temple offerings were reused to make incense bricks, stick incense, and incense towers. This case offered an early point of reference for the present study. It suggested that ritual flowers could enter a new material cycle through incense products while still retaining part of their symbolic meaning.

Based on this clue, the present study asked whether flowers collected after funerals could also be transformed through incense-making and return to a commemorative context in a new form. To examine this question, the researcher visited Yihe Fragrance Hall in Kunming and Yang Ruxuan, an inheritor of traditional incense-making techniques in Weishan, Dali. The researcher also carried out small-scale making trials.

Non-combustible incense products: incense bead experiment

At Yihe Fragrance Hall, the researcher found that floral powders already played a role in traditional incense products, although they were not used as the main material. The workshop staff explained that powders made from dried lily, rose, and other flowers were usually added as supporting ingredients. These powders helped enrich the material layers and gave the product a softer visual and olfactory quality. This point was important to the present study. It indicated that funeral floral materials could be incorporated into an incense system, but they were more suitable as part of a blended material structure than as a single primary substance.

**Figure 50**

*A large quantity of floral materials and ground floral materials (including lilies, roses, etc.) in the workshop.*


*Note:Photo taken by the author*

The researcher then turned to incense beads. The staff explained that incense beads are a non-combustible type of product. Their scent is released slowly as the temperature and humidity of the surrounding environment change. This kind of release is gentle and continuous. It is also better suited to plant materials with a lighter fragrance.

With guidance from the staff, the researcher took part in the making process. The powder used in the experiment was a pre-mixed plant-based incense powder prepared by the workshop. The workshop selected this powder because it provided stable fragrance and consistent shaping performance.

**Figure 51**

*Incense powder and measuring tools used*


*Note:Photo taken by the author*

The incense-making process included the following stages. In the weighing and mixing stage, the incense powder was measured according to the required ratio and then mixed with a small amount of water until the moisture was evenly distributed.

**Figure 52**

*Weighing and Mixing*

*Note:Photo taken by the author*

The kneading and pressing stage came next. In this step, the mixture was pressed repeatedly with a pressing machine until it became even and compact. dough-like texture was achieved.

**Figure 53**

*Blending and Compression*

*Note:Photo taken by the author*

Subsequently, in the molding stage, the incense paste was divided and rolled into spherical portions of consistent weight. After lightly oiling the mold, each portion was

placed inside, the mold was closed, a steel pin was inserted, and the material was pressed firmly to form the beads.

**Figure 54**

*Mold Pressing*

*Blending and Compression*

*Note:Photo taken by the author*

Finally, during the drying and polishing stage, the molded beads were air-dried in a cool, ventilated environment for 7–15 days, followed by sanding, polishing, and stringing into finished incense bead sets.

**Figure 55**

*Air-drying*


*Note:Photo taken by the author*

The making process included measuring, moistening, kneading, molding, drying, and polishing. The technical process itself was not the main concern of this study. The more important issue was how funeral floral material behaved after entering this system. The experiment showed that incense beads offered a gentle transformation route. In this route, the flower did not need to remain in full visible form. Its presence could continue through faint scent, hand touch, and slow daily contact. This result

matters because funeral flowers usually leave the ritual site very quickly. By contrast, incense beads allow the material to stay in everyday life in a quieter and more private way.

From the perspective of material performance, incense beads showed three main advantages. The first advantage was a gentle and lasting scent. The second advantage was that they required no strong combustion performance. The third advantage was that they were more suitable for portable or wearable memorial objects.From the perspective of meaning, this route supported a quieter form of companionship rather than a brief ritual release. The material remained present, but in a restrained way. This quality matched the emotional tone of the study. It also aligned well with material aesthetics and mono no aware. The material source was not removed. Instead, its trace became softer, slower, and more inward.

Research on Combustible Incense Products: Experimental Study on the Making of Chinese Traditional Stick Incense and South American Stick Incense

After the incense bead experiment, the researcher moved on to combustible incense products. In this part, the researcher first examined Chinese traditional stick incense. This step was important because stick incense is closely connected with ritual practice, visible burning, and the sense of passing time. To understand how floral materials might be used in this system, the researcher visited Yang Ruxuan in Weishan, Dali, and discussed the practical logic of traditional incense making with her

**Figure 56**

*Learning Incense Stick Making with Yang Ruxuan*

*Note:Photo taken by the author*

Yang Ruxuan explained that Chinese traditional stick incense usually takes wood-based and herbal incense powders as its main base. Floral petal powder is more often used as a supporting ingredient. This is particularly true for the funeral flowers involved in the present study. Their scent is relatively light, and their powder does not have enough stability to serve as the only base material. When floral powder is used on its own, the incense body becomes harder to form, and the burning performance is also more difficult to manage. For this reason, floral material in the Chinese traditional system is better combined with other plant powders. In this mixed structure, wood-based powder helps with shaping and burning, while floral powder adds source meaning and a softer plant-derived note.

**Figure 57**

*Test samples of incense sticks containing chrysanthemum, carnation, white lily, and white rose powders*

*Note:Photo taken by the author*

The investigation showed that floral materials could be incorporated into this system, but their role needed to remain balanced and supportive. This result later became an important basis for evaluating the use of funeral flowers in combustible memorial products.

On this basis, the study also referred to South American incense stick making methods and carried out a small-scale incense stick experiment. In this experiment, Palo Santo powder was used as the main aromatic material because it had a relatively high oil content and a natural woody scent. Nanmu powder was added as a plant-based binder and shaping material. Water was then mixed in at a suitable ratio, and the material was kneaded into a soft, mud-like mass.

The mixture was then applied evenly to the surface of bamboo sticks to form the base layer of the incense sticks. After that, dried yellow chrysanthemum, white chrysanthemum, and carnation petals were ground into fine fragments and attached to the semi-dry outer layer of the sticks. This step helped retain the visible features and symbolic traces of the floral materials.

The finished samples were finally placed in a cool and well-ventilated space and left to dry naturally for about seven days. This process allowed the incense sticks to gradually set into shape.

**Figure 58**

*The Incense Stick Manufacturing Process*

*Note:Photo taken by the author*

**Figure 59**

*Finished Product Diagram*

*Note:Photo taken by the author*

When non-combustible incense beads and combustible stick incense are compared within the same framework, the suitability of funeral floral materials in different incense-making paths becomes easier to understand. Incense beads place more weight on slow fragrance release, tactile presence, and longer preservation. Because of this, they are better suited to private, body-related, and everyday forms of memorial expression.

Stick incense, by contrast, places more weight on the time-based process created by lighting, burning, falling ash, and the spreading of scent. For this reason, it is more suitable for commemorative situations that involve ritual action. Both paths extend the source meaning of the floral materials, but each does so in its own way. Incense beads continue memory through lasting presence, while stick incense calls up memory through gradual disappearance.

From the perspective of material comparison, the incense bead route showed clearer strengths in stability, daily use, and the retention of subtle floral scent. This route was also better suited to long-term, companion-like products. The stick incense route showed stronger advantages in ritual character, formal recognition, and suitability for commemorative settings. At the same time, this route placed higher demands on base materials, ratio control, and combustion structure.

If memorial suitability, sensory expression, structural stability, and later product development are taken as the main criteria, both routes still have clear value. Even so, the two routes point to different directions of development. Incense beads are more suitable for companion-like memorial products, while stick incense is more suitable for ritual memorial products.

This comparison further shows that incense-making was not only a workable way of material transformation, but also one of the clearest paths in this study for connecting material, meaning, and product. In this system, the floral materials were neither simply kept in their original form nor fully turned into ordinary recycled matter. Instead, they developed into two different forms of memorial expression through different incense systems: slow companionship and ritual dissipation.

From the perspective of material aesthetics, both paths retained traces of material origin, although they did so in different ways. From the perspective of mono no aware, incense beads were closer to a gentle continuation of memory, while stick incense was closer to sensing presence through gradual disappearance. Based on this finding, the incense-making path later became the material basis for two important design outcomes in this study, namely fragrant bead bracelets and stick incense products.

Experiment on Natural Adhesive Blends

In the material transformation experiments, this study selected gelatin and glycerin as the main binding and film-forming agents in order to examine the reuse potential of floral materials within a natural biodegradable system.

Gelatin is derived from animal and plant proteins. It showed good film-forming ability and biodegradability. Glycerin acted as a small-molecule plasticizer. It improved the flexibility and stability of the material by adjusting intermolecular forces, and it also helped maintain moisture balance to a certain degree.

Compared with industrial resins or chemical adhesives, this natural system was more environmentally friendly and safer. This feature was in line with the core design direction of this research, namely sustainability and sensory experience.

In the actual experiment, the study selected fresh petals, dried petals, and fresh floral materials with leaves and stems as the main research materials. The study applied several treatment methods and combined them with gelatin–glycerin systems in different ratios. In this way, the study examined how different floral forms and adhesive ratios influenced material shaping and sensory qualities.

**Figure 60**

*Boiled carnation petal dye solution combined with gelatin and glycerin*

*Note:Photo taken by the author*

**Table 14**

*Illustrations of floral petals in different conditions*

| **Types** | **Fresh Petals** | **Dried Flower Petals** | **Undried flower petals (fragmented state)** | **Dried Flower Petals (Powdered Form)** | **Undried Flower Petals and Rhizome Fibers** | **Undried Rhizome Fiber** |
|---|---|---|---|---|---|---|
| Yellow Chrysanthemum |  |  |  |  |  |  |
| Carnation |  |  |  |  |  |  |
| White Lily |  |  |  |  |  |  |
| White Rose |  |  |  |  |  |  |

*Note:drawn by the author*

**Figure 61**

*Petal-extracted dye solutions and tests combining petals in different states with gelatin + glycerin mixture*

*Note:Photo taken by the author*

**Figure 62**

*Four floral materials mixed with gelatin and glycerin*

*Note:Photo taken by the author*

The gelatin–glycerin experiment showed that the natural adhesive system had strong plasticity. Samples made only with petals formed smoother and softer surfaces.

Samples that contained stems and fibers showed a rougher texture and a stronger structure.

This difference was important because it later helped define different product roles. Materials with a finer texture were better suited to forms that emphasized touch and visual softness. By contrast, materials with a stronger fiber content were more suitable for carriers and holders that required structure and a visible raw texture.

Plant Fiber Paper Experiment

To examine the potential of post-ceremony floral materials as ingredients in handmade paper, the researcher visited the traditional papermaking workshop of Yin Wangsong in Xizhou Town, Dali, Yunnan Province. Yin Wangsong is a provincial-level inheritor of intangible cultural heritage in traditional papermaking. During the field visit, he shared his experience with the researcher. The researcher also joined the papermaking process and interviewed local artisans about the possible use of floral materials in handmade paper.

Yin Wangsong explained that paper mulberry (Broussonetia papyrifera) is the key raw material in traditional papermaking. Its long and strong fibers provide the toughness needed for the paper. He also noted that attempts to combine floral materials with papermaking had appeared before, but in most cases, flowers were used as decorative additions to improve visual effect rather than as the main fiber source.He further pointed out that the use of floral materials alone requires careful attention to fiber content, because fiber content directly affects paper strength. He also explained that floral materials are relatively costly, produce limited output, and face lower market demand. For this reason, he suggested that floral materials are more suitable for blending with paper mulberry fibers.

**Figure 63**

*Learning traditional papermaking techniques from Yin Wangsong*

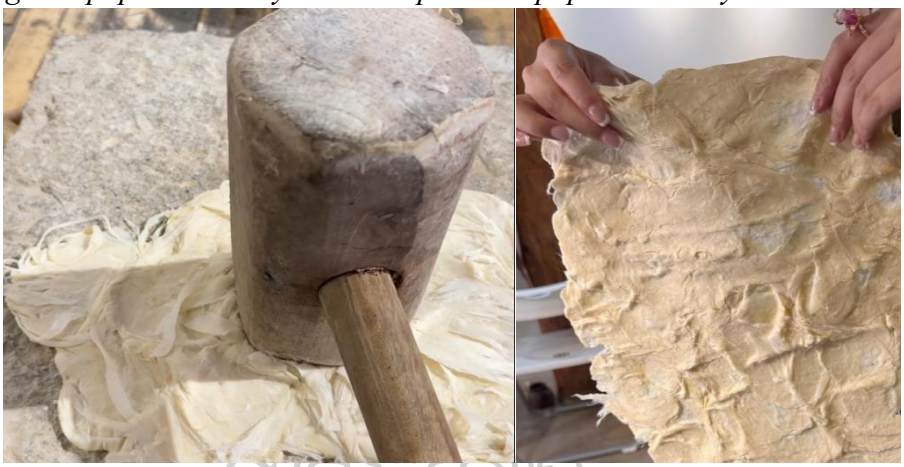
*Note:Photo taken by the author*

After taking these suggestions into account, the researcher carried out small-scale experiments with floral materials and conducted comparative tests using three different raw material groups: petals alone, a mixture of petals and rhizomes, and rhizomes alone. During the experiment, the researcher followed traditional

methods to complete the steps of pounding mulberry bark, blending fibers, and preparing the paper pulp.

**Figure 64**

*Pounding raw paper mulberry bark and pounded paper mulberry bark*



*Note:Photo taken by the author*

**Figure 65**

*Pounding raw paper mulberry bark and pounded paper mulberry bark*

*Note:Photo taken by the author*

**Figure 66**

*Pouring prepared floral materials into the paper mulberry mixture for stirring and papermaking*

*Note:Photo taken by the author*

**Figure 67**

*Drying process*

*Note:Photo taken by the author*

**Figure 68**

*Handmade paper products with different textures*

*Note:Photo taken by the author*

The experiments showed that paper made only with petals tended to be thicker. This type of paper was more suitable for thin petals or dried flowers. Stem fibers from coarser floral materials, created more distinct textures on the paper surface. Natural pigments from different floral materials also gave the paper different tonal variations.

The handmade paper experiment showed that floral materials could produce natural texture, tonal change, and surface depth when they were combined with paper mulberry fibers. This direction showed clear sensory and decorative potential. Even so, it did not present the same level of ritual continuity as incense-based forms. For this reason, paper still held value in the study, but it functioned more as a supporting visual language than as the main design outcome.

Summary

A comparison of the experiments shows that each one played a different role in the study. The dehydration and preservation tests focused mainly on pre-treatment and stable retention of the floral materials. These tests provided a basis for later material selection. The plant dyeing, natural adhesive, and handmade paper experiments opened up more possibilities in color, texture, and surface expression, but these paths functioned mainly as supporting visual, tactile, or structural elements.

By contrast, the incense experiments showed a stronger fit in terms of symbolic meaning, ritual connection, technical feasibility, and safety. For this reason, this path became the main focus of the final design. In this sense, the material exploration stage did more than verify the feasibility of different transformation methods. It also established a clearer connection between material properties, symbolic meaning, and product form.

**Table 15**

*Material Exploration Evaluation Matrix*

| **Experimental Pathway** | **Morphological Stability** | **Trace Retention** | **Sensory Expression** | **Ritual Association** | **Formability/Applicability Feasibility** | **Design Transformation Potential** | **Design Positioning** |
|---|---|---|---|---|---|---|---|
| Dehydration Test | √ | √ | — | — | ○ | √ | Preprocessing Fundamentals |
| Preservation Test | √ | √ | ○ | ○ | ○ | √ | Memorial Carrier Basis |
| Plant Dyeing Experiment | — | — | √ | — | ○ | ○ | Auxiliary Visual Language |
| Incense-Making Experiment | ○ | ○ | √ | √ | √ | √ | Core Design Direction |
| Natural Adhesive Materials Test | ○ | ○ | √ | — | √ | √ | Structural Basis and Medium |
| Handmade Paper Experiment | ○ | ○ | √ | — | ○ | ○ | Auxiliary Narrative Materials |

*Note:drawn by the author*

*✓ indicates outstanding performance, ○ indicates certain potential, — indicates relatively weak.*

#### 4.2.3.4 Material Classification

After the experiments were completed, the study grouped the resulting materials into three main categories. The first category was ritual carriers, which included solid scented candles, incense bricks, incense beads, and combustible incense. The second category was gelatin–glycerin bio-based composites, which included solid forms and flexible sheets. The third category was fiber and pigment applications, which included naturally dyed fabrics and handmade plant fiber paper.

This classification was not based only on appearance. The study based it on the later logic of use. The first category showed direct ritual potential. The second category showed strong formal plasticity and visible natural texture. The third category offered supporting value in tone, texture, and sensory expression. This classification later helped the study connect material behavior with product direction more clearly. It also provided a basis for the selection criteria used in the design stage, namely symbolism, safety, durability, and contextual suitability.

**Table 16**

*Material Classification*

| Category | Material Form | Illustration | Primary Material Composition | Material Characteristics |
|---|---|---|---|---|
| I.Ritual Carriers: Solid Encapsulation Materials | 1. Solid scented candles and soap bases |   | Flower petal fragments, dried flowers, amino acid soap base, beeswax/soy wax | Preserve floral form; Ensure structural stability; Achieve high visual recognition. |
| | 2.Incense beads and combustible stick incense |   | Incense powder, plant adhesive powder, floral fragments, plant-based incense cores (sacred wood powder, etc.) | Scent retention; ritualistic |
| II.Gelatin-Glycerin-Floral Moldable Bio-composite | Solid Block Structures |  | Gelatin, glycerin, petal/rhizome fragments | Highly malleable; moldable; visible surface fibers and color variations |
| III. Fiber & Pigment Applications | Flexible Sheet Materials |  | | Exceptionally flexible with adjustable transparency; exhibits “fabric-like” properties; natural texture |

| | | | |
|---|---|---|---|
| Naturally Dyed Fabrics |  | Petal pigments, cotton-linen fabric, alum | Low saturation tones; naturally soft |
| Handmade Plant Fiber Paper |  | Paper mulberry fibers, petals, floral fibers, plant pigments, paper treatment solution | Pigments permeate the paper; floral fibers embedded; distinct texture |

*Note:drawn by the author*

**4.2.4 Material Evaluation**

After completing the material classification, the study carried out a small-scale material evaluation. The aim of this stage was to understand how participants responded to actual material samples rather than to abstract design concepts. The evaluation was conducted at FLOAT Studio in Kunming and at Dounan Flower Market. During the process, participants were invited to look at, touch, and smell the samples. In total, the study collected 30 paper questionnaires and also recorded representative verbal responses.

The feedback showed a clear tendency. Participants found candles and incense products easier to accept when these were presented as memorial objects. Most participants could understand these forms without much explanation. They had already connected such objects with Chinese memorial practices. This result suggests that familiarity with an existing context can lower emotional resistance. These products did not need to create a new ritual language. Instead, they were able to continue one that people already recognized.

Fragrant bead products also received positive feedback, but the reason was different. Participants saw these products as more personal and easier to carry. They felt that such objects could bring commemoration from a public ritual setting into everyday private life. This result later supported the study's dual-product direction, with one line focused on ritual action and the other on personal remembrance.

The gelatin–glycerin bio-based materials also drew strong interest because of their visible texture and flexible form. At the same time, these materials immediately raised concerns. Participants asked whether the material might develop mold and whether it could be stored safely at home for a long time. This response is important for the analysis. It suggests that novelty by itself is not enough. When people encounter an unfamiliar material language, they tend to judge it first through questions of durability, safety, and storage.

The preliminary evaluation also showed that different material categories did not share the same potential for later commemorative design. Some materials were easier for participants to accept because their form and meaning were already close to

memorial practice. Other materials attracted attention because of their visual novelty or tactile qualities, but they were less convincing in terms of long-term use and contextual fit. Based on these responses, the study did not apply the same level of performance testing to every experimental material. Instead, the study selected representative materials with stronger application potential for further verification.

For this reason, the following sections focus on targeted tests of solid memorial materials, gelatin–glycerin–floral biocomposites, and plant-dyed materials. In this way, the evaluation stage worked as a bridge between experiment and design. It did more than show which materials participants preferred. It also clarified which materials were ready for further development and which technical issues still needed to be resolved before design application.

**Figure 69**

*Material Testing Site*

*Note:Photo taken by the author*

#### 4.2.4.1 Testing of Solid-State Containment Materials

Materials in this category had relatively clear functional uses. For this reason, the testing focused on safety, combustion behavior, and compatibility with human contact. In this part, the study examined the following items.

Combustion Safety and Air Quality Assessment

To assess the effects of Ceremonial Vessels · Solid-State Containment Materials—including incense sticks, incense bricks, and candles—on indoor air quality during actual use, the study carried out combustion safety testing. The release of combustion byproducts was treated as a key safety indicator for these materials.

Evaluation Indicators and Instruments

The study used a multifunctional air quality monitor to record the concentration of major pollutants in real time during combustion.

**Table 17**

*Monitoring Indicators and Significance*

| Indicator | Unit | Significance and Brief Description of International Standards |
|---|---|---|
| PM2.5 | (μg/m³) | Refers to particulate matter with an aerodynamic equivalent diameter ≤2.5μm. Due to its extremely small particle size, it can penetrate deep into the alveoli of the human lungs and enter blood circulation, posing a major threat to human health. The World Health Organization (WHO) Air Quality Guidelines recommend: the annual average concentration should not exceed 5μg/m³, and the 24-hour average concentration should not exceed 15μg/m³. |
| PM10 | (μg/m³) | Refers to particulate matter with an aerodynamic equivalent diameter ≤10μm, which can enter the human body through the respiratory tract and is another important air pollution indicator. |
| TVOC | (mg/m³) | Refers to the total amount of organic compounds that can volatilize into the air at room temperature, which is an important indicator for measuring indoor air pollution. Prolonged exposure may cause neurotoxicity and immune system disorders.。 |
| HCHO | (mg/m³) | A common indoor volatile organic compound with a pungent irritating odor, which has been classified as a Group 1 carcinogen by the International Agency for Research on Cancer (IARC). |

*Note:drawn by the author*

Testing Methods and Procedures

The test was carried out under indoor conditions that simulated a normal home environment. The aim was to observe pollutant release during the combustion of floral-based solid-state containment materials in actual use situations. In this way, the study evaluated their effects on indoor air quality and their safety in use.

The testing procedure included the following steps.

Background Value Recording

Before the material was ignited, the air quality monitor was turned on to record PM2.5, PM10, TVOC, and HCHO in the test space in a continuous and stable way. These data were used as the background values for later comparison.

Combustion and Real-Time Monitoring

The study then ignited the test material, including incense sticks, incense bricks, or candles, and allowed it to burn under normal conditions. During combustion, the monitor continued to operate and recorded pollutant concentration data at 1 minute, 5 minutes, and 10 minutes after ignition.

Overall Air Quality Assessment

The study also recorded the overall air quality index shown by the testing device. This index reflected the immediate effect of combustion on the indoor air environment as a whole.

By comparing pollutant concentrations before and after combustion, the study was able to analyze both the peak values and the lasting effects of harmful substance release from different materials during burning. This process provided an objective basis for evaluating the health and safety performance of these materials in commemorative and ceremonial use.

Incense Sticks: Instant Fluctuation and Fast Recovery

The test results show that incense sticks presented clear stage-based changes during the early period after ignition. Within about 1 minute after ignition,, as the flame extinguishes and transitions into smoldering combustion, brief and visible smoke phenomena occur during the burning process, causing instantaneous peak concentrations of PM2.5 and PM10, which trigger the air quality exceeding standard warning on the testing instrument in a short time. However, as the incense stick enters the stable smoldering stage, the smoke rapidly disperses and dissipates, and various air quality indicators (PM2.5, PM10, TVOC, HCHO) return to the environmental background level within a short period, with the comprehensive air quality indicator also recovering to "normal." From an assessment perspective, this phenomenon represents a typical physical reaction characteristic of the ignition moment of biomass materials, characterized by short duration and limited impact range. During the continued burning of the incense sticks, the test did not detect any sustained release of harmful substances. This result suggests that, under normal conditions of use, the material met the safety requirements for indoor air quality.

Incense Bricks and Candles: Stable Combustion Performance

By comparison, incense bricks and candles showed a high level of stability throughout the whole test period, including ignition, melting, and continued burning.

The air quality monitoring data showed that key indicators, such as PM2.5, TVOC, and HCHO, remained close to the background levels of the environment during the test. The study did not observe any exceedance during the testing process.

This result suggests that, as ritual carriers, incense bricks and candles underwent a relatively complete transformation of their main components during heating and burning. The process did not produce obvious particulate matter or harmful volatile organic compounds. For this reason, these materials showed relatively good safety for indoor use.

Conclusion

Summary, the incense sticks, candles, and incense bricks developed in this study showed generally good environmental performance in actual use contexts. Although incense sticks produced a brief smoke effect during the initial stage of ignition, their combustion effects are instantaneous and will not cause sustained negative impacts on

indoor air quality; incense bricks and candles demonstrate highly stable safety characteristics throughout the entire combustion process.

These test results provide measurable safety support for the use of such materials in commemorative and ceremonial design. They also establish a technical basis for later material selection and design development.

**Table 18**

*Combustion Safety Test Data Record Sheet*

| **Material Types** | **Test Time** | **Test Illustration** | **PM2.5（μg/m³）** | **TVOC（mg/m³）** | **HCHO（mg/m³）** | **PM10（μg/m³）** | **Instrument Air Quality Labeling** |
|---|---|---|---|---|---|---|---|
| Incense Sticks | Before ignition (background value) |  | 19 | / | 58 | 23 | Normal |
| | When ignited |  | 27 | / | 27 | 19 | Normal |
| | 1 Minute After Ignition |  | 246 | / | 19 | 313 | exceeding the standard |
| | 5 Minutes After Ignition |  | 16 | 0.052 | 0.008 | 20 | Normal |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 10 Minutes After Ignition |  | 16 | 0.039 | 0.006 | 20 | Normal |
| | Before ignition (background value) |  | 29 | 0.013 | 0.002 | 37 | Normal |
| Incense Bricks | 1 Minute After Ignition |  | 26 | 0.013 | 0.002 | 32 | Normal |
| | 5 Minutes After Ignition |  | 21 | 0.065 | 0.01 | 26 | Normal |
| | 10 Minutes After Ignition |  | 21 | 0.039 | 0.006 | 21 | Normal |
| Candles | Before ignition (background value) |  | 12 | 0.052 | 0.008 | 15 | Normal |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 Minute After Ignition |  | 12 | 0.065 | 0.010 | 16 | Normal |
| 5 Minutes After Ignition |  | 11 | 0.013 | 0.002 | 14 | Normal |
| 10 Minutes After Ignition |  | 11 | 0 | 0 | 14 | Normal |

*Note:drawn by the author*

Fragrance Bead Durability and Safety Testing

(1) Analysis of the Durability of Incense Beads

In testing the durability of incense beads, this study first referred to interview data from traditional incense bead makers. Unlike industrial products such as food, incense beads do not have a fixed and clearly defined shelf life. Their service life is shaped by several factors, including the stability of the fragrance formula, the adhesive system, the degree of curing during production, and the wearer's use environment and care habits.

From the production side, natural incense powder and plant-based adhesives show a certain level of stability. When the beads are stored properly in a cool, dry, and light-protected place, they can remain usable for several years or even longer. Some aged incense beads may even develop a softer and subtler fragrance after long-term still storage. By contrast, exposure to humidity, high temperatures, strong sunlight, or frequent contact with water, sweat, and oils may cause the fragrance to fade more quickly. These conditions may also lead to softening, whitening, powdering, or mold.

In actual use, the durability of incense beads depends more directly on the wearer's daily habits. Sweat, skin oil, and external friction are the main factors that affect both structure and fragrance. Very dry conditions may cause cracking, while humid and poorly ventilated conditions are more likely to encourage microbial growth. For this reason, when the beads are not being worn, they should be stored in a dry, light-protected, and sealed container. This method can effectively slow fragrance loss and volatilization.

(2) Simulated Wearing Test

Based on the actual use conditions of incense beads, this study did not use destructive testing. Instead, the study carried out qualitative observation by simulating real wearing conditions.

Test procedure:

The researcher conducted a continuous wearing test over 7 days. The average daily wearing time was about 8 hours.

Observation results:

Appearance stability: The incense beads showed no deformation, cracking, or powder loss during the test period.

Skin response: The wearing area showed no redness, itching, or other allergic reactions.

Result:

The test showed that under normal wearing conditions, with no contact with water and no exposure to extreme temperature or humidity, the incense beads maintained their structural integrity and caused no allergic symptoms

**Figure 70**

*Illustration of Wearing Fragrant Bead Bracelets*

*Note:Photo taken by the author*

(3) pH Testing of Fragrant Beads

To further confirm the contact safety of fragrant beads in a measurable way, this study carried out pH testing.

Testing purpose:

The purpose of the test was to examine whether the acidity or alkalinity of the material fell within a skin-safe range, so as to avoid possible chemical irritation.

Experimental procedure:

The study followed the Chinese standard GB/T 7573. The procedure included weighing the sample, extracting it with a potassium chloride solution, and carrying out oscillation extraction in a constant-temperature water bath. After that, the study measured the extract with a digital pH meter.

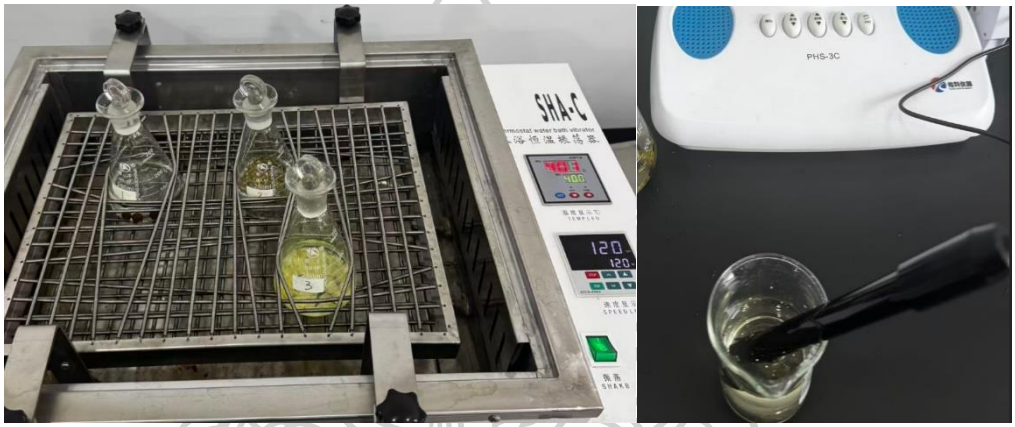
Results:

According to the safety requirements for skin-contact products in Category B under China's mandatory standard National Basic Safety Technical Specification for Textile Products (GB 18401-2010), the acceptable pH range is 4.0 < pH < 7.5.

The measured pH value of the fragrant bead sample in this study was 4.6. This value fell within the safety range required by the national standard. The result suggests that although the fragrant beads were mildly acidic, they still met the safety requirements for contact with human skin. This also means that the material had a basic foundation for use in wearable design.

**Figure 71**

*pH Value Measurement Diagram*




*Note:Photo taken by the author*

**Table 19**

*Test Results of Fragrant Bead Samples*

| **Sample Name: Fragrant Bead Sample** | | | **Temperature: 20.3 Humidity: 64.7** | | |
|---|---|---|---|---|---|
| Detection Project | Standard | Test Data Record | | | Final Result |
| PH | GB/T 7573 | Numerical Value | 1.4.60；2.4.66； | Potassium Chloride Solution pH: 5.83 Temperature: 20 °C | 4.6 |

*Note:drawn by the author*

### 4.2.4.2 Gelatin–Glycerin–Floral Biocomposite Development

Except for floral material fibers, this category of materials is primarily composed of a gelatin and glycerin adhesive system, exhibiting high plasticity and forming flexibility. However, due to the natural component characteristics and sensitivity to

environmental factors such as humidity and temperature, the stability and safety of the material in practical applications still require further verification. Therefore, this research, centered on the application feasibility of this category of materials, conducted systematic testing on key performance indicators including mold resistance, water resistance, temperature resistance, pH value, and mechanical strength.

Mold Resistance Testing

Testing Method

Mold resistance testing aims to evaluate the stability of bio-based materials with different formulations in high-humidity environments.

The testing was divided into two groups of materials:

Group A: Without preservatives added (only plant materials, gelatin, and glycerin).

Group B: Based on the same formulation, a small amount of food-grade preservative-potassium sorbate-was added.

During the testing process, researchers placed both groups of materials in the natural environment of Kunming for observation. The environmental characteristics were as follows: ambient temperature between 16°C and 18°C, relative humidity of 70%-80%, and insufficient light exposure, overall presenting a state of high humidity and low light, which is suitable for simulating actual high-humidity environments.

Test Results

According to meteorological records from Kunming from October 25-29, 2025, the average temperature was 16°C,with humidity maintained in a relatively high range of 70%-80%, and weather predominantly cloudy. Such environmental conditions are prone to causing material moisture absorption and softening, and provide favorable conditions for mold growth.

Group A (without preservative additives): On the fourth day of testing, the samples exhibited obvious mold deterioration, manifested as punctate and flaky mold spots, indicating that materials without preservative additives are susceptible to moisture and mold deterioration in high-humidity environments, affecting their structural stability.

Group B (with potassium sorbate preservative additive): Under the same environmental conditions, Group B samples showed no mold deterioration or structural changes, maintained stable appearance, and exhibited no off-odors, demonstrating good anti-mold effects, indicating that the addition of food-grade preservative significantly enhanced the material stability in high-humidity environments.

Conclusion:

The test results show that the addition of the food-grade preservative potassium sorbate can effectively improve the environmental stability of the bio-based material and clearly delay the appearance of mold. Under high-humidity conditions, Group B maintained good appearance and structural stability, which suggests that it had better

reliability in practical use. By contrast, Group A did not contain preservative additives, so it was much more likely to develop mold in a humid environment.

**Table 20**

*Temperature and Humidity Records in Kunming Area, October 25-29, 2025*

| date | The Highest Temperature | Minimum Temperature | Temperature Difference | Average Temperature | Average Humidity | Weather | 24-hour precipitation |
|---|---|---|---|---|---|---|---|
| 2025/10/29 | 23.3°C | 14°C | 9.3°C | 17.9°C | 72.50% | Multi-cloud | 0mm |
| 2025/10/28 | 21.3°C | 14.4°C | 6.9°C | 16.9°C | 76.10% | Multi-cloud | 0mm |
| 2025/10/27 | 20.6°C | 14.7°C | 5.9°C | 16.8°C | 77.80% | Multi-cloud | 0mm |
| 2025/10/26 | 20.5°C | 14.6°C | 5.9°C | 16.4°C | 79.80% | Scattered showers turning to mostly cloudy | 1.8mm |
| 2025/10/25 | 20.2°C | 13.4°C | 6.8°C | 16°C | 78.20% | Multi-cloud | 0mm |

*Note:https://datashareclub.com/weather/%E4%BA%91%E5%8D%97/%E6%98%86%E6%98%8E/101290101.html*

**Figure 72**

*Schematic illustration of mold growth on the sheet and block samples in Group A, showing spot-like and sheet-like mold formation*

*Note:Photo taken by the author*

**Figure 73**

*Schematic illustration of the sheet and block samples in Group B, showing no mold growth under the same conditions and stable material appearance throughout the test*

*Note:Photo taken by the author* Water Resistance Testing

Test Purpose

This test aimed to examine whether the bio-based plastic materials could maintain their structural integrity after contact with moisture. The study focused on their durability under liquid contact conditions and on their possible range of use. In this way, the test provided a basis for judging material stability in actual use situations.

Test Method

The study selected bio-based plastic samples with different forms and formulations, including solid samples A and B and flexible sheet samples C and D. The study then immersed these samples in distilled water at room temperature. During the test, the study observed structural changes under short-term immersion conditions of 0.5-1 hour and long-term immersion conditions of 12-24 hours. The study also recorded the appearance of the immersion medium in order to examine the hydrolysis and dissolution behavior of the materials in an aqueous environment.

Test Results

The test results showed clear differences in water resistance among materials with different forms and different fiber contents.

Short-term stability (0.5-1 hour)

Under short-term immersion conditions of 0.5-1 hour, all samples remained relatively stable. None of the samples showed obvious macroscopic changes in shape, and the distilled water stayed clear during the test. This result suggests that the bio-based material system had a basic level of resistance to hydrolysis and dissolution during brief contact with water.

Long-term morphological changes (12-24 hours)

As the immersion time became longer, the materials gradually showed water absorption and softening. After 12 hours of immersion, the bulk samples (A and B) became noticeably softer, but they still kept their overall shape and structure. After 24 hours, the sample volume expanded slightly, but the materials did not show complete structural failure.

By contrast, the flexible sheet samples (C and D) showed more obvious softening after 12 hours. Their fragility also increased clearly.

Reinforcing effect of plant fibers

Samples that contained petal or rhizome fibers, including bulk samples A and B and sheet sample D, released a small amount of fiber residue during immersion. Even so, the fiber structure played a clear reinforcing role in maintaining the overall form of the material. This effect helped slow down structural degradation.

In comparison, thin sheet sample C did not contain plant fibers. This sample was made only from chrysanthemum dye solution and a gelatin-glycerol system. After 12 hours of immersion, the material became fully soft. After 24 hours, it showed obvious cracking, and its structural integrity was quickly lost.

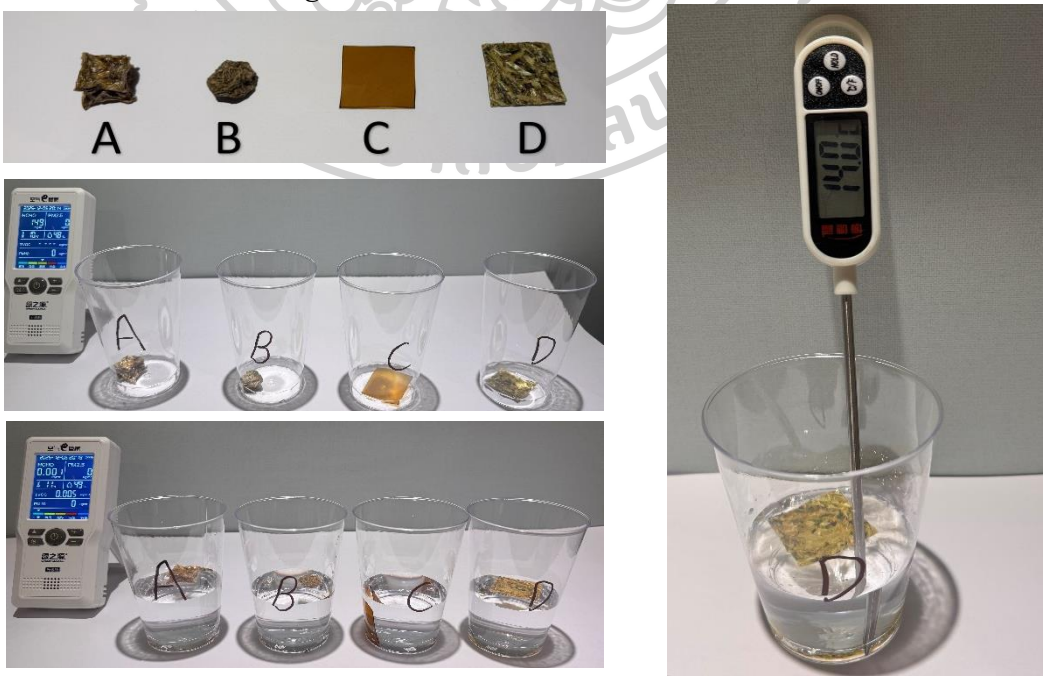
Conclusion

Based on the overall test results, the gelatin-glycerol bio-based material system showed good structural stability during short-term water immersion of less than 1 hour. This result suggests that the material can meet the basic requirements of general short-term contact with water.However, under prolonged water immersion conditions (>12 hours), the material undergoes softening and swelling due to continuous water absorption, resulting in a significant decrease in mechanical strength.

Among these, morphologically weak flexible sheet materials, particularly samples lacking plant fiber reinforcement, are highly susceptible to structural damage in prolonged water immersion environments. In contrast, samples containing floral material fibers exhibit better structural stability, indicating that plant fibers play a significant reinforcing role in this bio-based material system.

**Figure 74**

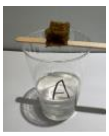
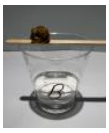
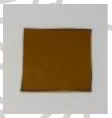
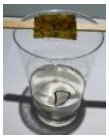
*Water Resistance Test Diagram*




*Note:Photo taken by the author*

**Table 21**

*Water Resistance Test Record of Gelatin-Glycerin-Floral Moldable Bio-composite*
*Experimental Date:2025-12-6*
*Environmental room temperature 10 °C*
*Environmental Humidity 50% RH*
*Immersion Medium/Temperature Distilled Water/14°C*

| Sample Number | Sample Composition | Sample Illustration | 30 minutes | 1 hour | 12 Hours | 24 Hours |
|---|---|---|---|---|---|---|
| Block-A | Yellow chrysanthemum petals, gelatin, glycerin (2g) |  |  |  |  |  |
| Block-B | Rhizome fiber, gelatin, glycerin (2g) |  |  |  |  |  |
| Thin Sheet-C | Yellow chrysanthemum dye solution, gelatin, glycerin (3cm*3cm) |  |  |  |  |  |
| Thin Sheet-D | Rhizome fiber, gelatin, glycerin (3cm*3cm) |  |  |  |  |  |

*Note:drawn by the author*

Heat Resistance Testing

Test Objective

This test aimed to examine whether the bio-based plastic materials would soften, deform, or fail under different temperature conditions. The study focused on their structural stability and functional safety margins in daily use, in high-temperature environments, and under extreme heat exposure. In this way, the test helped define the temperature resistance range of the material and its limits in practical use.

Testing Methods

To simulate the different heat conditions that the materials might face in actual use, the study used three representative heat resistance test methods. These methods corresponded to normal high-temperature conditions, extreme hot and humid conditions, and abnormal high-temperature exposure.

(1) Low- and Medium-Temperature Dry Heat Test (35°C / 60°C)

The study used a household temperature-controlled food dehydrator to carry out dry heat treatment on the materials. The 35°C condition was used to simulate the common high-temperature environment found in warm climates and tropical regions. The 60°C condition was used to represent the higher temperature range that materials might face during storage or when placed near a heat source. The study observed changes in appearance, structure, and mechanical condition at 30 minutes, 1 hour, and 2 hours.

(2) High-Temperature and High-Humidity Test (about 100°C boiling water)

The study immersed the material samples in boiling water at about 100°C to simulate extreme use conditions involving both high temperature and high humidity. The study focused on swelling, dissolution, and structural damage under short exposure of 2 minutes and longer exposure of 15 minutes.

(3) Extreme Dry Heat Test (110°C oven)

The study used an oven to expose the materials to dry heat at 110°C. This test was designed to simulate abnormal but potentially dangerous high-temperature conditions and to identify the critical point of thermal failure. During the test, the study recorded changes in appearance and structural stability at 1 minute, 2 minutes, and 5 minutes.

Test Results

The test results showed clear differences in heat resistance among bio-based materials with different forms and formulations. At 35°C, all samples remained stable during the test period. The samples showed no obvious change in color or structure, and their overall form stayed intact. In the 60°C dry heat condition, the bulk samples kept their structure stable within 1 hour, but they became brittle after longer exposure. The flexible sheet samples showed curling and brittle fracture earlier, which suggests that they were more sensitive to continued high temperature.

In boiling water at about 100°C, all samples showed clear signs of thermal failure. The bulk samples began to loosen in a short time and showed obvious dissolution after longer immersion. The flexible sheet samples showed melting or structural disappearance within 2 minutes, and their integrity was lost quickly.

Under the 110°C dry heat condition, thermal failure developed even faster. The bulk samples kept their overall shape for a short time, but discoloration and brittleness became obvious as the exposure time increased. The flexible sheet samples quickly showed softening, expansion, and even brittle cracking. This result indicates that their structural stability was not sufficient under extreme high-temperature conditions.

Conclusion

Based on the overall heat resistance results, the bio-based plastic material system showed good structural stability under normal high-temperature conditions of 35°C or below. This result suggests that the material can meet the basic requirements of general use and storage. Under relatively high dry-heat conditions of about 60°C, the material was still able to maintain its form during short-term exposure. However, longer exposure to high temperature created a clear risk of embrittlement.

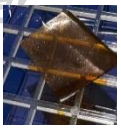
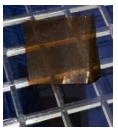
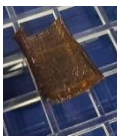
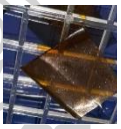
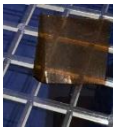
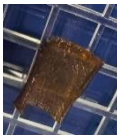
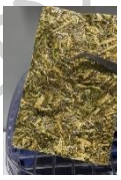
However, under high-temperature and high-humidity conditions of about 100°C, and extreme dry-heat conditions (110 °C), the material rapidly undergoes softening, dissolution, or structural degradation, demonstrating its unsuitability for use scenarios involving high temperatures or contact with hot water. Consequently, it is evident that the safe application range of this material should avoid high-temperature humid environments, and its design applications should focus on commemorative and display scenarios at room temperature or under low thermal loads.

**Table 22**

*Low and Medium Temperature Dry Heat Testing*

*Experimental Date: 2025-12-6*

*Heat Source Type: Household Controllable Temperature Drying Apparatus(35°C / 60°C)*

| Sample Number | Sample Composition | Initial Appearance | Test Temperature (°C) | 30 minutes | 1 hour | 2 hours |
|---|---|---|---|---|---|---|
| Block-E | Petal and rhizome fiber + gelatin + glycerin (2g) |  | 35 |  |  |  |
| | | | 60 |  |  |  |
| Thin Sheet-F | Yellow chrysanthemum dye solution, gelatin, glycerin (3cm*3cm) |  | 35 |  |  |  |
| | | | 60 |  |  |  |
| Thin Sheet-G | Petal and rhizome fiber + gelatin + glycerin (10cm*6cm) |  | 35 |  |  |  |
| | | | 60 |  |  |  |

*Note:drawn by the author*

**Table 23**

*High Temperature and Humidity Test*

*Experimental Date: 2025-12-7* *Heat Source Type: ≈100 °C Boiling Water*

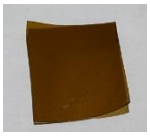
| Sample Number | Sample Composition | Initial State | 2 minutes | 15 minutes |
|---|---|---|---|---|
| Block-H | Yellow chrysanthemum petals, gelatin, glycerin (2g) |  |  |  |
| Thin Sheet-I | Yellow chrysanthemum dye solution, gelatin, glycerin (3cm*3cm) |  |  |  |
| Thin Sheet-J | Petal and rhizome fiber + gelatin + glycerin (10cm*6cm) |  |  |  |

*Note:drawn by the author*

**Table 24**

*Extreme Dry Heat Test*

*Experimental Date: 2025-12-7* *Heat Source Type: Household Oven*

| Sample Number | Sample Composition | Initial State | 1 minute | 2 minutes | 5 minutes |
|---|---|---|---|---|---|
| Block-K | Rhizome fiber, gelatin, glycerin (2g) |  |  |  |  |
| Thin Sheet-L | Rhizome fiber, gelatin, glycerin (3cm*3cm) |  |  |  |  |
| Thin Sheet-M | Petal and rhizome fiber + gelatin + glycerin (10cm*6cm) |  |  |  |  |

*Note:drawn by the author*

High-Strength Durability Test

Test Objective

This test aimed to examine the mechanical durability, structural integrity, and resistance to damage of the bio-based plastic materials in practical use. The test also aimed to provide mechanical evidence for their reliability as design carriers in daily applications. At the same time, by comparing samples with different amounts of rhizome fiber from floral materials, the study made a preliminary examination of how added plant fibers affected the mechanical properties of the material.

Testing Method

This study carried out tear strength testing on gelatin-glycerin-floral fiber composite sheet materials by following the Chinese national standard GB/T 3917.2. The study used an electronic fabric strength tester for the test. During sample preparation, the study kept the ratio of gelatin to glycerin unchanged and adjusted only the amount of rhizome fiber from the floral material. On this basis, the study prepared two comparative groups of samples:

Sample A: This sample contained a relatively low amount of rhizome fiber from the floral material.

Sample B: This sample contained a relatively high amount of rhizome fiber from the floral material.

**Figure 75**

*Comparative Diagram of Sample A-1 and Sample B-1*

*Note:Photo taken by the author*

The study carried out repeated tests in both the warp and weft directions of the material. During each test, the study recorded the maximum force that the sample could bear in the tearing process. These data were then used to calculate the average tear strength of the material.

Test Results

The test results showed clear differences in tear strength between the two sample groups. Sample A-1, which contained a relatively lower fiber content, showed an average tear strength of 210 N. Sample B-1, which contained a relatively higher fiber content, reached an average tear strength of 280 N in the warp direction. The weft direction showed a similar pattern, with a value of about 260 N.

To make the strength level easier to understand, a tear force of 210 N is roughly equal to the gravitational force produced by an object weighing 21.4 kg, while 280 N is close to the force produced by an object of about 28.6 kg. This result suggests that the gelatin-glycerin bio-based composite containing floral stem and root fibers had a relatively high level of structural integrity. It could withstand external force far beyond ordinary pulling or slight tearing stress. Under normal use conditions, the material was not likely to fail by tearing.

Conclusion

Based on the comprehensive results of durability and strength tests, the introduction of floral stem and root fibers significantly enhances the mechanical properties of gelatin/glycerol bio-based materials. Within the testing range of this study, samples with higher fiber content demonstrated superior tear resistance, indicating that plant fibers effectively reinforce the internal structure of the material.

Although the comparative test clearly demonstrated a positive correlation between floral stem and root fiber content and strength within the testing range (i.e., higher fiber content corresponds to relatively greater strength), given that the comparative test was conducted with only two samples, The study could not yet determine the critical amount of added floral stem and root fibers. In theory, once the fiber content reaches a saturated state or begins to agglomerate, the material strength will no longer continue to increase and may even decline.

**Figure 76**

*Experimental Diagram*


*Note:Photo taken by the author*

**Table 25**

*Experimental Data Record*

*Sample name: Gelatin-glycerin biomaterial sheet sample A-1, with a relatively low content of floral material fiber.*

*Testing conditions:Temperature was 20.3°C, and relative humidity was 64.7%.*

| Detection Project | Standard | Test Data Record | | | Final Result |
|---|---|---|---|---|---|
| Strength | GB/T 3917.2 | warp | 1.287； 2.201； 3.244； 4.178； 5.155 | Phenomenon: Rupture | 210N |
| | | weft | 1.266； 2.198； 3.216； 4.200； 5.159 | Phenomenon: Rupture | 210N |

*Note:drawn by the author*

**Table 26**

*Experimental Data Record*

*Sample name: Gelatin–glycerin biomaterial sheet sample B-1, with a relatively high content of floral material fiber.*

*Testing conditions: Temperature was 20.3°C, and relative humidity was 64.7%.*

| Detection Project | Standard | Test Data Record | | | Final Result |
|---|---|---|---|---|---|
| Strength | GB/T 3917.2 | warp | 1.320；2.297；3.279；4.206；5.311 | Phenomenon: Rupture | 280N |
| | | weft | 1.240 ； 2.266；3.315；4.274；5.214 | Phenomenon: Rupture | 260N |

*Note:drawn by the author*

Flammability Testing

Test Objective

This test aimed to examine how quickly the bio-based plastic materials ignited when exposed to a fire source and whether they could extinguish themselves after the fire source was removed. In this way, the study evaluated their safety under possible fire exposure and also considered how material form influenced combustion behavior.

Testing Method

The study selected two representative material forms for comparison, including bulk samples (N) and flexible sheet samples (O). Under the same environmental conditions, with an ambient temperature of about 12°C and a relative humidity of about 44%, the study carried out ignition tests on both samples using the same fire source.

During the test, the study recorded the following indicators:

the time required for the sample to ignite after contact with the fire source;

the time required for the flame to go out completely after the external fire source was removed;

the remaining form of the material and its odor after combustion.

Based on these indicators, the study made a combined assessment of the flammability and fire-source safety of materials with different forms.

Test Results

The test results showed that material form had a clear effect on combustion behavior.

In terms of ignition, the dense block sample (N) showed a stronger resistance to ignition. Its ignition time was 2 minutes and 17 seconds. This value was much higher than that of the flexible sheet sample (O), which ignited about 33 seconds after contact with the fire source.

In terms of self-extinguishing behavior, the block sample (N) performed better after the external fire source was removed. Its flame went out completely within about 15 seconds, which showed good self-extinguishing ability. By contrast, the flexible

sheet sample (O) could also extinguish itself, but the burning time was much longer. Its self-extinguishing process took about 1 minute and 46 seconds.

Observation of the combustion residues showed a similar pattern in both samples. Both materials burned only in local areas, while the unburned parts kept their original form. The burned areas formed a dark brown carbonized layer. During combustion, the test did not detect any obvious irritating odor. The residual characteristics were close to those of burned plant matter, which suggests that the combustion products of the material were relatively mild overall.

Conclusion

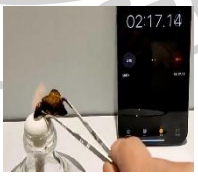
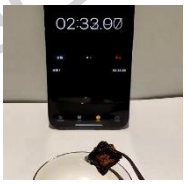
The overall combustion test results showed that the fire safety of the bio-based plastic material was closely related to its structural form. The compact block sample (N) showed a longer ignition time and a faster self-extinguishing speed. This means that its overall combustion risk was relatively low and its safety performance was better. By contrast, the flexible sheet sample (O) ignited more easily and burned for a longer time, which suggests a more limited safety margin.

For this reason, applications that may involve fire-related risk should give priority to block-structured materials. In design use, flexible sheet materials should avoid direct contact with open flames or high-temperature heat sources.

**Table 27**

*Experimental Data Record*

*Temperature/Humidity: 12°C/44%* *Light Source Type: Alcohol Lamp*

| **Sample Number** | **Sample Composition** | **Initial Appearance** | **Ignition Time (seconds)** | **Flame Self-Extinguishing Time After Removing Heat Source (seconds)** | **Residue After Combustion** |
|---|---|---|---|---|---|
| Block-N | Petal and rhizome fiber + gelatin + glycerin |  |   |   |  |
| Thin Slice-O | Petal and rhizome fiber + gelatin + glycerin |  |   |  |  |

*Note:drawn by the author*

pH Value Testing

Testing Purpose

In addition to the physical property tests described above, such as water resistance, heat resistance, flammability, and durability, the biocompatibility and skin

compatibility of the bio-based material made from gelatin, glycerin, and floral stem fibers were also important indicators in evaluating its application value.

The pH test had two main purposes. One purpose was to examine whether the material was safe for direct contact with human skin in applications such as wearable objects, memorial jewelry, or creative packaging. This test helped determine whether the material might disturb the skin's natural weakly acidic barrier and increase the risk of irritation or allergic response.

The other purpose was to check whether acidic or alkaline chemical residues remained after material preparation and forming. In this way, the test also provided a basis for judging process safety from both ecological and human-contact perspectives.

Testing Method

This experiment was conducted in accordance with the Chinese National Standard GB/T 7573 "Textiles - Determination of pH Value of Water Extract". During the testing process, the bio-based composite material samples were cut into pieces and placed in a potassium chloride solution of specified volume for mechanical agitation extraction, allowing the soluble components in the material to be fully released. Subsequently, using a calibrated portable electronic pH meter, the acidity and alkalinity of the obtained water extract was measured.

The testing was performed under room temperature conditions (approximately 20 °C) to ensure the stability and comparability of the measurement results.

Test Results

The test results show that the pH value of the aqueous extract of the bio-based material is stable at approximately 5.9. The pH value of the potassium chloride solution used in the control test is 5.83, and the two values are close, indicating that the material system has not introduced any significant shift in acidity or alkalinity.

Conclusion

Based on the comprehensive pH value test results, the gelatin/glycerol/flower stem and root fiber bio-based material demonstrates good biocompatibility and skin-friendly properties. Its pH value (5.9) falls within the natural weakly acidic range of human skin (approximately 5.5-6.5), indicating that the material has high safety in application scenarios involving direct skin contact and is unlikely to cause irritation or discomfort reactions.

At the same time, this result also indicates that no significant acidic or alkaline chemical residues remain in the material during the preparation and molding process, demonstrating good process safety and ecological friendliness, providing reliable evidence for its further application in commemorative design, wearable forms, and emotionally-charged objects.

**Figure 77**

*Schematic Diagram of pH Value Testing Process*


*Note:Photo taken by the author*

**Table 28**

*Experimental Data Record*

*Sample Name: Gelatin Glycerin Floral Rhizome Fiber Material Sample*

*Temperature: 20.3°C Humidity: 64.7%*

| Detection Project | Standard | Test Data Record | | | Final Results |
|---|---|---|---|---|---|
| PH | GB/T 7573 | Numerical Value | 1.5.94 ; 2.5.90 | Potassium Chloride Solution pH: 5.83 Temperature: 20 °C | 5.9 |

*Note:drawn by the author*

#### 4.2.4.3 Color Fastness and Safety Testing of Plant-Dyed Materials

Test Objective

This test aims to evaluate the color fastness quality and safety of use of plant-dyed cotton and linen fabrics using chrysanthemum petals. Through abrasion fastness testing, the binding stability between dyes and fabric fibers is analyzed to determine whether color migration easily occurs during daily wearing or use. At the same time, the study used pH testing to examine how the plant dyeing process affected the acidity or alkalinity of the fabric. In this way, the study could determine whether the dyed fabric met health and safety requirements for direct contact with human skin.

Testing Methods

(1)Rubbing Fastness Test

This study tested the dyed cotton-linen samples with a rubbing fastness tester by following the national standard GB/T 3920, Textiles-Tests for Colour Fastness-Colour Fastness to Rubbing. The test included two parts. One part was the dry rubbing test, which was used to simulate daily wear and ordinary contact. The other part was the wet rubbing test, which was used to simulate conditions affected by sweat or moisture.

(2) pH Value Testing

This study measured the pH value of the dyed fabrics by following the national standard GB/T 7573, Textiles-Determination of pH Value of Aqueous Extract. The test used the water extraction method. The purpose was to assess skin compatibility and process safety.

Test Results

The test results showed that the samples dyed with yellow chrysanthemum petals performed well in both color fastness and safety.

In the rubbing fastness test, the samples reached a dry rubbing fastness rating of 4-5. This result indicates that, in a dry state, the dye bonded well with the cotton and linen fibers and produced almost no obvious color staining. The wet rubbing fastness rating was 3-4. Although this result was slightly lower than the dry rubbing result, it still remained at a good level. It also suggests that the fabric could resist slight color fading caused by sweat or moisture during daily wear.

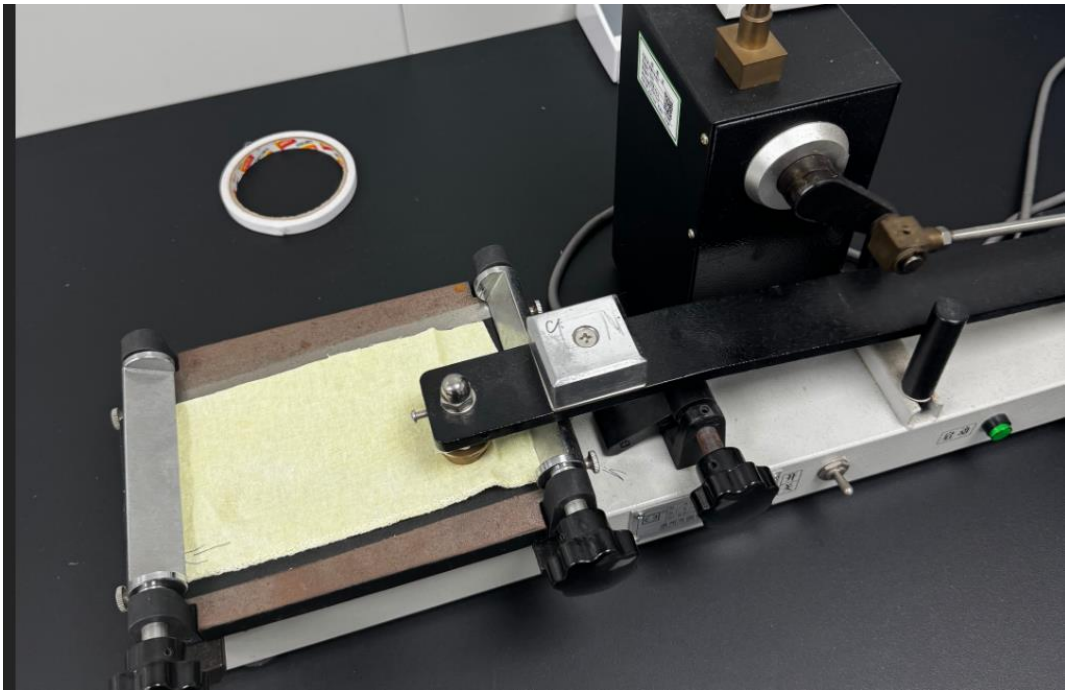
In the pH test, the measured value of the samples was 5.8. This value showed a weakly acidic character. It also fell within the natural weakly acidic range of human skin, which is about 5.5-6.5. This result suggests that the plant dyeing process was relatively mild and safe, with a low risk of skin irritation.

Conclusion

The overall test results showed that the plant-dyed cotton-linen samples met practical requirements in both color fastness and biosafety. These results provide a reliable basis for their further use in wearable design, commemorative textiles, and emotional design practice.

**Figure 78**

*Color fastness test of samples dyed with yellow chrysanthemum petals*



*Note:Photo taken by the author*

**Table 29**

*Test data of samples dyed with yellow chrysanthemum petals*

*Sample name: Fabric sample dyed with yellow chrysanthemum petals.*
*Testing conditions: Temperature was 20.3°C, and relative humidity was 64.7%.*

| **Detection Project** | **Standard Test Data Record** | **Standard Test Data Record** | | | | **Final Results** |
|---|---|---|---|---|---|---|
| PH | GB/T 7573 | Numerical Value | 1.5.83 ; 2. 5.86 | Potassium chloride solution pH: 5.83<br>Temperature: 20°C | | 5.8 Weakly Acidic (Safe Range) |
| Abrasion Fastness of Color | GB/T 3920 | Dry Friction | 4--5 | Wet Friction | 3--4 | Dry rubbing: Excellent (basically no color transfer)<br>Wet rubbing: Good (slight color transfer) |

*Note:drawn by the author*

#### 4.2.4.4 Summary of Material Testing

Based on the comprehensive testing results presented above, this research has conducted necessary verification of safety, stability, and usage limitations for the primary materials entering the design phase, in conjunction with their actual use contexts. The testing content is not a comprehensive performance assessment of all materials, but rather focuses on material types with clear application orientations in commemorative and ceremonial contexts, based on the results of preliminary material screening.

In order to more clearly present the experimental results of explorations with different materials, and further clarify the basis for judgment regarding which materials enter into subsequent design explorations, a comparative analysis of the experimental methods, physical and sensory performances, and screening rationales of different material categories is hereby organized and presented.

**Table 30**

*Material Experiment Comparison and Selection Basis Table*

| **Material Categories** | **Experimental Methods and Composition** | **Test Results** | **Selection Criteria and Subsequent Development Potential** |
|---|---|---|---|
| Solid Aromatic Candles and Scented Wax Bricks | Casting and molding by mixing soy wax, beeswax, and amino acid soap base with dried or fresh flower petals. | Combustion stability is relatively high with no significant harmful emissions detected; dried flowers are able to maintain their original form and color better under high temperature conditions, while fresh flowers tend to fade more easily after being heated. | This material system possesses good stability and operability, capable of extending the visual characteristics of floral materials and maintaining certain relevance to the lighting behavior in commemorative ceremonies. However, it tends more toward preservation and display, with relatively limited depth of material transformation and continuity of emotional expression, and |

| | | | |
|---|---|---|---|
| | | | therefore is not pursued as a primary development direction. |
| Combustible Incense Stick Materials | Mix dried pollen with woody fragrance powder (such as camphorwood powder) and water to create a linear combustible material, and allow it to air-dry naturally in the shade. | Upon initial ignition, there is brief smoke, followed by relatively stable smoldering; indoor air quality remains within safe ranges. | This category of materials exhibits strong characteristics in combustion process, olfactory performance, and sense of ritual, which can embody the perceptual properties of time passage and emotional dissipation, thus possessing high potential for subsequent development. |
| Fragrant Beads Made from Petal Powder and Plant Powder | Mixing flower material powder with plant adhesive powder, then cold-pressing and shade-drying to form, without any combustion process. | The molded structure is relatively stable with certain durability; the pH value is 4.6, which is safe for skin with low irritation; the fragrance release is relatively slow and subtle. | This type of material exhibits stable structure after forming, with good safety, stability, and feasibility for daily contact, thus possessing high potential in subsequent exploration of commemorative materials. |

| | | | |
|---|---|---|---|
| Gelatin-Glycerol Bio-based Composite Material | The natural binder system (gelatin + glycerin) was mixed with flower petal and flower stem fibers for molding. | The material showed strong plasticity and a natural surface texture. After the addition of floral stem fibers, its tear resistance improved clearly, reaching a maximum of 280 N. At the same time, the material remained sensitive to high-humidity and high-temperature conditions. | This group of materials showed strong natural texture and good plasticity. These qualities helped preserve a clear sense of material origin and a rustic visual character. For this reason, the materials remain suitable for further exploration in modeling and carrier-based applications. At the same time, these materials were highly sensitive to environmental conditions. Their later use should therefore be limited to relatively stable settings. |
| Plant-Dyed Fabrics and Floral Fiber Paper | The study extracted pigments from petals by boiling them and used the extract to dye fabric. The study also made paper by blending floral fibers with paper mulberry pulp. | The material showed relatively good dry rubbing fastness, with a rating of 4–5.<br>Its pH value was 5.8, which suggests good skin-contact safety. The material also showed a rich fiber texture and a natural color tone with low saturation. | This category of experiments verified the potential of floral materials in low-saturation natural colors, fiber texture, and sensory expression. However, their performance tends more toward auxiliary visual and material language, with relatively weaker directional indicators of commemorative and ceremonial |

| | |
|---|---|
| | significance. Therefore, they are more suitable as auxiliary references in subsequent design rather than as primary development directions. |

*Note:drawn by the author*

The purpose of the testing in this section is not to pursue the limits of material performance, but rather to clarify the feasibility and boundary conditions of different materials in practical applications. The testing results provide necessary evidence for subsequent design practice, establishing material selection and formal transformation on reliable experimental judgment.

**4.3 Design and Development**

The design development stage did not begin from form alone. It began from a layered judgment system built in the earlier sections. That system included public data, field context, material performance, and theoretical direction. Therefore, the final products did not emerge from intuitive styling only. They emerged from a process of screening, translation, and refinement.

**4.3.1 Triangulation of Preliminary Data**

To strengthen the reliability of the design direction, this study compared three kinds of preliminary evidence: field interviews, questionnaire data, and offline material evaluation. These three sources addressed the same issue from different angles. Fieldwork reflected current practice. The questionnaire reflected broader public attitude. The material evaluation reflected immediate user response to actual samples.

The first consistent finding was that reuse is conditionally feasible. Practitioners described funeral flowers as single-use in current industry practice, yet the questionnaire showed that around 78% of the public would accept reuse under certain conditions. Offline participants also focused more on preservation, source, and safety than on rejecting the idea itself. This means that reuse is not blocked by a complete cultural refusal. It is blocked by the absence of a trusted and emotionally careful system.

The second shared finding was that products linked to memorial behavior received the highest level of acceptance. In the interviews, participants often mentioned incense or objects that could continue ceremonial use. In the questionnaire, eco-friendly materials and ritual or commemorative objects ranked at the top. In the offline tests, participants immediately recognized candles and incense as suitable forms. This consistency directly shaped the later product selection. It also answered

the research question in a clearer way. Post-funeral flowers were more likely to return to meaningful use when the new object still belonged to a memorial setting.

The third shared finding was related to resistance. Across the three sources of data, the main concerns focused on source legitimacy, family consent, psychological comfort, and hygiene safety. This result suggests that the final design system could not rely on the product alone. It also needed a process. In other words, the object and the service logic had to be designed together. For this reason, the later chapter includes a closed-loop service process instead of discussing product form alone.

A fourth finding was linked to innovation. The questionnaire showed that the general public still preferred familiar memorial forms. At the same time, the offline material tests showed that some niche users responded strongly to bio-based materials with visible floral traces. This result means that the study could not depend on radical innovation alone. The study needed a balance between the new and the familiar. For this reason, the final strategy placed innovative materials inside culturally recognizable product forms. This balance became one of the main outcomes of the design development stage.

### 4.3.2 Material Safety, Physical Performance and Usage Boundaries

At this stage, the study translated the test results into clear product boundaries. The material did not determine the product by itself, but it did define what could and could not be done.

Incense sticks, incense bricks, and candles showed stable combustion performance. This result made them suitable for memorial forms that involved burning, scent release, and time-based use. Their role in the design was therefore clear. These materials could support real ritual action rather than serve only as symbolic display.

Gelatin-glycerin biocomposites showed strong texture and good formal plasticity, but their sensitivity to humidity and heat limited their range of use. For this reason, the study did not place them in products that required high load-bearing capacity or exposure to high temperatures. Instead, the study used them in smaller, indoor, and supporting forms. This decision was not only safer. It also allowed the material's visual and tactile qualities to be used more effectively. Their visible fibers, uneven surfaces, and natural traces of aging could all be understood as part of the object's emotional narrative.

Plant-dyed fabrics and related materials met safety requirements, but their connection to the funeral context remained less direct. For this reason, these materials worked more as visual and material references than as the main final product.

This step was important because it turned technical findings into design judgment. The later mapping of incense holders, incense sticks, and bead bracelets was grounded in these material limits. The final design was therefore not based on symbolic assumption alone. It responded to what each material could do in a safe and meaningful way.

### 4.3.3 Cultural Context and Theoretical Support for Design Development

After the study identified the boundaries of the materials, it further narrowed the product directions through cultural context and theoretical reflection. This step was important because a product that is technically feasible is not necessarily acceptable within a specific context. The final design needed to function within actual memorial culture. It also needed to carry theoretical significance.

#### 4.3.3.1 Cultural Context in Design Screening

The field interviews and questionnaire results showed that Chinese memorial culture still holds a strong shared ritual structure, even when respondents do not identify with a particular religion. People across different family backgrounds generally understand incense, candles, paper offerings, and related memorial actions in similar ways. These forms are not seen only as items tied to a specific religion. Instead, people read them as familiar expressions of mourning, remembrance, and ritual respect.

This shared understanding helps explain why incense-based products received strong acceptance in both the fieldwork and the survey. Participants did not need any new explanation in order to understand them. They already knew how these objects related to memory and mourning. For this reason, incense and candle forms became culturally effective choices. These forms could carry funeral floral materials into a new object without breaking the emotional and ritual logic of the original setting.

The study also found that products too far removed from memorial use could weaken the original meaning of the flowers. When a post-funeral flower is turned into an object with no visible or contextual link to remembrance, its source meaning becomes harder to recognize. This change would reduce the emotional density of the redesign. For this reason, the final design did not move toward purely decorative consumer products. The study kept the design close to commemorative and ritual behavior.

#### 4.3.3.2 Theoretical Support for Design Development

Sustainable design gave the project its ecological direction.This perspective required low-energy processing, limited use of chemicals, and a practical concern for extending the life of materials. For this reason, the final design relied on drying, grinding, plant powders, natural adhesives, and other methods with relatively low intervention, rather than highly industrial forms of transformation.

Circular economy gave the project its material logic. It allowed the study to understand funeral flowers as materials that could enter a new use system after their first ritual role had ended. At the same time, the study did not apply circular economy in a purely industrial sense. The study extended this idea toward the recreation of emotional value. In this process, the flowers did not return only as matter. They returned as carriers of memory.

Material aesthetics shaped the visible form of the transformed objects. The final design kept fibers, natural textures, slight color differences, and traces of hand-making. These features were important because they allowed the source of the material to remain legible. The design did not try to erase the flowers completely or turn them into an anonymous new surface. Instead, the design allowed part of the material's earlier life to stay visible.

Emotional design shaped both product type and mode of use. It guided the study toward products that could support mourning, companionship, and memory, rather than simple function alone. The bead bracelet followed this logic by bringing remembrance into daily bodily contact. The incense and holder set followed the same logic by turning remembrance into a time-based act of lighting, watching, and waiting.

Mono no aware provided the final aesthetic and narrative direction. This idea did not ask the design to resist disappearance. It asked the design to respond to impermanence in a gentle way. This view directly influenced formal choices such as ripple-like diffusion, soft rhythm, low-saturation color, natural irregularity, and an acceptance of slow material change over time. In this study, mono no aware was not used as decoration. It became a way of understanding how mourning could remain quiet, restrained, and continuous.

### 4.3.4 Expert Evaluation and Recommendations

The researcher presented the experimental results and the phased design samples of regenerated floral waste materials in a concentrated form during an exhibition held in November 2025.The exhibition content included solid aromatic candles, fragrance bricks and soap-based materials, fragrant bead bracelets and combustible incense sticks, as well as block-structured solids made using gelatin and glycerin as natural adhesives, flexible sheet-like thin films with different mixing ratio experimental samples, naturally dyed textiles, and plant fiber handmade paper.

Experts from relevant fields (design, materials, cultural research, and industry practitioners) at the exhibition site conducted assessments and provided feedback.

**Figure 79**

*Expert Assessment On-site Images*


*Note:Photo taken by the author*

Expert opinions mainly focused on the following aspects:

(1) On the Correlation between Cultural Context and Design

Experts generally agreed that the material experiments were rich and varied, but the final design products still needed a stronger connection with cultural background. In the context of funeral rituals, floral materials already carry clear ritual attributes and symbolic meaning. If the design focuses only on form and separates itself from that cultural context, the emotional depth of the work may become weaker.

This point became an important turning point in the later stage of the research. In response, the study adjusted its earlier path. The research no longer continued to expand into many loosely connected forms. Instead, it moved away from a broad "material display"approach and turned toward a more focused development of

“commemorative products.” Based on this adjustment, the later design direction was narrowed to product types more closely related to memorial practice, especially incense sticks, incense holders, and fragrant bead bracelets. This change also made the relationship between material origin, symbolic meaning, and product form much clearer in the later design stage.

(2) On the Issue of Cultural Taboos Regarding Funeral Floral Materials

Experts pointed out that funeral-related objects carry a certain degree of taboo and emotional sensitivity at both cultural and personal psychological levels. For this reason, the design needed to handle the context of “funeral” with care and fully consider the cultural acceptance of the target users.

This suggestion later had a direct impact on the service process design. In response, the research did not treat funeral flowers as anonymous recyclable materials. Instead, it proposed a more careful service logic. The study added an authorization stage and a voluntary selection stage before product formation. This arrangement helps reduce barriers caused by cultural sensitivity, emotional discomfort, and uncertainty about source. After this adjustment, the study moved beyond a conceptual proposal and came closer to a more workable application model.

(3) Regarding Material Durability and Stability

The experts gave close attention to the long-term stability of the materials. Their main concerns focused on durability, resistance to mold, and the safety and stability of combustible materials during burning. They also suggested that the study should include more testing data, especially on strength and safety, so that the design could show stronger reliability and better practical value.

This suggestion pushed the study to further strengthen the later material testing section. As a result, the final design was no longer supported only by symbolic meaning or conceptual suitability. It was also supported by more specific technical evidence, including combustion safety, pH value, anti-mold performance, heat resistance, and structural strength. This revision made the final product argument more complete and allowed the basis for product selection to move from “conceptually reasonable” to “materially and technically supported.”

(4) Reference Value of Funeral Gift-Giving Traditions

Experts suggested that the study could draw on “funeral gift-giving” or “memorial return gift” customs found in some regions, such as the practice in Thailand of preparing commemorative items for guests who attend funeral ceremonies. These traditions could be used as a source of design inspiration.

This suggestion also offered a new direction for the later service process design. It encouraged the study to think beyond the product itself and to consider how objects transformed from funeral flowers might enter a broader memorial service system. Because of this, the study gradually began to understand these products not only as independent design objects, but also as commemorative media that could be kept by families, given as memorial gifts, or used in specific remembrance settings. In this

way, the design extended from simple material transformation toward ritual service and memorial communication.

(5) Regarding Material Formula Labeling and Standardized Management

Experts emphasized that the formulas of the final material products should be clearly labeled in order to improve the rigor and reproducibility of the research.

To respond to this suggestion, the study added material composition tables and proportion tables in the final design section. This revision improved methodological clarity and made the relationship between the original floral materials, auxiliary materials, and final product forms more explicit. It also increased the reproducibility of the material process. As a result, the final design outcomes became more systematic both in academic presentation and in possible future application.

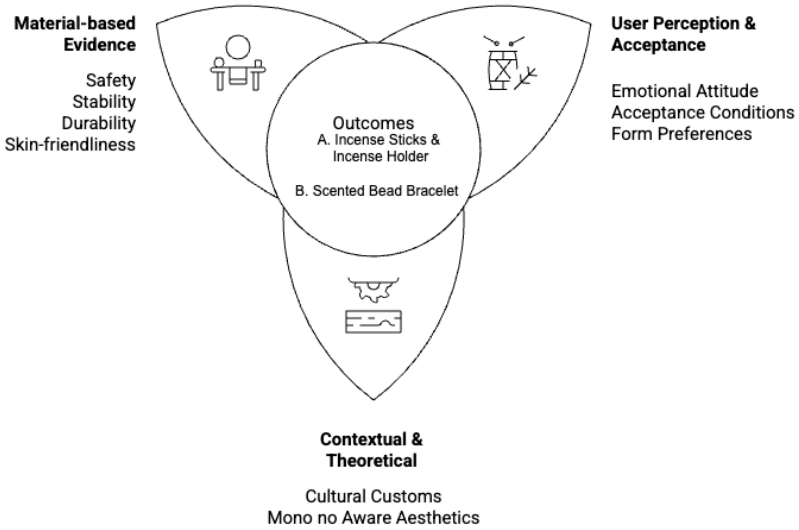
Overall, the expert evaluation did more than confirm the value of the research direction. More importantly, it revealed several gaps between material experimentation and final design development. In response to these suggestions, the study made targeted revisions in four areas. It narrowed the design direction and made it more closely tied to memorial practice. It strengthened the handling of cultural sensitivity and service logic around funeral-related materials. It added technical testing to support material feasibility and safety. It also improved the rigor and reproducibility of the design process through clearer material labeling and proportion control. Through these revisions, the study gradually moved from “material exploration” to “design argument,” and the relationship among material, meaning, product form, and user acceptance became much clearer.

### 4.3.5 Preliminary Design Proposals

Based on user attitudes, material testing results, and analysis of cultural context and aesthetic theory, and with reference to expert recommendations, the corresponding relationships between different forms and material systems were clarified, and two design schemes were ultimately determined.

**Figure 80**

*Design Derivation*




*Note:drawn by the author*

Plan A: Incense sticks and incense holders: Combinatorial Design Based on Ritual Behavior

(1) Contextual and Emotional Rationality

The research findings show that incense burning holds a highly stable cultural place in Chinese funerals and commemorative rituals. People do not only understand incense burning as a ritual act of mourning and farewell. People also understand it as a form of emotional expression that unfolds over time. Its process of ignition, burning, and gradual dissipation can be understood in a natural way as a response to transience and as a quiet act of accompaniment. This time-based quality shows a strong emotional and logical connection with the mono no aware view of impermanence and slow fading. For this reason, object forms directly linked to incense burning have a clear and reasonable contextual basis.

(2) Material Feasibility and Safety Boundaries

The material test results show that the combustible materials used for incense sticks had controllable performance in both combustion stability and safety. Under normal ventilation conditions, the materials did not produce persistent irritating odors or obvious safety risks. This result suggests that they were suitable for ritual use involving ignition.

Simultaneously, the moldable bio-based material based on Gelatin-Glycerin-Floral moldable bio-composite maintains basic structural integrity

under conventional indoor environmental conditions and meets safety requirements in terms of flame retardancy and self-extinguishing performance. However, it is sensitive to high humidity and high temperature environments and is not suitable for direct participation in combustion or bearing long-term structural loads.

(3) Usage Method and Design Orientation

Based on the aforementioned performance boundaries, this bio-based plastic material is employed to fabricate incense stick holder components, rather than serving as the primary combustible body. The incense stick holder assumes structural functions of fixing the incense body, receiving incense ash, and maintaining ritual order, with its usage context clearly confined to indoor, small-scale, non-load-bearing commemorative scenarios. On the symbolic level, the floral stem fibers utilized in the incense stick holder correspond to the imagery of "support," "belonging," and "return," enabling the incense-burning act to achieve a stable and restrained terminal point of support while completing the act of "disappearance."

Plan B: Personalized Design Form of Fragrant Bead Bracelets Based on Portable Commemoration

(1) Contextual and Emotional Rationality

In contrast to incense burning as a public or semi-public ritual behavior, research also demonstrates that certain commemorative needs tend toward more privatized and low-visibility modes of emotional continuity. As a portable commemorative object, the significance of prayer beads does not depend on public display, but rather forms sustained and gentle companionship in daily life through its close relationship with the body. This mode of "understated commemoration" exhibits structural consistency with the characteristics of restraint, moderation, and emotional internalization emphasized in the aesthetics of "mono no aware."

(2) Material Feasibility and Safety Boundary

The solid-state molding materials employed in fragrant beads demonstrate reliable performance in terms of stability and biosafety. pH value test results indicate that the values fall within the weakly acidic safety range of human skin (approximately 5.5-6.5), demonstrating that the material possesses good skin compatibility in usage scenarios such as wearing or hand-holding, and is unlikely to cause skin irritation. Meanwhile, this category of materials maintains stable morphology in conventional environments and does not involve combustion processes, thereby reducing usage risks.

(3) Usage Method and Design Orientation

Based on the material features and safety results described above, the study defined the fragrant bead as a commemorative object that could be worn or kept close to the body. Its role was not to replace ritual action. Instead, its role was to extend remembrance from a fixed time and place into everyday life through the slow release of fragrance. In this way, the object formed a gentle and interruptible emotional connection. This mode of use avoided strong emotional stimulation and better matched the practical needs of long-term, companion-like commemoration.

### 4.3.6 Design Composition and Sketch Development

This design was developed within the context of Chinese traditional sacrificial and commemorative practices. The study brought together findings from fieldwork and questionnaires, material testing results, cultural meaning, and aesthetic ideas. The final outcome was a product series that included incense sticks, incense holders, and incense beads.

1. Theoretical and Cultural Foundation

The design concept was built on two main foundations.

Cultural context and acceptance:

The questionnaire results were largely consistent with the funeral customs found in many regions of China. In the Chinese traditional context, objects such as incense and incense beads are naturally linked to sacrifice and commemoration. These forms already carry broad recognition and clear ritual meaning. For this reason, the design products had a relatively strong basis for public acceptance.

Mono no aware aesthetics:

This design treated the product life cycle and the process of use as expressions of impermanence. The burning of incense, the fading of flowers, and the passing of human life all share a deep internal connection. Burning incense, in itself, is a visible form of transience. This quality fits well with the mono no aware view that subtle beauty and deep feeling can emerge from the fleeting nature of life and things.

2. Design Products and Material Basis

The material choices and formal design of these products were both supported by the material testing results and by the related cultural meanings.

Plan A: Incense sticks and incense holders: Combinatorial Design Based on Ritual Behavior

Material composition:

The incense sticks were made from dried petal powder, other plant-based powders, and Nanmu wood powder.

The incense holder was made from a mixture of floral rhizome material, gelatin, and glycerin.

Functional positioning:

This design was intended as a combustible incense set for commemorative, sacrificial, and related ritual settings.

Design significance:

In the incense sticks, the flower petals gradually changed form during burning and finally turned into smoke that dispersed into the air. This process symbolized the movement of life and the beauty of impermanence. The burning out of incense, the fading of flowers, and the ending of human life all shared a similar sense of time and irreversibility. The incense holder was made from the rhizome parts of flowers. As the incense ash slowly fell into the holder tray made from rhizome material, the process

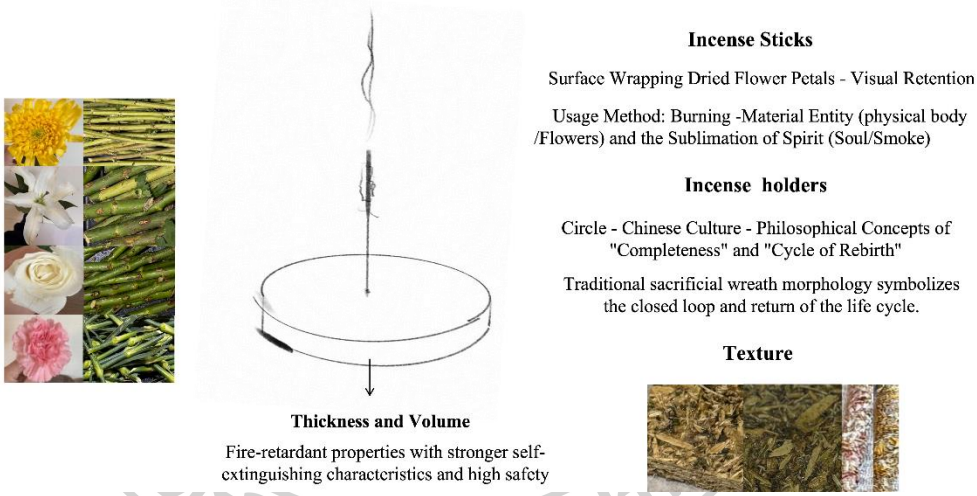
suggested a return to the earth and an integration into the cycle of nature. The texture of the rhizome and its plain natural quality reduced the sense of industrial processing. At the same time, these features responded to the mono no aware preference for naturalness, simplicity, and the quiet beauty of life's passing.

Material testing basis:

The material tests showed that the main combustible components of the incense sticks did not release harmful substances, which supported their environmental friendliness and safety during use. The incense holder material also showed good performance in heat resistance and self-extinguishing behavior under dense structural conditions. This result suggests that the holder was unlikely to deform during normal daily use and had a relatively high level of fire safety. At the same time, the pH test results showed that the material was safe for skin contact and non-toxic.

**Figure 81**

*Preliminary Sketch*




*Note:Photo taken by the author*

In the initial concept of the incense and incense holder, the design took the act of lighting incense in Chinese traditional sacrificial rituals as its starting point. On this basis, the study developed a basic combined form made up of stick incense and a circular incense holder. The materials came from flowers commonly used in funeral ceremonies. The incense sticks were made from a mixture of petal powder and natural plant-based adhesive powder. The incense holder mainly used gelatin as the binding material, with added flower stems and petal fibers for shaping. This material structure allowed the holder to keep a certain degree of strength while also preserving the texture of natural materials. Through this system, the design formed an initial connection between ritual behavior, material source, and symbolic meaning.

In the sketch stage, the incense holder took on a relatively simple disc form, with the incense stick placed vertically at the center. The overall structure was clear and symmetrical. This arrangement emphasized a stable and complete visual impression.

The circular form also created an early symbolic link through its sense of cycle and return. At this stage, the design focus remained mainly on the correspondence between material and meaning. The design had not yet moved into a deeper exploration of formal language or structural transformation.

For this reason, this phase was mainly concerned with concept building and material integration. It laid the groundwork for later adjustments and refinements in base form, structural organization, and overall expression.

Plan B: Personalized Fragrant Bead Bracelet

A portable form of commemorative design

Material composition:

The fragrant beads were made from chrysanthemum powder, carnation powder, lily powder, rose powder, other fragrant plant powders, and Nanmu wood adhesive powder.

Functional positioning:

This design was positioned as a wearable ornament that could act as a carrier of remembrance.

Design significance:

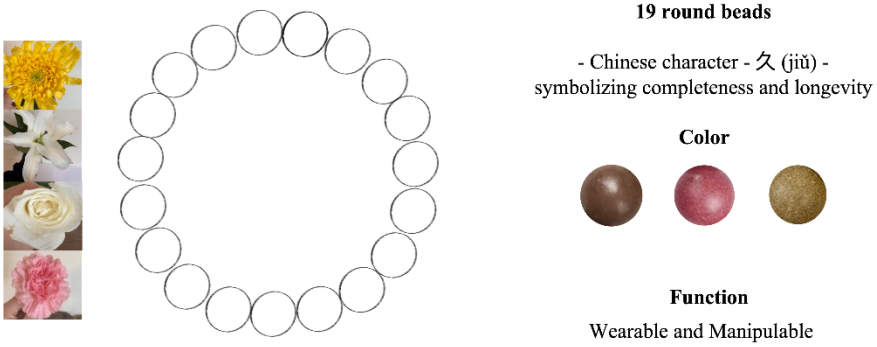
The fragrant beads were shaped in a traditional circular form. This form echoed the Chinese cultural understanding of wholeness, circulation, and continuity. As the wearer's body temperature changed, the fragrance of the beads also shifted in subtle ways. This slight and irreversible change resonated with the mono no aware sensitivity to the passing of time. The beads also kept a natural and plain appearance, which helped avoid an industrial visual effect.

Material testing basis:

The fragrant beads showed good structural stability in the wearing tests

**Figure 82**

*Preliminary Sketch*




*Note:Photo taken by the author*

In the initial concept stage of the fragrant bead bracelet, the overall structure was made up of 19 beads of the same size connected into a closed loop. The design used number symbolism and material color to establish its commemorative meaning. The spherical bead form was chosen as the basic shape. On one side, this form expressed

the idea of circulation and return. On the other side, it also echoed the wreath form often seen in traditional Chinese commemorative rituals. In terms of cultural meaning, the number 19 was linked to the pronunciation of the Chinese character“久”(jiǔ), which suggests duration and continuity. This numerical choice therefore strengthened the expression of remembrance.

At the material level, the beads were mainly made from petal powder taken from flowers commonly used in funeral ceremonies, mixed with natural plant-based adhesive powder. The color of the beads came directly from these floral materials. This choice helped maintain consistency between the material source and the ritual context, and it also created a direct connection between the physical material and its symbolic meaning.

From the perspective of form, this stage adopted a fully symmetrical and evenly repeated arrangement. The overall structure was relatively regular, and the visual hierarchy remained quite simple. At this point, the design meaning depended mainly on the symbolism of the number and the source of the color. The design had not yet developed a deeper exploration of formal variation or narrative rhythm. For this reason, this version should be understood more as a stage of concept proposal and material logic building than as a fully mature design scheme. At the same time, it provided a foundation for later development in formal hierarchy and structural relationships.

**4.3.7 Design Iteration and Sketch Evolution**

Plan A: Incense Sticks and Incense Holders

A combined design based on ritual behavior

(1) Radial Structure: Order and Functional Zoning

After the initial concept was established, this stage moved into a more concrete development of the incense holder structure. In the early sketches, the base of the incense holder took a simple disc form. This structure was stable, but the surface appeared too flat. The overall visual rhythm was also rather single. At the same time, the spacing between incense sticks was not clearly controlled, and the functional zones were not clearly defined. Because of these issues, the later design adjusted the structure of the base.

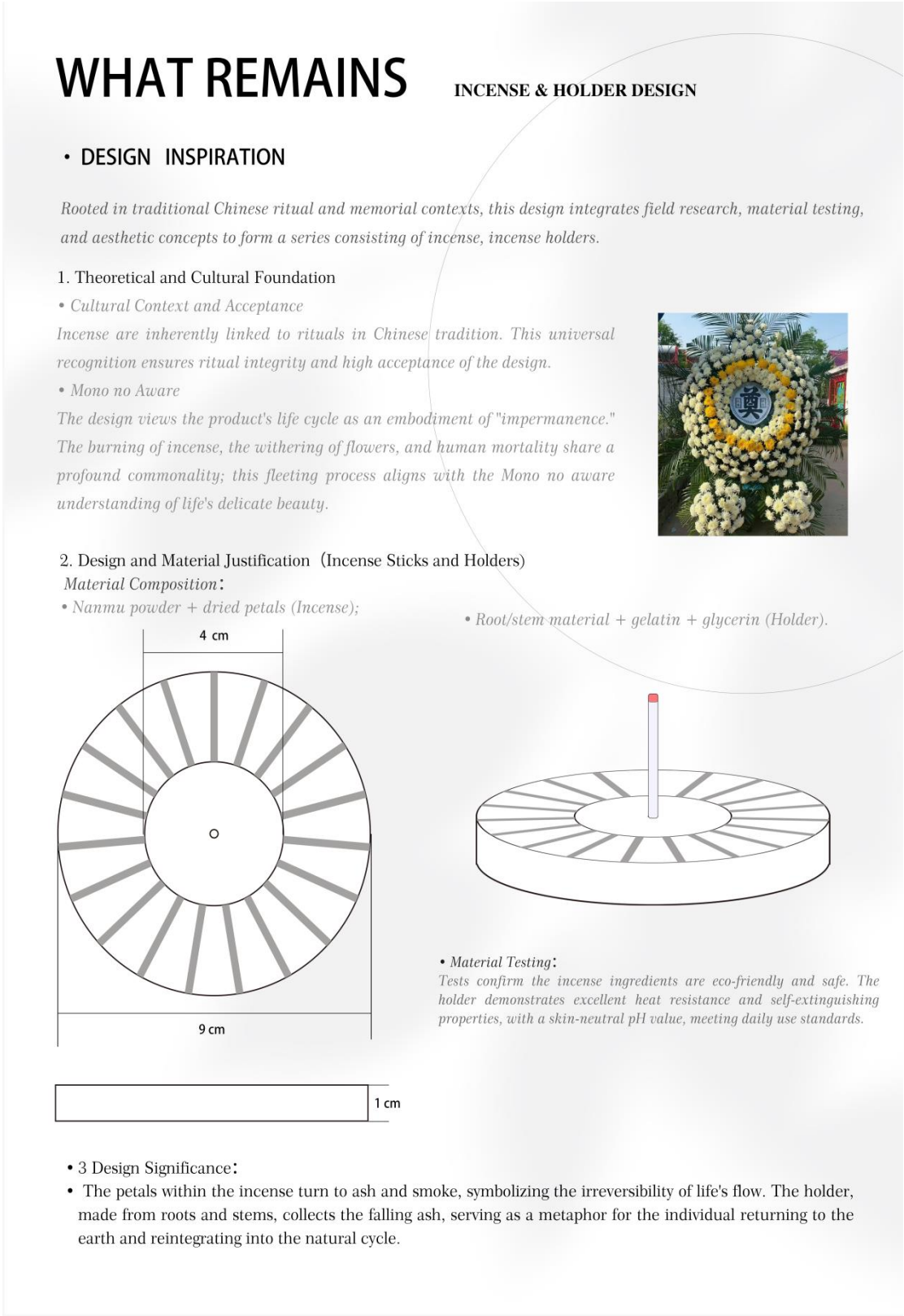
In the revised scheme, the design introduced a radial segmented structure into the inside of the base. This change added layers and rhythm to the originally flat surface. It also created clear areas for placing the incense sticks. In the figure, the shaded parts indicate the grooves used for holding the incense sticks. Through the radial arrangement, the design increased the spacing between incense sticks and also created a structural order that visually expanded outward. In this way, the design brought function and form into closer alignment.

At the same time, the design established a proportional relationship between the length of the incense stick and the diameter of the base, as shown in the figure. This

step helped define the overall size and the practical scale of use. It also allowed the design to move gradually from conceptual expression to a stage closer to actual making and use. In addition, the thickness of the base became part of the structural design. This adjustment helped ensure that the material had the basic stability needed for load-bearing and heat resistance.

**Figure 83**

*Iterative Version 1*




*Note:Photo taken by the author*

(2) Introduction of a Temporal Structure: Inclination and Sundial

In addition to the circular radial structure, this stage introduced a new spatial idea. The incense holder took on a slightly inclined overall form, drawing inspiration from the sundial. In this design, the burning incense stick was no longer treated only as a vertical element. Instead, the design understood it as a kind of pointer of time.

The groove structure was still used to hold the incense stick in place, but in this version, it was also treated as the central axis of time measurement. As the incense stick gradually became shorter during burning, the ash naturally slid down the inclined surface and slowly collected there. In this way, the ash left visible traces.

As the burning continued, the ash became a material way of recording time. Time was no longer treated as an abstract idea alone. The design made time visible through the gradual accumulation of ash. This scheme turned the burning process into a direct expression of passing time, and it further strengthened the metaphor of the irreversibility of life.

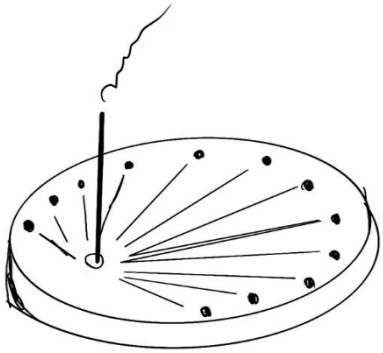
**Figure 84**

*Solar Corona in Ancient China*

*Note:Image source from Google*

**Figure 85**

*Iterative Version 2*



*Note:Photo taken by the author*

(3) Circle and Spiral: A Moving Path Within Circulation

The base kept its circular outer contour, but the inner structure changed from a flat disc into a spiral form. In this design, the circle represented wholeness and circulation, while the spiral suggested a path that unfolded from within the circle.

Spiral forms are widely found in nature and in the universe. Similar structures can be seen in rotating galaxies, curling plants, and even in parts of the human body. The spiral has also appeared as an ancient symbolic form in many civilizations, where it often represents the continuous movement of life, energy, and time.

By placing the spiral inside the circular base, the design kept a complete outer boundary while creating a sense of movement within the structure. The incense stick was placed at the center. As it burned, the ash extended outward along the spiral path. In this way, the design responded to the cycle of emergence and dissipation that exists in nature.

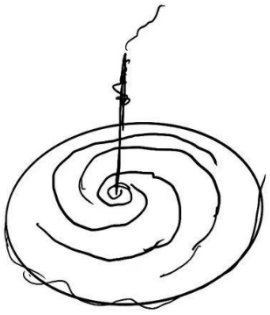
**Figure 86**

*M51 Whirlpool Galaxy*

*Note:Image source from Google*

**Figure 87**

*Iterative Version 3*



*Note:Photo taken by the author*

(4) Wave Structure: Rhythm and Undulation

Beyond the exploration of geometric paths, the design moved toward a more natural expression of rhythm. In this stage, the base changed into a wave-like structure, with more emphasis on undulation and rhythmic variation. In this design idea, life was understood as being like waves. At times it was calm and quiet, and at other times it was intense and rising, but it always remained in motion. For this reason, the wave form became a metaphor for the course of life. Through this wave-based structure, the base gained a stronger sense of movement and also pointed more clearly to the flow and impermanence of life.

The outer edge and inner structure of the base both adopted wave-like curves. The incense sticks were placed near the raised parts of the waves. During burning, the ash fell into the undulating structure and formed a natural pattern of accumulation.

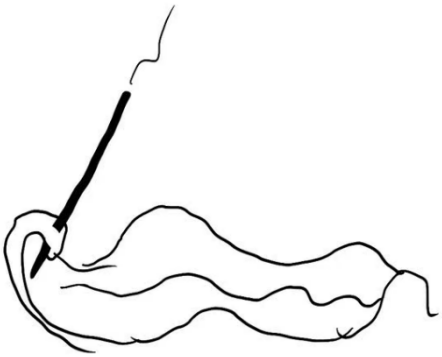
**Figure 88**

*The Wave*

*Note:Image source from Xiaohongshu ID JOJOSendoh*

**Figure 89**

*Iterative Version 4*



*Note:Photo taken by the author*

(5) Ellipse and Ripples: Diffusion and Dissipation

Based on the original circular structure, the design further adjusted the base into an elliptical form. The circle had emphasized completeness and closure, while the

ellipse kept the central structure but added a clearer sense of direction. Because of this change, the overall form gained a stronger feeling of extension.

The inspiration for this adjustment came from water ripples. Ripples spread outward from a central point and gradually form layered paths. In this design, the lines inside the base unfolded around the center where the incense stick was placed. As the incense continued to burn, the falling ash corresponded to these expanding textures.

The appearance and disappearance of water ripples carry a sense of transience and irreversibility, so they became a metaphor for impermanence. In this view, the existence of all things can be understood in a similar way. They emerge, expand, and then slowly fade. Through this transformation of the base form, the design moved from a focus on stable structure toward an expression of process. The design placed more emphasis on change and gradual dissipation within time.

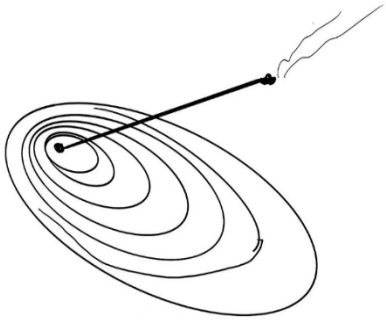
**Figure 90**

*The Wave*

*Note:Image source from Google*

**Figure 91**

*Iterative Version 5*



*Note:Photo taken by the author*

Plan B: Personalized Fragrant Bead Bracelet

A portable form of commemorative design

(1) Development of a Structural Coding System

After working from the initial sketches, the researcher found that the early design relied too much on a single structure of 19 equal-sized beads and on color difference

alone to express meaning. This approach was not enough to carry the complexity of an individual life experience. The form was too regular, and the symbolic layer was too limited. As a result, the memorial meaning stayed at a general symbolic level and lacked structural depth and narrative hierarchy.

Because this design used regenerated funeral floral materials as its material base, its main purpose was not to create a decorative ornament. Its purpose was to offer the living a medium through which they could recall and commemorate the life path of the deceased. For this reason, the design began to move away from a single symbolic expression and toward the development of a structural coding system. This shift allowed the bracelet to carry a clearer narrative logic and a more layered emotional structure.

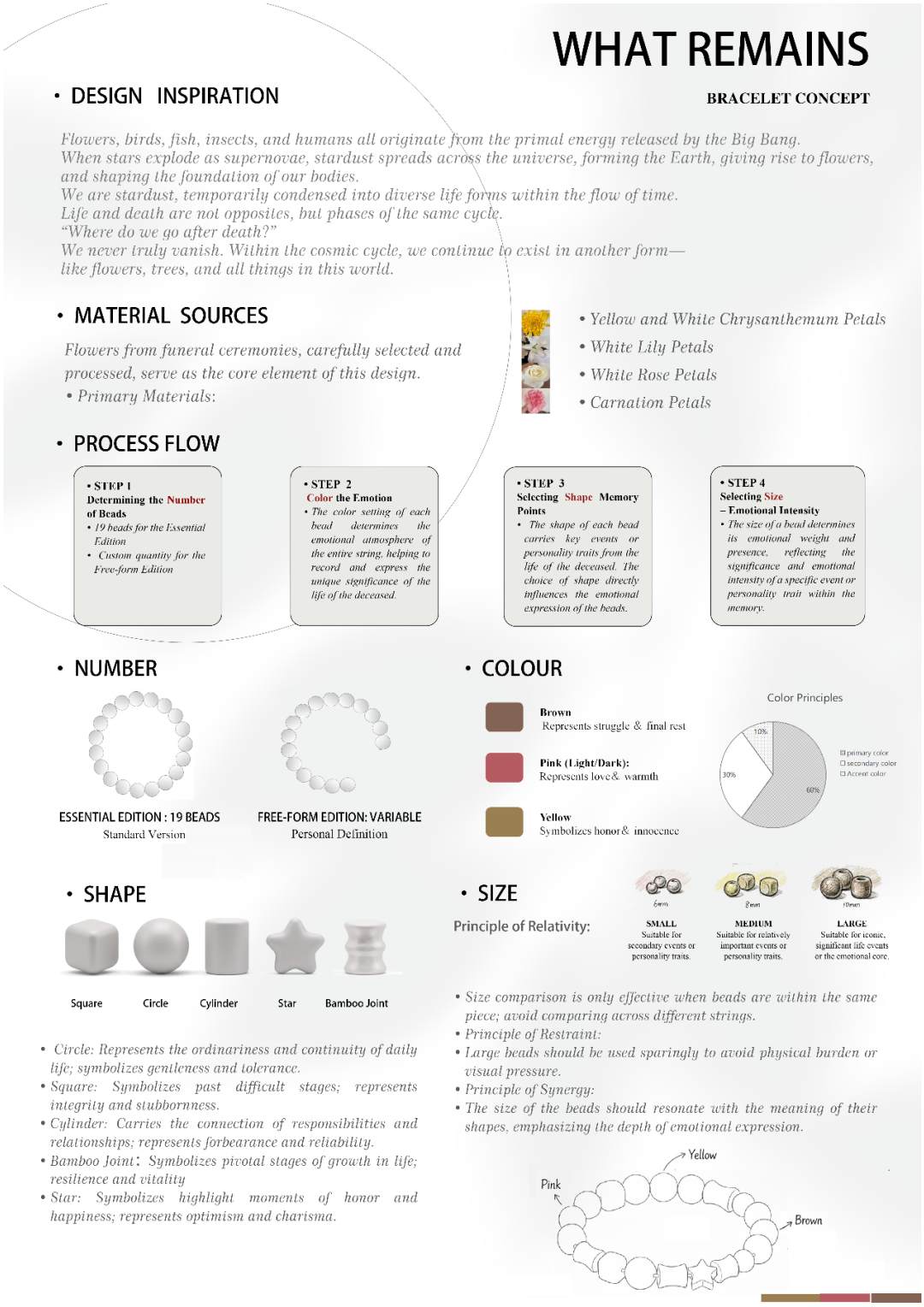
At this stage, the fragrant bead bracelet was redefined as a visual model of life structure. The design established four dimensions of expression: quantity, color, shape, and size. Through these four dimensions, the beads could do more than hold symbolic meaning. They could also form a memory structure that could be reorganized.

In this system, the quantity dimension included both a standard version of 19 beads and a flexible version with adjustable bead numbers. This choice responded to the need for both completeness and individual variation. The color dimension corresponded to emotional tone and helped strengthen the overall atmosphere of the bracelet. The shape dimension introduced symbols of important life moments and gave the structure a clearer hierarchy of events. The size dimension expressed emotional weight and the intensity of memory, which also created variation in visual rhythm.

Through this change, the bracelet shifted from a single commemorative object into a memory system that could be selected, arranged, and combined. Beads of different shapes, sizes, and colors came to represent fragments of a life path. In this way, commemoration moved beyond abstract symbolism and became a structured expression of individual life stages.

**Figure 92**

*Iterative Version 1*




*Note:Drawn by the author*

(2) Exploration of De-regulation and Rhythm Reorganization

After the coding system was established, the bead structure already carried a clear symbolic logic. Differences in quantity, color, shape, and size created distinct layers within the bracelet, which allowed commemorative meaning to be expressed in a more structured way. Even so, the overall arrangement still kept a strong sense of regularity and order. The distribution of the beads remained balanced in both number and spacing, so the whole structure appeared stable and restrained.

This kind of rule-based arrangement helped maintain visual stability, but an overly neat and symmetrical structure also created a somewhat mechanical character. Because of this, the design remained closer to rational coding than to emotional rhythm. The bracelet still lacked a stronger sense of time, flow, and change. In this state, the structure stayed at some distance from the mono no aware sensitivity to impermanence, incompleteness, and the passage of time.

At the same time, the researcher raised a further question while reflecting on the bead structure. If the bracelet was not only a formal combination of beads, but also a commemorative medium for carrying and revisiting the life experience of the deceased, then could its structure begin to express the narrative relationship of life memory?

In the early scheme, the beads were arranged in a relatively dense way, and the overall form was closer to a decorative composition. This kind of uniform arrangement could not show the layered differences among different memory points. It also could not express the changing rhythm within a life experience.

Based on this issue, the design focus in this stage shifted toward a less regular structure and a clearer sense of rhythm. One change appeared in the adjustment of quantity and spacing. The bead arrangement was no longer fully controlled by fixed numbers and equal distances. By increasing the distance between certain beads, the design introduced pauses and blank space into what had once been a dense and continuous arrangement. This spatial change moved the structure away from a closed and compact state and toward a more open one. It also allowed each bead unit to be seen more clearly as an individual element, which strengthened its role as a memory node. At the same time, the empty intervals between beads suggested the passage of time, so the structure gradually shifted from a decorative arrangement toward a narrative form with temporal meaning.

Another change appeared in the adjustment of basic geometric forms. Shapes such as circles and squares were given slight visual variation. They no longer appeared as completely standardized geometries. This change reduced the sense of mechanical regularity and strengthened the natural quality of the material itself.

A third change appeared in the rearrangement of beads with different sizes and forms. Through this adjustment, the overall structure developed a more uneven and interrupted rhythm. The contrast among different bead forms created a visual rhythm

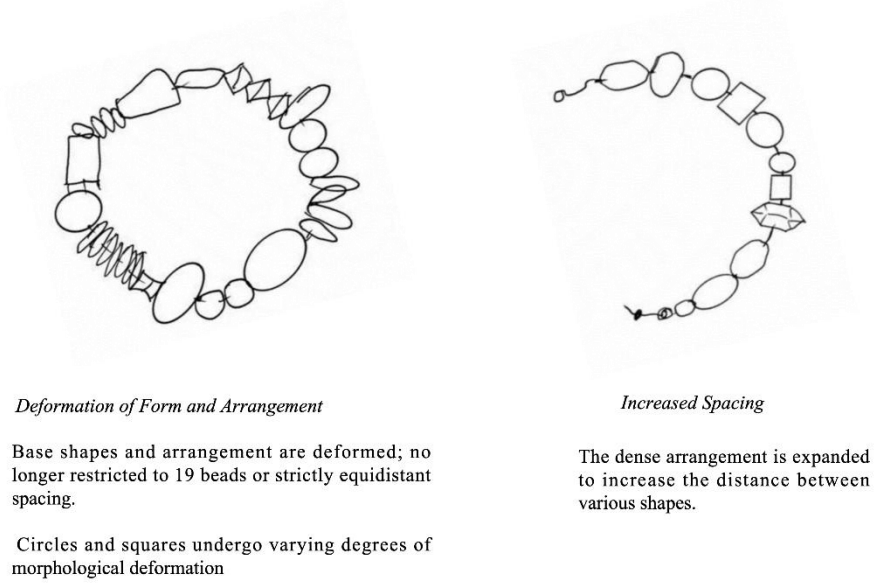
closer to the flow of time. In this way, the bracelet more clearly expressed the idea of a life path.

In this structure, smaller beads and knotted forms were introduced as linking and transitional elements between different memory nodes. Larger beads, or beads with more distinctive forms, were used to represent important life events or personal traits. These elements then formed a sequence of connections across different nodes. Through this method, the bead string gradually changed from a simple formal combination into an expression of life trajectory with temporal order and layered relationships. As a result, when the wearer touched or looked at the bracelet, the structure could be understood as a memory path extending from the past to the present.

It is important to note that the adjustments made at this stage changed only the formal expression of the structure. The changes did not alter the symbolic meanings of the original coding system. In this sense, deregularization was not a rejection of the earlier system. Instead, it was a reorganization of rhythm and structure carried out while preserving the original symbolic meanings. Through this shift, the bracelet moved from being a simple combination of symbols to becoming a commemorative structure with temporal narrative and emotional layers.

**Figure 93**

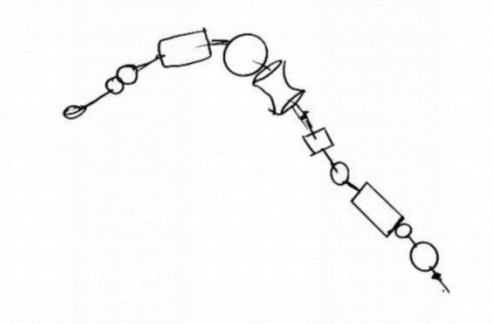
*Iterative Version 2*




*Note:Drawn by the author*

**Figure 94**

*Iterative Version 3*



*Note:Drawn by the author*

(3) Introduction of a Life-Path Structure: Knotted Recording

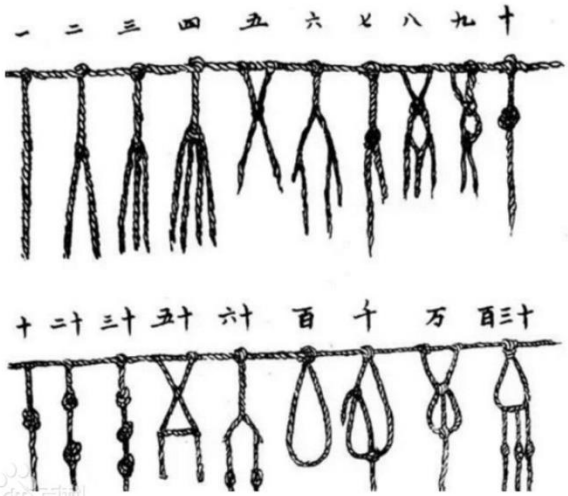
After completing the stage of de-regularization and rhythm adjustment, the design moved to a further question. If the bead string was not only a formal combination, but also a symbolic expression of life experience, then could its structure be understood as a way of recording?

Based on this question, the researcher turned to the structural logic of knotted-cord recording as an important design reference.

Knotted-cord recording was one of the early ways humans used to record events before writing systems appeared. Different kinds of information could be expressed through differences in the size, number, and order of knots. Related descriptions can be found in ancient Chinese texts such as the Yijing and the Zuo Zhuan. Similar ideas can also be seen in the Incan quipu system, which recorded quantity and events through different knot forms. Although these systems came from different cultural backgrounds, they shared two basic features. One feature was the use of formal difference to build hierarchy. The other feature was the use of connected structure to form a sequence in time.

**Figure 95**

*Knotted String Record-Keeping*




*Note: https://baike.baidu.com*

This logic of recording offered a new way to understand the structure of the bead string. The design no longer focused only on the shape of each individual bead. Instead, the design treated the overall arrangement of the bead string as a symbolic record of life trajectory.

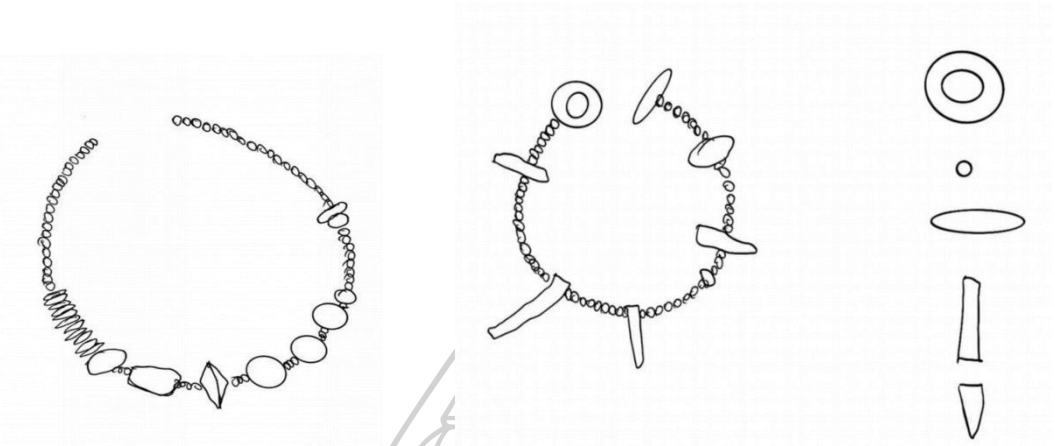
In this structure, small beads and knotted forms were used as connecting and transitional elements. These structural sequences linked different memory nodes. Larger beads, or beads with more distinct forms, were used to represent important life stages or key events. In this way, the design built sequential connections among different nodes.

Through this method of organization, the bead string was no longer just a simple formal combination. It gradually became an expression of life trajectory with temporal order and layered relationships. The rhythmic changes between beads-from small to large, and from continuous to discontinuous-made the overall structure closer to the narrative pattern of human life experience.

The adjustments made at this stage did not change the symbolic meanings carried by the original forms. Instead, the design reorganized the arrangement and gave the bead string a structure that moved closer to a model of memory recording.

**Figure 96**

*Iterative Version 4*



*Note:Drawn by the author*

(5) Material Expression and Natural Irregular Form

Starting from the idea of knotted recording, the researcher continued to reflect on how the beads themselves should be expressed. If the bead string was understood as a symbolic record of life experience, then the question became whether its form still needed to remain within a strictly unified geometric system.

Basic forms such as circles and squares can help build a clear symbolic structure and keep the overall order of the bracelet. Even so, highly unified geometric forms can also create a mechanical and standardized visual effect. When this happens, the life path represented by the bracelet may appear too regular and too predictable.

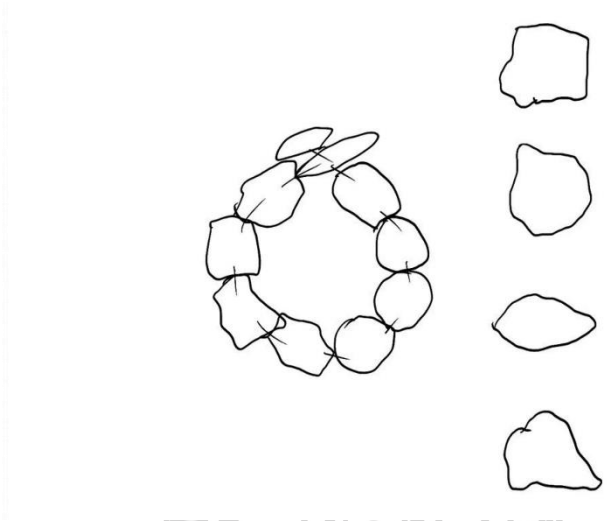
Actual life experience is often marked by chance, change, and uncertainty. Its course does not fully follow rational order. For this reason, the design at this stage deliberately weakened the strict unity of geometric form and allowed the beads to appear in a more natural material state.

In practice, the beads were shaped through hand-pressing. Because of this process, the outer contours of the beads showed slight variation and natural irregularity. The final forms no longer depended entirely on standard geometry. Instead, they kept their basic formal identity while also showing fine differences produced by the material itself.

This non-uniform and non-standardized expression had two effects. On one side, it strengthened the natural quality of the material. On the other side, it suggested the uncertainty and unpredictability found in life experience. The small differences between individual beads allowed the bracelet to keep its memory-recording structure while also presenting openness and change.

Through these adjustments, the bead structure developed a dual mode of expression. On one side, the arrangement of different beads formed a symbolic record of life experience. On the other side, the irregularity of material and form responded to the uncertainty and change that belong to life itself.

**Figure 97**
*Iterative Version 5*



*Note:Drawn by the author*

### 4.3.8 Design Refinement Based on User and Expert Feedback

In the early stage of the research, the study first carried out small-scale material assessment and testing. Through material displays, questionnaires, and interviews, the study collected information on participants acceptance of regenerated funeral floral materials, as well as their views on possible product forms, contextual suitability, and concerns about use.

Later, during the exhibition stage, the study presented a concentrated display of phased material experiment results and preliminary design samples. The study also collected expert feedback and suggestions during the exhibition. Based on the views gathered from these two stages, the study made corresponding revisions and adjustments in the later design development. These changes involved product direction, the limits of material application, cultural expression, formal language, and the way material arguments were presented.

The relevant feedback and its influence on later design revision and iteration are summarized in the following table.

**Table 31**

*The Impact of User Feedback and Expert Suggestions on Design Revision and Iteration*

| Feedback Source | Main Feedback Content | modification |
|---|---|---|
| Preliminary Material Assessment Test | Participants generally considered candles and incense to be the forms most easily accepted within the context of funeral memorial objects or memorial scene supplies. The main reason was that these objects already have a natural connection with sacrificial rituals, incense burning, and offering practices in Chinese culture. | The study then placed greater focus on product types that were directly connected with memorial, sacrificial, and commemorative practices. |
| Preliminary Material Assessment Test | Some participants believed that bead-based products had stronger commemorative value and better wearability. They felt that these products could extend remembrance from ritual space into everyday life. | The study retained and further developed the direction of fragrant bead bracelets. The later design also placed more emphasis on portability, tactile qualities, and individualized commemorative expression. |
| Preliminary Material Assessment Test | The gelatin–glycerin bio-based material with added plant matter attracted attention because it showed strong plasticity and could be formed into a wide range of shapes. | The study added further material testing and clarified the boundaries of later application. |
| Preliminary Material Assessment Test | Participants were mainly concerned with two issues. They wanted to know whether the material would develop mold, as fresh flowers often do. They also wanted to know whether the material could remain stable over a long period in a home setting. | The study added more content related to material testing, environmental stability, preservation, and the limits of use. |

| | | |
|---|---|---|
| Exhibition Phase Expert Recommendations | The final design still needs to build a stronger connection with its cultural background, especially with the ritual context of funeral practice. | The study placed further emphasis on product types that were directly linked to memorial, sacrificial, and commemorative practices |
| Exhibition Phase Expert Recommendations | Funeral-related objects carry cultural taboo and emotional sensitivity. For this reason, their forms of expression need to be handled with care. | In the later service design, the study should establish a stage of prior authorization and voluntary choice. This stage would allow users to decide for themselves whether they wished to join the service. In this way, the design could reduce barriers to acceptance caused by cultural taboo and emotional sensitivity. |
| Exhibition Phase Expert Recommendations | The study should add further testing criteria related to material durability, resistance to mold, and fire safety performance. | The study expanded the material testing section and incorporated these results into the basis for matching product types with material systems. |
| Exhibition Phase Expert Recommendations | The study should clearly indicate the material formula and the method of composition. This step would help improve the standardization of the research and strengthen its reproducibility. | In the final design stage, the study added material composition tables, ratio tables, and related explanations. These additions helped strengthen the rigor of the research argument. |
| Exhibition Phase Expert Recommendations | The study may draw on the tradition of return gifts at funerals, as well as other commemorative gift-giving practices, as possible points of reference. | In the service process design, the study should introduce the logic of commemorative gifting. In this way, the redesigned products can be placed within the context of family keeping or the distribution of memorial objects. |

*Note:Drawn by the author*

### 4.3.9 Final Design Outcomes

At the final design stage, this study further clarified an overall design logic based on the relationship between material performance, product form, and symbolic meaning. The earlier material experiments showed clear differences among regenerated funeral floral materials in terms of plasticity, stability, heat resistance, combustion compatibility, tactile quality, and preservation. These differences directly shaped the kinds of product forms and use contexts that each material could support.

At the same time, funeral flowers are materials with a clear ritual origin. They also carry emotional meanings related to farewell, mourning, and remembrance. For this reason, the final design did not treat the process simply as turning materials into objects. Instead, the study selected product forms that could continue the contextual meaning of the materials while also respecting their physical properties. In this way, the design established a more unified relationship among material character, mode of use, and symbolic expression.

Based on this logic, the study finally developed two categories of commemorative products according to the performance of different material systems. One category was the incense stick and incense holder set. The other category was the fragrant bead bracelet. These two product types responded to different forms of commemorative behavior and different needs of emotional expression.

**Table 32**

*Selection Table of Materials and Conversion Methods*

| **Material Sources and Transformation States** | **Flower petals are ground into pollen after desiccation and then compounded with plant fragrance powder.** | **Floral Stems and Petals Fibers Combined with Gelatin-Glycerol System to Form Biocomposite Materials** | **Plant-dyed textiles, flower fiber paper** | **Sealing materials such as candles, incense bricks, and soap bases** |
|---|---|---|---|---|
| Adaptation Product Direction | Incense Sticks/Incense Beads | Incense Stick/Incense Holder | Auxiliary Material Language | / |
| Main Material Characteristics | Flammable/slow-release fragrance, | Plastic-formable, with fibrous texture, suitable for small-scale indoor | Visual softness, natural tactile sensation, but weak directional indication of | Technically feasible, but the symbolic reference between it and the final form is |

| | | | | |
|---|---|---|---|---|
| | | structures | commemorative behavior | relatively general. |
| Symbolic Meanings in Funeral Contexts | Farewell, Ritual Commemoration, Dissipation, Transformation, Emotional Release/Continuation, Companionship, Private Remembrance | Support, Belonging, Return, Sustenance | Visual Atmosphere | General Commemorative Association |
| Cultural Context Adaptability | √ | √ | — | △ |
| Emotional and Memorial Expression | √ | √ | △ | △ |
| Material Feasibility and Safety | √ | √ | √ | √ |
| Theoretical Support Matching Degree | √ | √ | △ | △ |
| Usage Scenarios and Application Boundaries | √ | △ | △ | △ |
| Screening Results | Retained | Retained | Not selected | Not selected |

*Note:drawn by the author*

*✓ indicates strong correspondence，△ indicates partial correspondence.*

*— indicates weak correspondence*

**Table 33**

*Correspondence Table of Material Properties, Product Forms, and Symbolic Expression*

| Materials | Key Material Properties | Product Form | Corresponding Usage Scenarios | Symbolic Expression |
|---|---|---|---|---|
| Floral Material Fragments and Gelatin-Glycerin | Fiberiness, plasticity, drying stability, certain load-bearing capacity and heat resistance boundary | Fragrance Insertion | Incense Bearing in Commemorative and Ceremonial Contexts | The design used the ripple form as its main visual language. Through layered textures that spread outward from the center, the design turned the flow of time and the movement of life from fluctuation to calmness into a visible spatial expression. The surface kept the natural texture of plant fibers and bio-based materials. Over time and under different conditions of use, the object could also show slight changes in color and form. In this way, the object continued to reveal traces of natural aging and the gradual accumulation of time. Through the processes of burning, shortening, turning into ash, and releasing fragrance, the transience already present in floral materials was further transformed into a perception of life's impermanence, the passing of emotion, and the continuity of remembrance. As the incense kept changing and finally disappeared during use, its material transformation became part of the commemorative act itself. In this way, dissipation became a symbolic expression that could be directly perceived. |
| Petal Powder and Plant Fragrance Powder, Wood Powder System | Grindability, Flammability, Combustion Compatibility, Aroma Diffusivity | Incense Sticks | Incense Burning in Remembrance, Daily Commemoration, Scenes of Quiet Contemplation | |

.

| | | | | |
|---|---|---|---|---|
| Petal Powder and Plant Fragrance Powder, Wood Powder System | Shape-plastic structure stability, tactile quality, wearing adaptability, preservation | Fragrant Bead Bracelet | Daily Wearing, Continuous Touching, Individualized Commemoration | Taking knotted memory as its core idea, the design turned individual life experience into a tangible narrative structure through a coding system of shape, color, and size, together with the combination of different bead forms. In this system, circular, square, triangular, bamboo-joint, star-shaped, and irregular beads corresponded to different life stages, emotional moments, and memory types. Because of this, the bracelet did more than function as a wearable object. It also became a readable form of life writing. At the same time, the natural fragrant beads changed slowly through long-term wearing, touch, body temperature, and exposure to air. These conditions gradually affected their color, luster, and surface texture. As a result, the beads continued to transform over time. This slow change further expressed the accumulation of memory and the quiet presence of emotional companionship. |

*Note:Drawn by the author*

#### 4.3.9.1 Final Design of Incense Stick and Incense incense holders

After completing the formal exploration in Plan A, “Incense Stick and Incense Holder Design Based on Ritual Behavior,” this study finally selected the ripple form as the final design of the incense holder. The study chose the incense holder as one of the final outcomes of this material system for more than one reason. On the practical side, the holder could support the act of burning incense and meet the needs of commemorative use. On the expressive side, the holder, as a supporting vessel, could bring together material qualities, ritual action, and the symbolism of time within one unified design.

The form drew its inspiration from ripples on the surface of water. Through textures that spread outward from the center, the design expressed the relationship between time and the flow of life. In this sense, the ripple structure was not simply a

visual imitation of a natural form. Instead, it worked as a symbolic translation of life process and commemorative context, built on the practical condition that the product must be able to support the burning of incense.

In the aesthetics of mono no aware, emotion often begins with an awareness of transience and of the process through which things gradually disappear. Ripples on water begin from a central point and spread outward. As they move, they slowly weaken and finally return to stillness. This process can be read as a parallel to life itself, moving from emergence to extension and then to disappearance. For this reason, the ripple structure is not only a visual form. It also becomes a symbolic expression of time and the impermanence of life. The layered textures create a soft and continuous rhythm. As a result, the surface of the base shows a restrained and orderly undulation. This quiet and inward formal language responds to the emphasis on emptiness, silence, and reflection in Eastern aesthetics. It also allows the incense holder to do more than support incense sticks. The holder becomes a spatial medium through which commemorative behavior can carry emotional sediment and a sense of time.

At the material level, this study mainly selected yellow chrysanthemums, white chrysanthemums, white roses, white lilies, and pink carnations that are commonly found in funeral settings as its core source materials. The preliminary material experiments showed clear differences among these flowers in color, scent, fiber condition, and molding behavior. For this reason, the study did not use them simply as decorative elements. Instead, the study introduced them into two different product systems-incense holders and incense sticks-according to their material properties. Some floral fragments showed good stability and strong fiber qualities after drying. These materials were suitable for shaping in combination with a gelatin-glycerin system, so the study used them in the making of incense holders. Other petal materials, after drying and grinding, could blend effectively into wood powder and incense powder systems and still maintain a certain level of combustion compatibility. The study therefore used these materials in incense stick production. In other words, the pairing of incense holders and incense sticks was not arbitrary. The pairing was based on the actual differences in material performance.

On this basis, the study designed and produced three types of incense sticks in different colors and four categories of linear incense according to the original color and scent characteristics of different floral materials. After processing, the floral materials still retained natural color variation and also developed distinct scent qualities of their own. In this way, floral materials no longer remained only as resources to be reused. Through color, scent, and texture, the design transformed them into perceptible carriers of memory and emotion.

**Table 34**

*Final Design Mapping Framework*

*（1）Incense Sticks*

| Item | Content |
|---|---|
| Material Source | Post-funeral floral petals |
| Transformation Method | Dried, ground into floral powder, and mixed with wood powder and plant incense powder |
| Product Form | Incense sticks |
| Tools Used | Electronic scale, mixing container, press |
| Key Design Features | Linear form; length = 14 cm |
| Symbolic Meaning | Farewell, dissipation, transformation, emotional release |
| Mono no Aware Translation | The length of 14 cm corresponded to the seven-day memorial cycle found in funeral culture. In the Chinese language context, the number 4 also carries an association with death. During use, the incense gradually became shorter, turned into ash, and finally disappeared. This process made impermanence visible and allowed disappearance itself to become part of remembrance. |
| Use Context | Daily commemoration, ritual use, quiet contemplation |

*(2) Incense Holder*

| **Item** | **Content** |
|---|---|
| Material Source | Post-funeral floral stems and petal fibers |
| Transformation Method | Combined with a gelatin-glycerin system to form a floral biocomposite |
| Product Form | Incense holder |
| Tools Used | Drying tray, heating pot, stirring rod, silicone mold |
| Key Design Features | Ripple form; horizontal and low-profile structure; length = 19 cm |
| Symbolic Meaning | Support, return, containment, quiet grounding |

| | |
|---|---|
| Mono no Aware Translation | The ripple form turned the process of emergence, spreading, weakening, and stillness into a visible shape. The outward texture suggested the flow of time and the gradual fading of life. The 19 cm dimension conveyed a sense of approaching wholeness without complete closure, which echoed the quiet incompleteness emphasized in mono no aware aesthetics. |
| Use Context | This form was suitable for indoor memorial display and for holding incense in commemorative settings. |

*Note:Drawn by the author*

**Table 35**

*Material Composition and Proportion*

| **Composition** | **Primary Materials** | **Material Diagram** | **Color Presentation** | **Other Auxiliary Materials** | **Proportion** |
|---|---|---|---|---|---|
| incense holders | Yellow Chrysanthemum Petal Fragments |  | Yellow | Gelatin, glycerin | Adhesive (gelatin 60g/glycerin 20g/water 600ml) as the main material is added at approximately 60% of the total material composition depending on specific circumstances. |
| | Pink Carnation Petal Fragments |  | Pink | Gelatin, glycerin | |
| | White Lily Rhizomes and Rhizome Fragments |  | Green | Gelatin, glycerin | |
| | Yellow Chrysanthemum Petals and Rhizome Fragments |  | Brown | Gelatin, glycerin | |
| Incense Sticks | Yellow Chrysanthemum Petal Powder |  | Yellow | Styrax Powder | Yellow chrysanthemum pollen 3g/storax powder 1g/camphorwood powder 1g |
| | Carnation Petal Powder |  | Pink | Redcedar Powder/Benzoin Powder | Carnation pollen 3g/Red cedar 1g/Benzoin |

| | | | | |
|---|---|---|---|---|
| | | | | 1g/Camphorwood powder 1.25g |
| White Lily Petal Powder |  | Brown | Agarwood Powder/Patchouli Powder | White lily powder 3g/agarwood 1g/yunzhu 1g/nanmu powder 1.25g |
| White Rose Petal Powder |  | Beige | Old Mountain Sandalwood Powder/Amber Powder | White Rose Pink 3g/Old Mountain Sandalwood 1g/Amber 1g/Nanmu Powder 1.25g |

*Note:Drawn by the author*

*The final color of the product was influenced by the type of floral material used and by the natural air-drying process. For this reason, some degree of color variation could occur during drying.*

It can be seen that although both incense holders and incense sticks came from funeral floral materials, they developed clear differences in material form, auxiliary ingredients, and ratio settings because their modes of use, structural demands, and sensory qualities were not the same. This result further shows that the final product form was not chosen at random. It was a systematic decision based on differences in material performance.

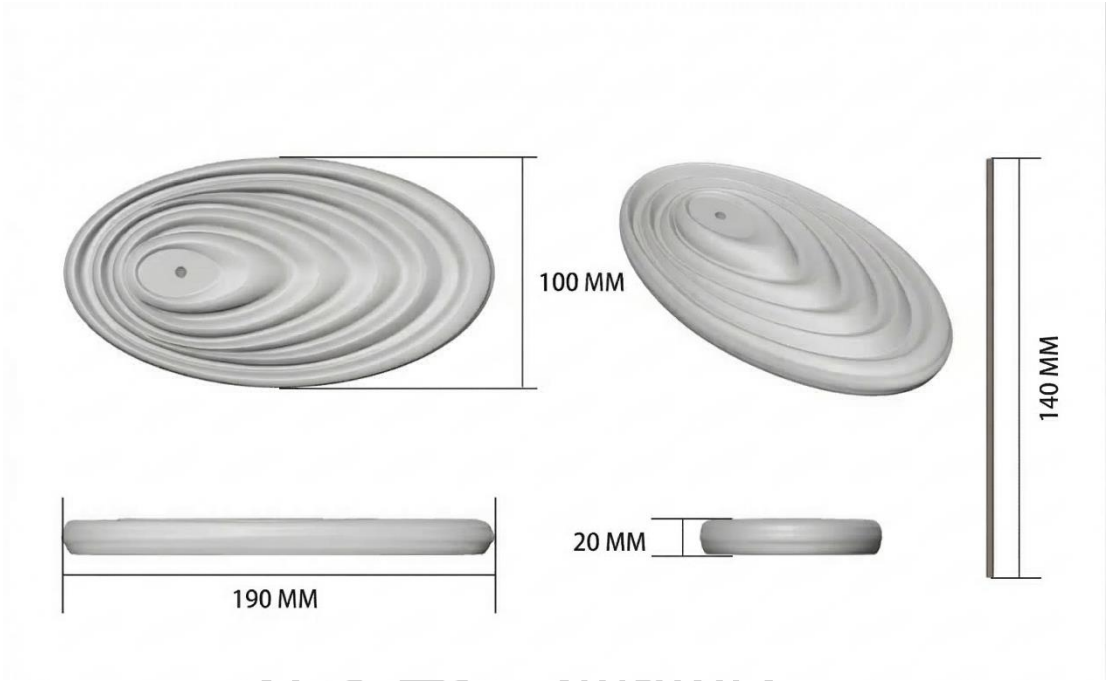
At the same time, the combined form of incense sticks and incense holders showed a strong fit with the context of Chinese traditional sacrificial and commemorative culture. In Chinese culture, incense burning is a widely recognized ritual act in sacrifice, mourning, and remembrance. As incense gradually disappears during burning, its temporary state of existence is often understood as a sign of life's impermanence. In this study, floral materials that were first used in funerals and later discarded were transformed into incense-stick materials. The incense holder then used a ripple structure with temporal meaning as its supporting form. Through this design, the study established a continuous symbolic link among the withering of flowers, the burning of incense, and the passing of time. In this way, commemorative practice gained a more unified expression across the levels of material, use, and emotion.

From this perspective, the incense holder in this study was not only a functional object for holding incense sticks. It also became a commemorative medium built on material plasticity, heat-resistance limits, and the practical needs of memorial ritual. In actual use, the burning of the incense, the spread of fragrance, and the settling of ash together formed traces of time. Through this process, an originally brief ritual action was transformed into a life memory that could continue to be perceived. For this reason, the combination of incense holder and incense sticks did more than address the reuse of materials. Through product form, it also gave visible shape to

emotional memory, the cycle of life, and the awareness of impermanence emphasized in mono no aware aesthetics.

**Figure 98**

*Product Composition Diagram*




*Note:Drawn by the author*

Dimension Specification

In this design, the incense stick was set at a length of 14 cm. In Chinese traditional funeral culture, the number seven carries special meaning, as seen in memorial cycles such as the first seven days and the second seven days. Because 14 is a multiple of seven, this length relates closely to the context of commemorative ritual. At the same time, in the Chinese language context, the number four has a phonetic association with death. For this reason, the number 14 also forms a subtle symbolic link with the themes of life's ending and remembrance. In actual use, an incense stick of this length burns for about 30 to 50 minutes. This duration makes it suitable for daily commemoration and quiet reflection.

In this design, the incense holder was set at a length of 19 cm. As a prime number, 19 suggests a sense of emotional and mnemonic indivisibility. The number also relates to the Metonic Cycle in astronomy, which describes a 19-year cycle of lunar phases and can be understood as a sign of natural recurrence and cyclical life. At the same time, 19 approaches the whole number 20 but always remains one step short. This condition of nearing completeness without fully arriving at it echoes the sense of impermanence and quiet incompletion emphasized in mono no aware.

**Figure 99**

*Product Rendering*

*Note:Drawn by the author*

Because the materials used in this design came from natural fresh flowers, some degree of natural color change occurred during the drying and processing stages.Therefore, the final physical product after complete desiccation may exhibit local color differences compared to the renderings. This color variation is not merely a production error, but rather a natural trace retained during the transformation process of natural floral materials, which further reflects this research's attention to "transience," "variability," and the authenticity of materials. Therefore, the renderings are primarily used to demonstrate the product form and overall design effect, while the actual color of the physical product shall be based on the final material state.

#### 4.3.9.2 Final Design of Fragrant Bead Bracelets

In Plan B "Personalized Fragrant Bead Bracelet Design Based on Portable Commemoration," through comparison and integration of multiple sketch schemes, this research ultimately selected "knotted-rope memory" as the core concept. This concept originates from the ancient memory method of "knotted-rope record-keeping," transforming time and memory into touchable and linkable structures. The reason for ultimately choosing the bracelet as the product form of this material system is that the fragrant bead material demonstrated favorable bead-forming properties, plasticity, tactile quality, and wearing compatibility in preliminary experiments, making it more suitable for development into a product type that can be carried daily, repeatedly touched, and continuously commemorated.

**Table 36**

*Final Design Mapping Framework*

| **(3) Fragrant Bead Bracelet** | |
|---|---|
| Item | Content |
| Material Source | Post-funeral floral petals |
| Transformation Method | Dried, ground into powder, and cold-pressed with plant binder powder |
| Product Form | Fragrant bead bracelet |
| Tools Used | Electronic scale, measuring and mixing container, fragrance bead mold, steel needle, polishing strip |
| Key Design Features | Wearable bead structure; coded through shape, size, and color |
| Symbolic Meaning | Continuity, companionship, private remembrance |
| Mono no Aware Translation | The bracelet focused on a quiet form of remembrance in everyday life. Small differences in bead size, shape, and surface texture helped keep the structure from becoming too rigid. Through touch, wearing, and contact with air, the material changed slowly over time. In this way, memory could remain gentle, unfinished, and continuous. |
| Use Context | This product was suitable for daily wearing, tactile remembrance, and private memorial use. |

*Note:Drawn by the author*

On this basis, the study redefined the bracelet as a narrative structure of life. In this structure, each bead corresponded to a certain kind of event or to a particular stage of life. In this way, the bracelet became a medium through which life experience could be revisited and presented again.

Within this conceptual framework, the study further developed an incense bead coding system based on three dimensions: shape, color, and size. Through this system, life experience could be expressed in a more structured way.The significance of this system lies not merely in increasing morphological variations, but in transforming originally abstract memories, emotions, and life milestones into concrete forms that can be seen, touched, and worn, thereby converting the hand string from a decorative object into a carrier with commemorative narrative significance.

In this coding system, the structure of the beaded bracelet is no longer merely a decorative arrangement, but rather a tactile narrative structure constituted jointly by shape, color, and size. In the process of touching, manipulating, and viewing the beaded string, the wearer can continuously re-perceive the life experiences encoded

within it, transforming the commemorative act from static viewing to dynamic perception. Therefore, this structure not only reinforces the individual participatory nature of the product, but also transforms the expression of commemoration from abstract emotion into a repeatedly triggerable sensory experience.

The coding system mainly comprises three levels: morphological coding, color coding, and dimensional coding.

(1)Shape Encoding

In this system, shape is primarily used to express event types and the structure of life stages. Beads of different morphologies assume different narrative roles within the bracelet structure, enabling life experiences to form a structured expression in sequence.

**Table 37**

*Morphological Coding Table*

| **Form** | **Cultural or Theoretical Background** | **Symbolism** |
|---|---|---|
| Circle  | In visual psychology, circles are often understood as forms that suggest continuity and wholeness. In Chinese culture, circles also carry symbolic meanings related to circulation and completeness, as seen in forms such as the wreaths commonly used in funeral ceremonies. | This form symbolized the continuity of everyday life and the sense of smoothness and fulfillment within ordinary human existence. |
| Square  | In studies of visual structure, the square is often understood as a form with stability and clear boundaries. In traditional Chinese cosmology, there is also a long-standing structural idea that "heaven is round and earth is square." | This form symbolized a stable stage of life or a period marked by important responsibilities, such as the formation of family or the development of a career. |

| | | | |
|---|---|---|---|
| Triangle |  | In traditional Chinese thought, the number three is often understood as a structure with generative meaning. The Daodejing states that "the Dao gives rise to one, one gives rise to two, two gives rise to three, and three gives rise to all things."in which "three" symbolizes the transformation and unfolding in the process of things' development. Meanwhile, the "three talents" concept of heaven, earth, and humanity in Chinese culture also embodies the structural relationship among the three. In geometric form, a triangle is composed of three vertices and possesses obvious directionality and structural tension. Therefore, in the morphological coding system of this design, the triangle is employed to symbolize key stages or important choice nodes in the trajectory of human life. | Symbolizing turning points or critical choices in life. |
| Bamboo-node |  | In Chinese folk culture, bamboo is often endowed with the auspicious meaning of "rising progressively" due to its growth pattern of segmented upward development, symbolizing continuous development and constant ascension. | Symbolizing the growth stages in human life. |
| Star |  | The star possesses a radial structure and frequently forms a visual focal point, symbolizing hope and direction across multiple cultures. | Symbolizing the highlights of life, such as honor and happiness. |

| | | | |
|---|---|---|---|
| Irregular / Formless bead |  | In Buddhist philosophy, "formlessness" refers to the absence of fixed and immutable form and essence in things. The Diamond Sutra proposes that "all forms are illusory," wherein "form" denotes external appearance and visible manifestation, while "formlessness" emphasizes that all things are in constant flux and should not be attached to fixed forms. Based on this theoretical framework, this research introduces the concept of "formless beads" into bead string structures. Formless beads have no fixed shape nor do they presuppose fixed meanings. | The symbolization of fortuitous opportunities and unpredictable events in life. |

*Note:Drawn by the author*

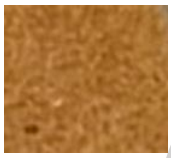
Through this morphological encoding method, the bracelet structure can express the relationships among life stages, turning points, and important memory nodes.

(2)Colour Encoding

Color is primarily used to express the emotional tone of memory. In this study, color is understood as an emotional symbol that endows different events with an emotional dimension within the narrative structure.Through the variation of color, the bead structure not only presents visual hierarchy, but also can distinguish different types of memory experiences at the narrative level, making commemorative expression more delicate and diverse.

**Figure 100**

*Color Coding Table*

| Colour | | Emotional Atmosphere | Narrative Meaning |
|---|---|---|---|
| Brown |  | Steady and Natural | Expressing the Atmosphere of Tranquil and Unadorned Memory |
| Pink |  | Warm and soft | Expression of Intimate Relationships and Emotional Connection |
| Yellow |  | Bright and positive | Expression of Hope and Warm Memories |

*Note:Drawn by the author*

In order to maintain overall visual balance, this research refers to the basic color proportion principle: Primary color approximately 60%, Secondary color approximately 30%, Accent color approximately 10%, This approach helped highlight key memory nodes while also maintaining visual stability in the overall color arrangement.

(3)Size Encoding

Size was mainly used to express the importance of memory and the weight of emotion. Through beads of different sizes, the bracelet formed a clearer hierarchical structure. In this way, life events could appear in sequence with a sense of priority and variation.

**Table 38**

*Dimension Coding Table*

| Dimensions | Symbolic Meaning |
|---|---|
| Small | Representing everyday events and personality characteristics. |
| Medium | Represents relatively important life events or more prominent personality characteristics. |
| Large | Representing important life events or emotional core memories |

*Note:Drawn by the author*

The use of size followed three main principles. The meaning of size was based on the relative relationship among beads within the same bracelet, rather than on absolute scale alone. The design also used larger beads in moderation so that the bracelet would not create too much visual weight or become uncomfortable to wear.

Materials and Proportions

This design used yellow chrysanthemum petals, pink carnation petals, and white lily petals as its main raw materials. The study first dried these floral materials naturally in sunlight and then ground them into powder. This powder then became the main material for making the fragrant beads.

On this basis, the study also followed the production methods developed during the material exploration stage. The study added an appropriate amount of other plant-based aromatic powder and natural camphorwood powder in order to balance the fragrance and improve the binding performance of the material. Through this adjustment, the fragrant beads gained better molding stability

**Table 39**

*Material Composition Table*

| **Composition** | **Primary Materials** | **Material Diagram** | **Color Presentation** | **Other Auxiliary Materials** | **Proportion** |
|---|---|---|---|---|---|
| Fragrant Bead Bracelets | Yellow Chrysanthemum Petal Powder |  | Yellow | Styrax Powder | Yellow chrysanthemum pollen 3g/storax powder 1g/camphorwood powder 1g |
| | Carnation Petal Powder |  | Pink | Redcedar Powder/Benzoin Powder | Carnation pollen 3g/Redcedar 1g/Benzoin 1g/Camphorwood powder 1.25g |
| | White Lily Petal Powder |  | Brown | Agarwood Powder/Patchouli Powder | White lily powder 3g/agar |

| | |
|---|---|
| | wood<br>1g/yunzhu<br>1g/nanmu<br>powder<br>1.25g |

*Note:Drawn by the author*

(6) Coding System and Mono no Aware Aesthetics

Through the aforementioned coding system of form-color-size, the prayer bead bracelet is reinterpreted as a narrative structure of life. Beads of different shapes and sizes took on different narrative roles within the sequence. Through this structure, life experience could be recorded and recalled in a tactile way.

This narrative structure also responded to the mono no aware understanding of life's transience and the passing of emotion.The formation process of the bracelet is both an organization of life memories and a perceptual process of temporal flow and emotional fading, allowing commemorative behavior to achieve a more concrete mode of expression within the morphological structure.

Based on the coding system described above, this study finally designed and produced four personalized commemorative bracelets. Through the combination of form, color, and size, these works turned abstract life memories into concrete and tactile narrative structures. These bracelets were not only presented as final design outcomes. They also demonstrated, through actual production, that the coding system was workable in commemorative product design.

**Figure 101**

*Produc Renderingt*

*Note:Drawn by the author*

The hand string uses beige hemp rope as the weaving carrier, echoing the cultural imagery of "knotted cord record-keeping."

**Figure 102**

*Produc Renderingt*

*Note:Drawn by the author*

**Figure 103**

*Produc Renderingt*

*Note:Drawn by the author*

### 4.3.10 Potential Industry Partners

This study anticipates collaboration with two primary groups: funeral service companies/funeral home systems, and floral design teams providing funeral arrangements (including florists with long-term partnerships in funeral channels). These entities are prioritized as partners because they occupy critical junctures within the process: ordering floral materials → using them for ceremonies → clearing/disposing of materials post-ceremony. This positioning allows direct access to authentic floral materials at the source while simultaneously presenting the option of creating keepsakes during discussions with families about ceremony requirements.

Funeral Service Companies

These institutions typically oversee the planning and coordination of the entire process, serving as the first point of contact for families to discuss ceremony specifications, floral requirements, and budgetary considerations. Integrating “funeral floral redesign/memorialization” as an optional value-added service module within their existing offerings (such as memorial hall arrangements, wreaths/flower baskets, personal effects organization, and subsequent memorial services) allows for upfront “source authorization” to avoid later tracing questions like “Who ordered these flowers?” Simultaneously, funeral service providers possess heightened sensitivity to clients' emotional states, religious/ethnic taboos, and willingness to “take funeral items home.” This enables them to identify families genuinely suited for this service, minimizing the risk of misunderstanding.

Funeral Floral Design Team / Custom Funeral Florist

These teams typically serve families with high expectations for ceremonial details and floral aesthetics, meticulously designing arrangements in terms of color schemes, floral selections, and layered placements. Research indicates that individuals who care deeply about how funeral flowers are arranged are also most likely to consider whether any flowers can be preserved after the ceremony. In other words, the demographic prioritizing funeral floral arrangements largely overlaps with those open to repurposing funeral flowers. For this reason, this study suggests that the low-key commemorative objects proposed here—such as incense, candles, and incense holders or candlesticks—can be integrated into the service system of floral teams as an extended service or as part of a memorial package. This direction shows a high level of compatibility.This approach would neither disrupt the existing funeral aesthetics nor allow the “flowers from the funeral ceremony” to be preserved by the family in a more enduring and gentle manner.

Collaborative Value

For funeral service providers, this approach can improve service quality and increase customer value without changing the core service process. For funeral floral teams, this approach can extend the focus from ceremonial aesthetics to memorial aesthetics. For bereaved families, this approach can shift a single and solemn farewell into a quiet form of remembrance within daily life. Because the goals of all parties can be brought into alignment, this kind of collaboration has a strong practical basis for implementation.

### 4.3.11 Service Process Design

The preliminary questionnaire and interview results showed that respondents' attitudes toward the reuse of funeral flowers were strongly shaped by context. Most respondents did not reject reuse in principle. However, they were especially sensitive to whether the flowers came from their own family's funeral. Some respondents stated clearly that they could accept flowers only when the materials were connected to their own relatives or friends, but they could not accept flowers of unknown origin or flowers taken from other people's funerals.

This finding suggests that a centralized recycling model across different ceremonies or families could easily cause psychological discomfort. Once this happened, the environmental value and emotional meaning of reuse would both be weakened. Based on this result, the study established a service strategy of a single-ceremony closed loop. Under this strategy, the reuse process was strictly limited to floral materials generated within the same funeral ceremony.

The service process was designed as follows:

(1) Pre-authorization during the pre-funeral/order placement stage

When families ordered funeral floral arrangements, such as wreaths, baskets, or farewell hall decorations, from funeral service providers or cooperating florists, the service form included an added option for "Memorialization / Re-design of Funeral Flowers." Families could decide for themselves whether the flowers from the ceremony would be reused to make commemorative objects.

When a family selected "Yes," this choice functioned as formal authorization for the reuse of floral materials from that specific funeral. When a family selected "No," the flowers were handled through the normal disposal process. By placing this authorization step at the stage of funeral service ordering, the study could reduce uncertainty around several questions, such as whether the family agreed, whether the flowers could be used, and whether the material source was legitimate.

(2) Dedicated Post-Ceremony Collection

After the funeral service ended and the site was cleared, the funeral or floral service provider collected only the floral materials from that specific ceremony for which family consent had already been given. These materials were not mixed with flowers from other ceremonies, nor were they placed into any public or shared reuse system. The provider could mark the materials in a simple way, such as by date, service number, or the initials of the deceased's surname, while still avoiding the disclosure of private information. This method helped maintain a one-to-one connection between the materials and the specific ceremony, and it gave the later commemorative design a clear emotional reference.

(3) Low-Energy Processing and Product Transformation

After harmless treatment and low-energy material processing, the floral materials were transformed into corresponding commemorative products. Because this process followed a single-ceremony closed-loop model and relied on only one floral source, it

avoided more complex procedures such as source reclassification and cross-family authorization. This condition also helped reduce the difficulty of service implementation.

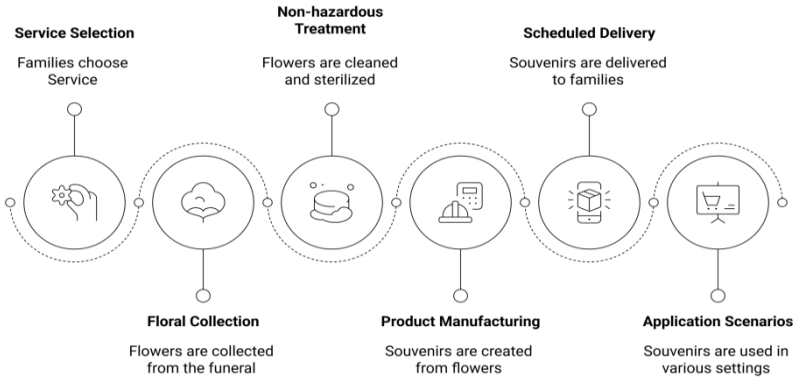
(4) Application Scenarios

The transformed floral materials were made into a group of understated memorial objects suitable for home remembrance, Buddhist altar offering, anniversary commemoration, or display areas within funeral spaces. Typical forms included single scented candles, sets of candles, or incense sticks that contained petals from the funeral ceremony, together with incense holders or candlesticks that showed raw texture and visible traces of handmaking.

The overall visual language remained simple and quiet, which made these objects suitable for long-term display. Their design and material treatment followed the principles of material aesthetics and mono no aware. The design emphasized temporality, traceable origin, and restrained emotional expression. The design also avoided excessive decoration and overly commercial appearance. In this way, families could more naturally understand these objects as a continuation of the farewell, rather than as ordinary craft products.

**Figure 104**

*Service Process*




*Note:drawn by the author*

Compared with a centralized model that collects flowers across different funerals and redesigns them in a unified way, the single-funeral closed-loop model may lead to a slightly lower rate of material use. Even so, this model showed clearer advantages in emotional clarity, ethical transparency, and users' psychological acceptance. For this reason, it was more consistent with the core position of this study, which focused on the emotional and symbolic narratives of funeral flowers.

The questionnaire correlation analysis also showed that respondents who held more positive views toward environmental protection and resource regeneration were more willing to accept the redesign of funeral flowers. This result suggests that the

introduction of this process as an optional value-added service within funeral or floral design institutions has a solid user basis and practical potential for promotion.

### 4.3.12 Product Prototype Display

**Figure 105**

*Product Display*

*Note:Photo taken by the author*

**Figure 106**

*Product Display*

*Note:Photo taken by the author*

**Figure 107**

*Product Display*

*Note:Photo taken by the author*

**Figure 108**

*Product Display*

*Note:Photo taken by the author*

**Figure 109**

*Product Display*

*Note:Photo taken by the author*

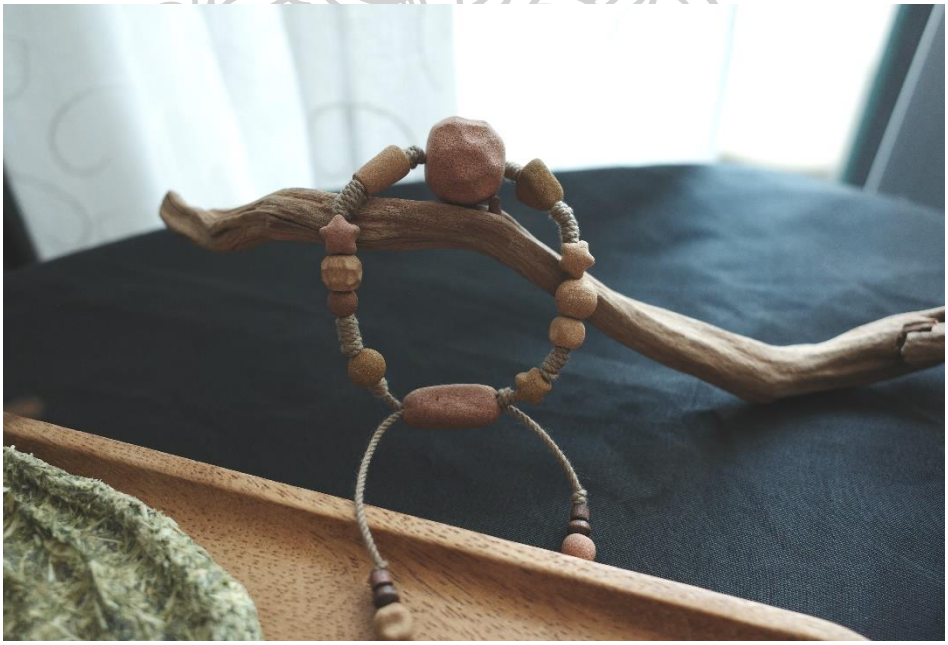
**Figure 110**

*Product Display*

*Note:Photo taken by the author*

**Figure 111**

*Product Display*



*Note:Photo taken by the author*

**Figure 112**

*Product Display*

*Note:Photo taken by the author*

**Figure 113**

*Product Display*

*Note:Photo taken by the author*

**Figure 114**

*Product Display*

*Note:Photo taken by the author***Figure 115**

*Product Display*

*Note:Photo taken by the author*

**Figure 116**

*Product Display*

*Note:Photo taken by the author*

**Figure 117**

*Product Display*

*Note:Photo taken by the author*

**Figure 118**

*Product Display*

*Note:Photo taken by the author*

**Figure 119**

*Product Display*

*Note:Photo taken by the author*

**Figure 120**

*Product Display*

*Note:Photo taken by the author*

#### 4.3.13 User Testing and Feedback

In order to understand how the final design products performed in actual use, this research conducted user testing after the completion of the final prototypes. The purpose of this stage was not only to evaluate user acceptance, but also to examine how user feedback could guide further design refinement. A total of 15 participants took part in the test. Most of them were members of the general public, and some had previous experience attending funerals or memorial ceremonies.

During the testing process, participants were first introduced to the design concept and the material source of the products, namely the redesign of floral materials generated after funeral rituals. They then experienced the products through visual observation, tactile interaction, wearing trials, and incense lighting. The tested prototypes included incense holders, incense sticks, and fragrant bead bracelets. After the experience, participants completed a user evaluation form covering product design, material expression, sensory experience, emotional expression, and intention to use. At the same time, on-site conversations were recorded as qualitative feedback to supplement the questionnaire results.

Overall, the participants showed a relatively positive attitude toward the final products. Most participants accepted the idea of reusing funeral flowers and considered this approach meaningful in both commemorative and design terms. They generally believed that the products could express farewell and remembrance in a

gentle way while also reflecting a degree of design innovation. The incense products received especially positive responses in relation to ritual atmosphere. Many participants noted that the process of lighting incense, watching it burn, and seeing it gradually turn to ash created a clear sense of temporal passage, which closely echoed the emotional atmosphere of memorial practice.

More importantly, the user testing at this stage helped clarify how feedback could be translated into visible design changes. In the design of the incense holder, the study did not begin with a single material version only. Instead, the study developed several prototypes in parallel. Some prototypes were made mainly from petal-based materials, while others were made from fiber materials based on stems and rhizomes.During the testing process, participants showed a clearer preference for the stem-based versions. They generally felt that the petal-dominant versions had a weaker morphology and looked less stable in overall form. By contrast, the stem- and rhizome-based versions presented stronger structure, clearer texture, and a more grounded visual character. Based on this feedback, the later development of the incense holder shifted toward stem-fiber-based versions. On this basis, the study produced several additional incense holder samples in different natural color directions. The purpose was to examine how color variation could enrich the final form while still keeping the material language consistent.

The feedback also influenced the development of the fragrant bead bracelet. In the first tested version, the bracelet used only one hemp cord color, so the overall visual effect appeared relatively simple and plain.Some participants felt that the bracelet had commemorative value and wearable potential, but its presentation could become richer. Based on this suggestion, the later trial introduced a black cord version for comparison. This adjustment improved visual contrast and made the bracelet structure appear more stable and more suitable for daily wearing. This change also showed that even when the bead material remained the same, small adjustments in connecting materials could noticeably influence the final aesthetic effect.

At the same time, participants also proposed broader suggestions for future refinement. Some believed that the current products still had room for improvement in formal diversity and visual detail. They suggested that the proportions, structural variation, and material combinations could be further enriched. In particular, for the bracelet, some participants suggested that future versions could be combined with other materials, such as stone, crystal, or metal accessories, in order to create a more layered and visually refined effect. These suggestions were not fully incorporated into the current final version, but they provide a clear direction for future development.

In terms of practical use, some participants also expressed concern about long-term preservation. Because the products are made from natural floral materials, several participants asked whether the color might gradually change over time. At the same time, some participants considered a certain degree of color change or natural aging acceptable, because such change also reflects the material's natural character.

This response is meaningful for the research, because it suggests that users do not necessarily expect complete material permanence. Instead, some degree of transformation can still be accepted when it remains consistent with the emotional logic of remembrance.

Overall, the user testing results indicate that the design product proposed in this research has received relatively positive user feedback at the level of practical experience, and can form a certain resonance in terms of emotional expression and commemorative significance. This result, to a certain extent, validates the feasibility of funeral floral materials re-entering the commemorative context through design transformation, and provides preliminary practical evidence for the application of related materials in emotion-oriented design.

**Figure 121**

*User Testing Scene*

*Note:Photo taken by the author*

**Figure 122**

*User Testing Scene*

*Note:Photo taken by the author*

# CHAPTER 5

# CONCLUSIONS AND DISCUSSIONS

## 5.1 Conclusions

This study argues that post-funeral floral waste should not be treated as useless material. These flowers become waste not because they have completely lost their value, but because their original ritual role has ended. For that reason, this study understands them as contextually discarded materials. Their status as “waste” does not signal the loss of value. Instead, it marks the start of a new opportunity for contextual transformation.

To begin with, this study shows that post-funeral floral waste has qualities that clearly distinguish it from ordinary floral waste. This difference is not only physical. More importantly, the material comes from a specific ritual setting and carries emotional and cultural meanings such as farewell, mourning, and remembrance. In this sense, the material should be seen as contextual material that leaves its original setting after the ritual ends, rather than as ordinary waste without value.

This study also shows that low-energy processing methods can open a new path of material transformation for post-funeral floral waste and reveal its basic potential for commemorative design. Experiments with drying, grinding, plant dyeing, incense making, handmade paper, and bio-based composite molding indicate that these materials can still retain traces of color, texture, scent, and origin after transformation. At the same time, the study makes clear that material transformation alone does not guarantee successful design. The final suitability still depends on stability, safety, cultural appropriateness, and emotional fit.

At the design level, this study suggests that the value of post-funeral floral waste does not lie in simple recycling. Its value lies in the rebuilding of meaning. In other words, material discarded from a ritual setting can be redesigned as a semantic system. Through design, such materials can be reorganized into a system that carries memory, emotion, and symbolic meaning. In this process, the origin of the material, the traces of time, shifts in color, fragile textures, and commemorative qualities are translated into design language and then developed into product forms with commemorative functions. So, material transformation is not only a matter of physical reuse. It is also a process that turns ritual residue into commemorative expression through the reconstruction of meaning.

This study further confirms that this transformation path has preliminary practical value in real settings, though that value remains conditional. Questionnaire data, interviews, and feedback all show that public acceptance does not depend on “reuse” alone. It also depends on several conditions, including a clear explanation of material origin, family authorization, safe and hygienic processing, and forms of expression that align with memorial ethics and cultural respect. This finding suggests

that the significance of this study does not rest only on the production of several design outcomes. It also lies in proposing an initial application logic: post-funeral floral waste can be transformed into a commemorative service option that combines emotional respect, cultural sensitivity, and sustainable value.

Overall, the central conclusion of this study is that post-funeral floral waste is not useless waste, but rather material that has been discarded because its original context has ended while still retaining the potential for redesign. Its value lies not in being simply recycled into another object, but in being transformed through design from material residue into a system of meaning. In this sense, this study shows that "discarded" does not mean "useless," but marks the beginning of another kind of opportunity. Post-funeral floral waste should therefore be understood as a contextual transformation opportunity that can be activated, translated, and re-signified. More importantly, this research proposes a shift from material recycling to meaning regeneration, where design transforms contextually discarded materials into emotionally and culturally sustainable systems.

## 5.2 Discussions

### 5.2.1 Material: Floral Waste as Material with Memory

This study argues that discussion of post-funeral floral waste should not stop at the technical question of whether it can be reused. The discussion should begin with the material itself and with the kind of material it is. Funeral flowers are different from ordinary organic waste. They are not neutral natural matter, and they are not just leftover materials waiting to be thrown away. They are materials marked by their origin, by ritual traces, and by emotional memory. Their value lies not only in physical features such as fiber, color, scent, and form. Their value also comes from the fact that they once took part in acts of farewell, mourning, and remembrance. In this sense, the flowers examined in this study are not ordinary waste. They are materials that carry memory.

This view also matches the study's definition of post-funeral floral waste. These materials often remain physically usable, yet they lose their original function once the ritual ends. Their discarded status therefore comes, above all, from the ending of context rather than from the loss of material potential. From the perspective of material aesthetics, material is not passive matter waiting to be processed. Material is part of how meaning is formed. The origin of a material, its sensory qualities, and its cultural setting all take part in the making of design meaning. In this study, the ritual origin of funeral flowers is itself part of the material language. Even when later processing changes their appearance, that origin still shapes how the work is understood and how design decisions are made.

Because of this, flowers are no longer just things to be used. They become perceptual media that can retain memory, trigger association, and carry commemorative meaning. For that reason, the material experiments in this study do not simply test what flowers can be turned into. They ask which material forms can

keep basic performance while still holding memory and commemorative value. More importantly, the study also changes the way waste itself is understood. Funeral flowers are discarded not because they have fully lost meaning, but because their original ritual function has been completed. In other words, disposal does not mean that meaning disappears. It means that the material has left its original setting and entered a state that calls for new interpretation. The study therefore treats funeral flowers as materials discarded through the ending of a specific context. These materials still keep their material properties and contextual memory. They can still be processed, yet they also carry clear cultural sensitivity.

### 5.2.2 Design: Design as the Translation of Meaning

Based on this understanding of material, this study further argues that design here is not simply a matter of giving form. It is a process of translating meaning. In the redesign of post-funeral floral waste, design is not only about shaping form. It is also about carrying meaning from one context into another. What design deals with is not only how materials are processed, combined, or used. It also deals with how the ritual meaning once attached to those materials can be turned into a new form of commemorative expression. In this sense, design is no longer just a way of turning discarded flowers into products. Design reorganizes their origin, emotion, symbolism, and mode of use into forms that people can perceive, understand, and accept.

This point also responds to the third objective of the study, which is to transform material properties and cultural meaning into commemorative design outcomes. In this process, the origin of the flowers, the traces of time, their fragility, color change, remaining scent, and commemorative associations should not be treated as outside limits on design. These qualities should be understood as part of the design language itself. The task of design is not to erase the past of the material. Its task is to let that past continue, and to restate it through suitable forms, structures, and media. It is in this sense that the study suggests that material discarded from a ritual context can be redesigned as a semantic system. Here, the term “semantic system” is not used as an abstract phrase. It refers to an interpretable relationship among material origin, sensory qualities, symbolic meaning, product form, and context of use.

In terms of the actual design outcomes, the incense, incense holders, and fragrant bead bracelets were not selected by chance. These forms grew out of the fit between material performance, cultural context, and commemorative function. Incense relates to combustibility, scent, and ritual action. Incense holders relate to moldability, support, and the visible passing of time. Fragrant bead bracelets relate to wearability, tactility, and everyday remembrance. This shows that design is not an outer layer added after material experimentation. Design is a mediating process through which material features are translated into commemorative logic. What design does here is not only visual styling. It is also a form of interpretive mediation. Design translates symbolic meanings rooted in the funeral context into new commemorative forms. In

doing so, it turns material residue removed from the ritual setting into a design medium that can continue to carry memory.

For this reason, the design approach in this study does not aim to remove the original context of the material completely. On the contrary, the study stresses the value of keeping perceptible traces of origin during transformation. This position also fits with the sensibility of mono no aware, which values the beauty of transience, passing, and remains. The wilting, fading, cracking, and delicacy of flowers are not always treated as flaws. These qualities can also become part of design expression and serve as elements within a narrative aesthetic. Design, therefore, is not only a technical transformation. It is also an aesthetic and emotional re-narration. Through design, meanings that once existed only briefly within the moment of funeral ritual can continue in a form that remains perceptible and emotionally felt.

### 5.2.3 System: Reuse as a Cultural and Emotional System

If the material level asks what the flower is, and the design level asks how meaning is translated, then this level asks how that translation enters actual situations of use. Based on the findings, this study argues that the reuse of post-funeral flowers should not be understood as a single act of recycling. It should be understood as a combined process that involves material transformation, emotional acceptance, cultural understanding, and practical conditions of use.

From the perspective of the circular economy, this study does respond to the issue of extending material life and reusing resources. Even so, the study does not reduce reuse to material circulation alone. Instead, the findings show that for highly contextual materials such as post-funeral flowers, the viability of reuse depends on more than whether the material can be reprocessed. It also depends on whether that transformation can be understood within culture, accepted at the emotional level, and placed properly in real situations of use. The questionnaire results, interviews, and feedback all show a similar point. The public does not fully reject this kind of design, but acceptance depends on certain conditions. These conditions include a clear material origin, family authorization, safe processing, appropriate forms of expression, and consistency with memorial ethics. This suggests that such reuse is not only a technical matter. It is also a practice that must take culture, emotion, and actual conditions of use into account.

In this sense, design does more than transform form. Design acts as a mediator among material, context, and emotion. Through design, flowers can move beyond the simple logic of disposal and enter a continuing path that includes source recognition, material transformation, meaning translation, commemorative use, and social acceptance. In other words, design makes possible not only material regeneration, but also the rebuilding of meaning and the redefinition of use.

Seen in this way, the significance of reuse in this study does not lie only in showing that post-funeral flowers can be reprocessed. Its deeper value lies in showing that reuse becomes meaningful only when it is emotionally appropriate, culturally

understandable, ethically acceptable, and practically workable. At this point, the reuse of post-funeral flowers is no longer only a question of whether it can be done. It becomes a question of how it can be reused and reinterpreted under the right conditions.

Taken together, this study argues that the significance of post-funeral floral reuse lies not only in extending the life of materials, but also in rebuilding the relationship among material, ritual context, and emotional meaning through design. In this study, floral waste is understood as a material that carries memory. Design is understood as a process of meaning translation. Reuse is understood not as a purely technical act of recycling, but as a combined process that involves material, culture, emotion, and conditions of use.

From this perspective, This study demonstrates that design can function as a mediating system that reformulates material, context, and emotion into meaningful artifacts.

## 5.3 Research Contributions

The contribution of this study can be understood at three levels: theory, methodology, and practice. These three levels are connected. They move from conceptual definition, to research implementation, and then to possible application.

### 5.3.1 Theoretical Level: Defining Post-Funeral Floral Waste as Contextual Waste

This study offers a different way of understanding post-funeral floral waste. It defines this material as a form of contextual waste rather than ordinary organic waste. Earlier studies on floral waste have mostly discussed the topic through recycling, composting, or material regeneration. In many cases, those studies have treated discarded flowers as a relatively uniform biodegradable material. This study shows a different point. Post-funeral flowers are discarded not mainly because the material itself has fully lost value, but because their original ritual function has ended. In other words, their status as “waste” comes first from the ending of a specific ritual context, not simply from physical decline.

This definition broadens the way waste can be understood. Post-funeral flowers are not just leftover matter. They still carry traces of mourning, remembrance, farewell, and cultural symbolism. From this view, “waste” is not only a question of material condition. It is also closely tied to ritual context, social relations, and cultural norms. For materials of this kind, function and usability are not enough as the only standards of judgment. Their contextual origin, symbolic meaning, and emotional value also need to be considered.

Based on this understanding, the study further suggests that post-funeral floral waste should not be treated as a useless end point. It should be seen as a material resource open to reinterpretation and redesign. In this sense, reuse is not only a technical process of recovery. It is also a process through which meaning can be

reshaped. This perspective also offers a clearer basis for discussing the relationship among sustainable design, emotional design, material aesthetics, and the aesthetics of mono no aware.

### 5.3.2 Methodological Level: Forming an Emotion-Oriented Material Research Pathway

At the methodological level, this study develops an emotion-oriented pathway for material research. This pathway does not begin with material performance or product function alone. Instead, it starts from the emotional source of the material, its symbolic qualities, and the conditions that shape its social acceptance. From there, the study moves step by step toward material experimentation and design transformation.

More specifically, this study brings contextual analysis, field investigation, material experimentation, and design evaluation into one continuous process. The study first uses literature review and fieldwork to clarify how post-funeral flowers are used, discarded, and understood in actual ritual settings. It then applies a series of low-energy methods, including drying, grinding, blending, molding, and testing. Based on these experimental results, the study develops commemorative design proposals and evaluates them through user feedback and expert feedback. In this way, material research does not stay only at the level of physical testing. It remains connected to emotional meaning, cultural background, and context of use throughout the whole process.

The value of this pathway does not lie in how many methods are used. Its value lies in the way it brings emotional meaning, context, material properties, and design outcomes into the same research structure. For materials with emotional or cultural sensitivity, this kind of pathway helps prevent them from being reduced to neutral experimental matter. It also builds a closer connection between material research and design research. In this sense, the study offers a useful methodological reference for work on ritual waste, commemorative materials, and other discarded materials that carry social and symbolic value.

### 5.3.3 Practical Level: Providing Application Insights for the Funeral Industry and Sustainable Product Design

At the practical level, this study offers some initial insights for the funeral industry and for sustainable product design. The findings show that post-funeral floral waste can be transformed into commemorative products that are materially workable, culturally meaningful, and acceptable under certain conditions.

For the funeral industry, post-funeral flowers should not be treated only as final waste. They can also be understood as a resource that may extend memorial services. Through suitable treatment and design, these materials can be turned into commemorative objects such as incense sticks, incense holders, and fragrant bead bracelets. In this way, the emotional and symbolic value carried by the flowers can continue after the ritual has ended. These materials may then re-enter the funeral

service system in the form of memorial gifts, family keepsakes, or personalized remembrance services. The value here does not lie only in suggesting several product forms. It also lies in opening a new direction for funeral services that is both more sustainable and more responsive to emotional needs.

For sustainable product design, this study shows that discarded materials from specific ritual settings can be turned into meaningful design outcomes through an approach that considers material suitability, emotional narrative, and contextual appropriateness together. What matters here is not only the development of individual products. What also matters is a broader understanding of sustainable design itself. In addition to resource circulation and environmental efficiency, design judgment should also consider the ways materials carry memory, hold emotion, and respond to cultural context. This point is especially important for materials with sensitive origins and strong cultural meaning. In such cases, whether a design is convincing depends not only on technical feasibility. It also depends on whether the design respects the original context and creates an appropriate form of meaning.

Overall, post-funeral floral waste shows real potential for transformation into commemorative design objects. At the same time, it suggests a possible link between the extension of funeral services and the development of sustainable memorial products. This study therefore provides a reference for future collaboration with the funeral industry. It also offers a useful direction for the transformation of other discarded materials that carry contextual and emotional significance.

**5.4 Research Limitations**

This study still has several limitations, and these limitations also point to directions for future research.

One limitation lies in the empirical scope of the study. The main investigation was carried out in Kunming. The questionnaire, interviews, and related analysis were all based on local funeral practices in Kunming. Because of this, the conclusions of the study mainly come from a specific regional and contextual setting. Funeral customs, flower use, views of death, and ways of commemoration may differ from one place to another. For that reason, the findings of this study cannot be directly extended to other regions. They should be understood as an initial set of observations and analyses grounded in the context of Kunming.

Another limitation relates to the research object itself. This study focused mainly on post-funeral floral waste. That focus helped define the scope of the study and kept the research direction clear. Even so, flowers are not the only materials left behind after funerals. Funeral remains may also include ribbons, paper items, candles, incense residues, and other ritual objects. These materials may also carry emotional and symbolic meaning, and they may also have redesign potential. Since this study centered on flowers, the idea of “contextual waste” discussed here still remains limited to floral materials. It has not yet been extended to a wider range of

post-funeral residual materials. In this sense, the findings of this study apply mainly to floral materials, while other kinds of ritual remains still need further study.

A further limitation comes from the cultural and emotional sensitivity of the topic itself. The reuse of post-funeral materials is not shaped only by material properties or design form. It is also influenced by family relationships, mourning customs, religious beliefs, cultural background, and personal emotional boundaries. This study found that public acceptance of this kind of reuse is not fixed or unconditional. In many cases, acceptance depends on specific conditions. In other words, whether people accept it, under what conditions they accept it, and how far they are willing to accept it may all be affected by several factors. Because of this, the study can only offer an initial view of acceptance. It is still not enough to support a stable and broadly applicable model of acceptance. This issue needs further study through more detailed cultural and social variables.

This study also remains exploratory in nature. Its main purpose was to raise the question, build a basic research path, and examine through design practice the possibility of transforming post-funeral flowers as contextual materials. The findings suggest that post-funeral flowers should not be understood as waste that has simply lost value. Once their original ritual function has ended, they may still be transformed through design into materials that enter a new context of remembrance and emotional continuity. At the same time, several issues remain open. These include differences in acceptance across cultural backgrounds, the transformation of other ritual materials, and the extent to which such design outcomes can work in a broader social setting. For this reason, this study should be seen more as a starting point than as a finished conclusion.

**5.5 Future Research**

This study offers an initial exploration of the artistic transformation of post-funeral floral waste, but there is still room for further development in the choice of research objects, the expansion of application settings, and the building of a more complete system. Based on the limits of the present study and its possible next steps, future research may move forward in several directions.

One possible direction concerns the research object itself. Future studies may expand the scope from post-funeral flowers to other ritual materials that are discarded when a specific context comes to an end. Wedding flowers, for example, could serve as a useful case for comparison. Funeral flowers are often linked to mourning, remembrance, and restraint. Wedding flowers, by contrast, are more closely tied to celebration, the beginning of intimate relationships, and positive memory. A comparative study of these two types of ritual flowers could help clarify how different emotional settings shape the symbolic meaning of materials, the language of design, and their potential for reuse. Such a comparison could also help test whether the idea of contextual transformation can work across different ritual settings.

Another possible direction lies in the study of religious materials and other forms of post-ritual remains. Unlike waste produced through ordinary consumption, these materials often carry clearer cultural meanings, stronger religious attributes, and more specific rules of use. Future research may therefore examine how different belief systems, cultural taboos, and ritual rules shape the possibility of redesign after the original ritual function of a material has ended. This kind of expansion would not only deepen the cultural dimension of the present study, but also help distinguish which findings are more specific to funeral flowers and which may have broader relevance across different contexts.

A further direction for future research is to move beyond the exploration of single products and work toward a more complete service design system. This study has already shown that the reuse of funeral flowers is not only a matter of material transformation. It also involves coordination among stakeholders, the organization of services, and ways of emotional communication. For this reason, future studies may build a more systematic service framework that covers material collection, authorization, classification, processing, redesign, delivery, and later commemorative use. At the same time, future work may examine the different roles of florists, funeral staff, designers, and family members within this process. It may also look more closely at service language, traceability, packaging, and ethical boundaries. In this way, research would no longer focus only on what kinds of products can be designed. It would also consider how these design outcomes might enter a real and workable memorial service system.

Another direction for future research is the development of implementation models linked to policy or circular systems. At present, this study focuses mainly on material experimentation and design transformation. It has not yet fully discussed the operating mechanisms that would allow such practices to function within broader institutional and social systems. Future studies may therefore try to connect this kind of material transformation with green funeral policies, local cultural regulations, low-carbon service mechanisms, or regional circular economy frameworks. Through this approach, future research could examine how contextually discarded materials might move from individual design practice toward implementation paths that are institutionally supported and socially embedded. Such work would help push the field from a design case toward a more complete system model.

A further direction for future research is the development of a more systematic framework for analyzing acceptance. This study has shown that public attitudes toward the reuse of post-funeral flowers cannot be understood as a simple yes-or-no response. In many cases, acceptance is conditional. At present, however, this study has identified that conditional acceptance only at a preliminary level. Future research may look more closely at the factors that shape acceptance. These factors may include family relationship, familiarity with the deceased, regional culture, religious background, emotional distance, commemorative habits, and personal views on reuse. By building a clearer and more structured framework for acceptance analysis, future

studies may explain more fully why different groups respond in different ways and how those responses are formed. Such work may also provide a stronger basis for service segmentation, ethical evaluation, and practical application.

Another direction for future research is the continued strengthening of material testing and validation in real conditions of use. This study has already offered an initial demonstration of the feasibility of low-energy processing paths and commemorative design transformation. Even so, more long-term and more systematic testing is still needed. This is especially true in relation to material durability, storage stability, environmental adaptability, long-term use performance, and batch consistency. At the same time, future studies may bring this work into real collaborative settings. They may do so by carrying out small-scale pilot projects with funeral service institutions, floral teams, or craft studios. Through this kind of testing, future research may observe more clearly the applicability and limits of these design schemes under actual service conditions. This would help reduce the distance between conceptual design and real-world use.

Overall, future research should not remain limited to the question of whether post-ritual materials can be reused, but should further examine how ritual contexts, cultural rules, service mechanisms, and institutional structures shape the conditions under which such transformation becomes possible. Building on this, subsequent studies may extend the discussion from material recycling to meaning regeneration, and further explore how design can transform contextually discarded materials into emotionally and culturally sustainable systems.

# APPENDIX

## Appendix A: Images of Exhibition Participation

**Figure 123**

*exhibition photos*

**Figure 124**

*exhibition photos*

**Figure 125**
*exhibition photos*


**Figure 126**
*exhibition photos*

**Figure 127**
*exhibition photos*

**Appendix B:Questionnaire on Public Perception of Funeral Flower Reuse and Redesign Survey Description**

Public Questionnaire Survey on Funeral Flower Reuse and Redesign

I. Demographic Information

1. Your age: _____

2. Your gender: [ ] Male [ ] Female [ ] Other: ____

3. Your occupation:

[ ] Student

[ ] Teacher / Educator

[ ] Civil Servant / Public Institution Employee

[ ] Corporate Employee / Manager

[ ] Self-employed / Freelancer

[ ] Housekeeping / Service Industry

[ ] Floral Industry Professional (florist / wholesaler / designer, etc.)

[ ] Retired

[ ] Other: _____

4. Your religion/belief (optional):

[ ] No religion / Not sure

[ ] Buddhism

[ ] Taoism

[ ] Christianity

[ ] Catholicism

[ ] Islam

[ ] Hinduism

[ ] Other (please specify): _____

5. Have you attended a funeral of an immediate family member in the past few years:

[ ] Yes [ ] No

II. Experience and Perception of Funeral Flowers

6. Using flowers at funerals to express mourning and respect is meaningful. (1–5)

7. I believe that flowers at funerals are not just decorations, but also carry emotional symbolism. (1–5)

8. I am familiar with the use and meanings of common floral materials at funerals. (1–5)

9. What are the common floral materials at funerals? (Multiple selections allowed)

[ ] Chrysanthemum[ ] Lily[ ] Carnation[ ] Rose[ ] Orchid[ ] Baby's Breath[ ] Lotus[ ] Palm leaves / Ferns[ ] Other: _____

III. Attitudes Toward Floral Reuse and Redesign

The following questions aim to understand your overall views and acceptance of "funeral flower reuse or redesign."

Please answer according to your true thoughts. (1 = Strongly Disagree … 5 = Strongly Agree)

10. I believe that reusing or redesigning flowers after a funeral is valuable. (1–5)
11. As long as they are hygienically and properly processed, funeral flowers can still be given new meaning. (1–5)
12. Preserving or reusing flowers related to the deceased can bring emotional comfort. (1–5)
13. I believe that reuse designs that combine environmental protection and aesthetics are more easily accepted by society. (1–5)
14. I believe that funeral flower reuse can be socially accepted as long as cultural and emotional aspects are respected. (1–5)

IV. Acceptance Scope and Cultural Concerns

The following questions aim to understand your acceptable scope and cultural/psychological considerations when facing "funeral flower reuse."
Please answer according to your true thoughts.

15. Regarding reused funeral flowers, what sources can you accept? (Multiple selections allowed)
[ ]Only from my own or immediate family members' funerals
[ ] Can accept from relatives and friends' funerals
[ ] As long as the source is legal and processing is standardized, the source is unlimited (including anonymous others)
[ ] Cannot accept any funeral flower reuse
16. When considering funeral flower reuse, what are your main concerns? (Multiple selections allowed)
[ ] Cultural or religious taboos
[ ] Psychological discomfort
[ ] Authorization and privacy issues (whether family consent is needed, whether personal information is leaked)
[ ] Hygiene and safety risks (whether there are bacteria, odors, etc.)
[ ]Other: _____
17. Before conducting funeral flower reuse, what preconditions do you think should be met? (Multiple selections allowed)
[ ] Clear consent from family members or relevant personnel
[ ] Traceable source documentation
[ ] No disclosure of personal information of the deceased or family members
[ ] Harmless and eco-friendly processing (such as drying, disinfection, etc.)
[ ] Supervision and implementation by public institutions or platforms
[ ] Other: _____

V. Design and Sensory Perception in Floral Reuse

The following questions aim to understand your interest and acceptance of different design forms and sensory characteristics when facing "funeral flower reuse design."
Please answer according to your true feelings.

18. What forms would you prefer funeral flower reuse to be transformed into? (Multiple selections allowed)

[ ] Eco-friendly materials
[ ] Installations or artworks
[ ] Ceremonial/memorial objects
[ ] Home decorative design
[ ] Educational or public welfare purposes
[ ] Jewelry/accessories
[ ] Practical items
[ ] Other: _____

19. In this reuse design, which sensory experiences most arouse your interest or resonance? (Multiple selections allowed)
[ ] Color (hue, brightness, saturation and other visual impressions)
[ ] Touch (differences in feel such as soft, rough, warm)
[ ] Material texture (natural or recycled materials such as paper, fiber, wax, wood)
[ ] Scent (natural fragrance or residual floral scent)
[ ] No obvious sensory characteristics, more emphasis on symbolic meaning

20. When reusing funeral flowers, what additional or auxiliary materials can you accept? (Multiple selections allowed)
[ ] Completely preserve the original funeral flowers (only use post-ceremony flowers, do not add any substances)
[ ] Add a small amount of natural plants (such as leaves, branches, fruits, etc., to enrich compositional layers)
[ ] Add natural auxiliary materials (such as wax, pulp, plant fibers, natural adhesives, etc. for fixation or support)
[ ] Add artificial or industrial materials (such as epoxy resin, metal, glass, etc., to form protection or recreate visual effects)
[ ] Other (please specify): _____

**Appendix C: Semi-Structured Interview Guide (Funeral Practitioners / Funeral Floral Designers**

Purpose and Notes

Purpose:

To understand the current use and disposal practices of funeral flowers; professionals' perceptions of reuse/redesign; related cultural taboos and family psychology; feasibility and process coordination; as well as market and trend insights.

Notes:

All interviews must respect the privacy of respondents and bereaved families. No personally identifiable information should be recorded without explicit consent. Specific individual cases must not be discussed.

I. Current Situation and Practice

1.What is the typical process and scale of funeral flower use in your institution (or personal work)?

2.After the ceremony, how are the flowers usually handled? Are there differences among various settings (e.g., mourning hall, cemetery, farewell ceremony)?

3.Have you ever encountered or attempted "reuse/redesign" of funeral-related materials? What were the outcomes or feedback?

II. Cultural and Psychological Perspectives

4.What are the main cultural or religious taboos and psychological concerns regarding the reuse of funeral flowers?

5.How sensitive are families to the source of the flowers? Do they only accept flowers from their own family's ceremony, or can they accept anonymous or external sources?

6.Which styles of presentation are more likely to be accepted (e.g., subdued, minimalist, natural, traditional, symbolic, etc.)?

III. Process and Compliance

7.If reuse is to be implemented, what prerequisites and procedural steps are necessary?

8.What are the main practical challenges regarding timing, space/equipment, and personnel skills? How might these be resolved?

9.How can the process be most effectively aligned across the funeral chain (floral design → farewell ceremony → cleanup → processing → production → delivery)?

IV. User Needs and Delivery Timing

10.What delivery timing do families generally prefer? (e.g., shortly after the ceremony, on later memorial days, or at specific commemorative events)

11.Which aspects do families care about most? (e.g., emotional meaning, aesthetic design, environmental sustainability, price, durability, cultural conventions, etc.)

12.In your opinion, which presentation forms are most likely to gain broader acceptance?

V. Business and Collaboration

13.What are the potential price range, cost structure, and sustainable operation models for such services?

14.Which collaborators (e.g., funeral homes, floral teams, NGOs, environmental organizations, design studios) would be most suitable for joint development?

15.Are there any existing policies or industry regulations that support or restrict such practices? What are your recommendations for ensuring compliance?

VI. Trends and Recommendations

16.Have you observed any emerging trends toward more personalized or eco-friendly forms of remembrance? Please provide one or two examples.

17.If a small-scale pilot were to be conducted, what type of family or ceremony scale would you recommend as a starting point? Why?

18.What common pitfalls or risks should be avoided?

19.Are there any other key issues or suggestions not covered in the above questions that you believe are important?

Appendix: Implementation and Analysis Notes

Sampling and Scale:

Purposive sampling; recommended to interview three participants (funeral practitioners and floral designers) to achieve thematic saturation.

Recording and Analysis:

Interviews will be recorded and transcribed with consent. Data will be analyzed using thematic analysis focusing on four major themes: symbolism, emotion, feasibility, and process. The findings will be triangulated with questionnaire survey results.

Ethics and Compliance:

No personally identifiable information will be collected. Issues related to source, authorization, privacy, hygiene, and harmless treatment will be discussed under standardized and ethical expressions.

**Appendix D:Preliminary Material Evaluation Form**

Funeral Flower Reuse · Material Evaluation Form
Please imagine: The materials below are all made from reused floral materials remaining after the funeral ceremony. If they are used as funeral-related memorial items, please judge based on your actual experience of touching, viewing, and smelling them.
Please fill in according to your true feelings. There are no right or wrong answers.

1. Which material do you think best fits the concept of "memorial item"? (Multiple selections allowed, or select only 1)

☐ A. Scented candles / Incense bricks / Soap

☐ B. Incense beads / Combustible incense

☐ C. Dyed fabric

☐ D. Bio-based material combining gelatin + glycerin

☐ E. Fiber paper / Pressed flower paper

☐ Other: _____

2. If they fall into the following categories, which would you be more willing to consume/purchase: (Multiple selections allowed, or select only 1)

☐ Scented candles / Incense bricks / Soap (usable)

☐ Incense beads (wearable/hangable) / Incense (combustible)

☐ Dyed fabric (textile)

☐ Related items made from gelatin + glycerin material

☐ Fiber paper / Pressed flower paper (decorative, writable)

☐ Would not purchase at this time

3. Your views or concerns about these materials are:

**Appendix E:Final Product Test and Evaluation Form**

Final Product Test and Evaluation Form

This evaluation form is used to collect feedback from participants on the final design product prototype of this research. The evaluation content mainly focuses on design concept, material expression, sensory experience, and emotional perception. All information is used solely for academic research purposes.

Test Products: Incense Holders and Incense Sticks / Incense Bead Bracelets

1 Basic Information

（1）Age: ☐ 18–25 ☐ 26–35 ☐ 36–45 ☐ 46–60 ☐ 60+

（2）Have you ever attended a funeral or memorial service?

（☐ yes ☐ no )

2 Design Concept Evaluation -1-5 (Very Low - Very High)

| Topic | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Acceptance of the Concept of Funeral Flower Reuse | | | | | |
| Products can express emotions of commemoration and farewell. | | | | | |
| Design Concept Innovation | | | | | |

3 Product Design Evaluation - 1-5 (Very Low - Very High)

| Topic | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Overall Appearance | | | | | |
| Material Texture | | | | | |
| Material Texture Sensory Experience | | | | | |
| Usage/Wearing Experience | | | | | |

4 Usage/Purchase Intention

| Topic | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Suitable as a memorial | | | | | |
| Willing to use or purchase | | | | | |

5 Open-ended Feedback

Please briefly describe your overall impression of the product or provide relevant suggestions.

_____

_____

## Appendix F: Wenjuanxing Survey Results Report

### 关于葬礼用花再利用问卷调查

一、基本信息（Demographic Information）

1. 您的年龄:_____ [填空题]

| 填空 | 详情 |
|---|---|
| 填空1 | 详情 |

2. 您的性别: [单选题]

| 选项 | 小计 | 比例 |
|---|---|---|
| A. 男 | 180 | 45% |
| B. 女 | 220 | 55% |
| C. 其他: | 0 | 0% |
| 本题有效填写人次 | 400 | |

3. 您的职业 [单选题]

| 选项 | 小计 | 比例 |
|---|---|---|
| A. 学生 | 100 | 25% |
| B. 教师 / 教育工作者 | 120 | 30% |
| C. 公务员 / 事业单位 | 80 | 20% |
| D. 企业职员 / 管理人员 | 60 | 15% |
| E. 个体经营者 / 自由职业者 | 40 | 10% |
| F. 家政 / 服务行业 | 0 | 0% |
| G. 花卉相关从业者（花店 / 批发 / 设计等） | 0 | 0% |
| H. 退休 | 0 | 0% |
| I. 其他: | 0 | 0% |
| 本题有效填写人次 | 400 | |

4. 您的宗教/信仰（可选） [单选题]

| 选项 | 小计 | 比例 |
|---|---|---|
| A. 无宗教信仰 / 不确定 (No religion / Not sure) | 295 | 73.75% |
| B. 佛教 (Buddhism) | 67 | 16.75% |
| C. 道教 (Taoism) | 17 | 4.25% |
| D. 基督教 (Christianity) | 4 | 1% |
| E. 天主教 (Catholicism) | 0 | 0% |
| F. 伊斯兰教 (Islam) | 17 | 4.25% |
| G. 印度教 (Hinduism) | 0 | 0% |
| H. 其他（请说明）: (Other, please specify: ) | 0 | 0% |
| 本题有效填写人次 | 400 | |

5. 过去几年是否亲历直系亲属葬礼: [单选题]

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| A. 是 | 176 | 44% |
| B. 否 | 224 | 56% |
| **本题有效填写人次** | **400** | |

## 二、葬礼鲜花的使用与认知（Experience and Perception of Funeral Flowers）

6. 在葬礼上使用鲜花表达哀思与敬意很有意义。 [量表题]

**本题平均分：** 4.26

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| 很不同意 | 0 | 0% |
| 不同意 | 0 | 0% |
| 一般 | 79 | 19.75% |
| 同意 | 138 | 34.5% |
| 很同意 | 183 | 45.75% |
| **本题有效填写人次** | **400** | |

7. 我认为花卉在葬礼中不仅是装饰，更承载情感象征。 [量表题]

**本题平均分：** 4.38

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| 很不同意 | 0 | 0% |
| 不同意 | 0 | 0% |
| 一般 | 54 | 13.5% |
| 同意 | 139 | 34.75% |
| 很同意 | 207 | 51.75% |
| **本题有效填写人次** | **400** | |

8. 我熟悉葬礼中常见花材的使用与含义。 [量表题]

**本题平均分：** 3.81

| 选项 | 小计 | 比例 |
|---|---|---|
| 很不符合 | 11 | 2.75% |
| 不符合 | 48 | 12% |
| 一般 | 90 | 22.5% |
| 符合 | 110 | 27.5% |
| 很符合 | 141 | 35.25% |
| **本题有效填写人次** | **400** | |

9. 在葬礼上常见的花材包括哪些? [多选题]

| 选项 | 小计 | 比例 |
|---|---|---|
| A. 菊花 | 360 | 90% |
| B. 百合 | 280 | 70% |
| C. 康乃馨 | 220 | 55% |
| D. 玫瑰 | 140 | 35% |
| E. 兰花 | 18 | 4.5% |
| F. 满天星 | 28 | 7% |
| G. 莲花/荷花 | 39 | 9.75% |
| H. 棕榈叶/蕨类 | 43 | 10.75% |
| I. 其他: | 0 | 0% |
| **本题有效填写人次** | **400** | |

**三、对葬礼花卉再利用 / 再设计的态度（Attitudes Toward Floral Reuse and Redesign）**

以下问题旨在了解您对"葬礼鲜花再利用或再设计"的总体看法与接受度。
请根据您的真实想法作答。（1= 非常不同意 … 5 = 非常同意）

10. 我认为将葬礼结束后的鲜花进行再利用或再设计是有价值的。 [量表题]

**本题平均分：** 4.5

| 选项 | 小计 | 比例 |
|---|---|---|
| 很不同意 | 0 | 0% |
| 不同意 | 0 | 0% |
| 一般 | 40 | 10% |
| 同意 | 120 | 30% |
| 很同意 | 240 | 60% |

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| 本题有效填写人次 | 400 | |

11. 只要经过卫生与规范处理，葬礼花材仍可被赋予新的意义。 [量表题]

本题平均分：4.36

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| 很不同意 | 0 | 0% |
| 不同意 | 0 | 0% |
| 一般 | 82 | 20.5% |
| 同意 | 94 | 23.5% |
| 很同意 | 224 | 56% |
| 本题有效填写人次 | 400 | |

12. 保留或再利用与逝者有关的花卉能带来情感安慰。 [量表题]

本题平均分：3.81

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| 很不同意 | 43 | 10.75% |
| 不同意 | 49 | 12.25% |
| 一般 | 4 | 1% |
| 同意 | 150 | 37.5% |
| 很同意 | 154 | 38.5% |
| 本题有效填写人次 | 400 | |

13. 我认为再利用设计若兼具环保与美感，更容易被社会接受。 [量表题]

本题平均分：4.01

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| 很不同意 | 2 | 0.5% |
| 不同意 | 3 | 0.75% |
| 一般 | 121 | 30.25% |
| 同意 | 139 | 34.75% |
| 很同意 | 135 | 33.75% |
| 本题有效填写人次 | 400 | |

14. 我认为在尊重文化与情感的前提下，葬礼花卉的再利用是可以被社会接受的。 [量表题]

本题平均分：4.15

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| 很不同意 | 1 | 0.25% |
| 不同意 | 5 | 1.25% |
| 一般 | 76 | 19% |
| 同意 | 168 | 42% |
| 很同意 | 150 | 37.5% |
| **本题有效填写人次** | **400** | |

**四、再利用的可接受范围与文化考量（Acceptance Scope and Cultural Concerns）**

以下问题旨在了解您在面对"葬礼鲜花再利用"时的可接受范围与文化、心理考量。
请根据您的真实想法作答。

15. 对于再利用的葬礼花材，您能接受的来源是？[多选题]

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| A. 仅来自自己或直系亲属的葬礼 | 120 | 30% |
| B. 可接受来自亲友的葬礼 | 192 | 48% |
| C. 只要来源合法、处理规范，来源不限（包括匿名他人） | 48 | 12% |
| D. 无法接受任何葬礼花材的再利用 | 40 | 10% |
| **本题有效填写人次** | **400** | |

16. 在考虑葬礼花材再利用时，您主要担心的问题是？[多选题]

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| A. 文化或宗教禁忌 | 41 | 10.25% |
| B. 心理上的不适 | 122 | 30.5% |
| C. 授权与隐私问题（是否需家属同意、是否泄露个人信息） | 123 | 30.75% |
| D. 卫生与安全风险（是否有细菌、异味等） | 114 | 28.5% |
| E. 其他: | 0 | 0% |
| **本题有效填写人次** | **400** | |

17. 在进行葬礼花卉再利用之前，您认为应满足哪些前提条件？[多选题]

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| A. 家属或相关人员明确同意 | 280 | 70% |
| B. 具备可追溯的来源说明 | 240 | 60% |
| C. 不透露逝者或家属的个人信息 | 260 | 65% |
| D. 进行无害化、环保化的处理（如干燥、消毒等） | 320 | 80% |

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| E. 公共机构或平台监督执行 | 160 | 40% |
| F. 其他: | 0 | 0% |
| **本题有效填写人次** | **400** | |

**五、再利用设计的形式与感官体验倾向（Design and Sensory Perception in Floral Reuse）**

以下问题旨在了解您在面对"葬礼鲜花再利用设计"时，对不同设计形式与感官特征的兴趣与接受度。
请根据您的真实感受作答。

18. 您更倾向葬礼鲜花再利用被转化为哪类形式？[多选题]

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| A. 环保材料 | 260 | 65% |
| B. 装置或艺术作品 | 140 | 35% |
| C. 仪式/纪念性物件 | 240 | 60% |
| D. 家居类装饰设计 | 180 | 45% |
| E. 教育或公益用途 | 100 | 25% |
| F. 首饰/饰品类 | 40 | 10% |
| G. 实用类 | 60 | 15% |
| H. 其他: | 0 | 0% |
| **本题有效填写人次** | **400** | |

19. 在这种再利用设计中，哪些感官体验最能引起您的兴趣或共鸣？[多选题]

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| A. 颜色（色调、明度、饱和度等视觉印象） | 262 | 65.5% |
| B. 触感（柔软、粗糙、温润等手感差异） | 180 | 45% |
| C. 材质质感（纸张、纤维、蜡、木等自然或再生材料） | 235 | 58.75% |
| D. 气味（自然香气或花香残留） | 243 | 60.75% |
| E. 无明显感官特征，更重视象征意义 | 223 | 55.75% |
| **本题有效填写人次** | **400** | |

20. 再利用葬礼鲜花时，您能接受哪些添加或辅助材料？[多选题]

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| A. 完全保留原有葬礼鲜花（仅使用仪式后花材，不添加任何物质） | 240 | 60% |
| B. 添加少量自然植物（如叶片、枝条、果实等，以丰富构成层次） | 180 | 45% |

| 选项 | 小计 | 比例 |
| --- | --- | --- |
| C. 添加天然辅材（如蜡、纸浆、植物纤维等，天然粘合剂等用于固定或支撑） | 220 | 55% |
| D. 添加人工或工业材料（如滴胶、树脂、金属、玻璃等，以形成保护或再造视觉效果） | 80 | 20% |
| E. 其他（请说明）： | 0 | 0% |
| **本题有效填写人次** | **400** | |

**题目平均分之和：** 33.27

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