Notes on creation

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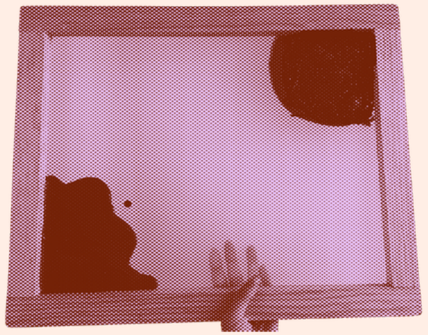
Intro



The origin of this project stems from my conviction that we can change our patterns of consumption and the ways we create. Experimenting with alternative materials that can degrade and leave no residue is my response to an ongoing search for solutions to this issue. I wanted to combine this principle with one of my longest and strongest fascinations: jewelry. As long as I can remember, I have loved wearing these accessories;

I would even say they are my favorite objects.
However, my concern regarding the materials and production methods used to create them has grown over time. Through this project, I aim to intersect these two interests and begin constructing my voice as a designer, one that is closely tied to my increasing social and consumer awareness.
This journal is a compilation of the notes I took, and the decisions made during my creation process, this is part of my commitment to responsible creation and to share the ideas I developed throughout this journey, with the hope that it may serve as inspiration for others to pursue projects of this nature.

It is my small contribution to a movement that has been unfolding for years. In many ways, this journal is the guide I wish I had before starting this project, and I am certain it will serve as a foundation for my future ideas, this is only the beginning.

Concept

Every design project begins somewhere, a question, an image, a feeling that refuses to leave. For this project, that beginning was a phrase heard at an architecture conference, attributed to the iconic Mexican architect Luis Barragán: that style does not exist, and that the essence of our creative work is shaped by the binomial of culture and the nature of our surroundings. The speaker extended this idea further, adding that personal history, who we were and who we aspire to become, is equally formative. These words became the conceptual foundation of this project and gave rise to three guiding questions: Who was I? Who am I? Who do I want to become?

Reflecting on the past revealed something important. Growing up in an environment that encouraged free expression and creativity, objects became the primary vehicle through which imagination took shape. Costumes, crowns, plastic necklaces and earrings, these were not trivial things, but tools for world-building. A particular photograph of my sister and I dressed as our favorite princesses, wearing plastic jewelry, became the central image of this project; a visual anchor to the past and a point of departure for reimagining the future. This act of looking back is not nostalgic for its own sake. It is intentional. The proposition of this project is that reinterpreting the past through the lens of conscious design is a powerful way to define who we are becoming.

Growing up loving objects and accessories also means growing up shaped by a culture of consumption. Today, that relationship demands questioning. In Consuming Life (2007), Zygmunt Bauman argues that with the advent of liquid modernity, the society of producers has been transformed into a society of consumers, one where individuals become simultaneously the promoters of commodities and the commodities themselves. In this framework, identity is no longer something built through lasting relationships or commitments, but something purchased, assembled– and discarded in an endless cycle. Consumption, Bauman warns, offers temporary relief from anxiety, but also demands that we consume increasingly more, since what we previously acquired quickly loses its rewarding quality, a vicious spiral that defines our time.

Gilles Lipovetsky describes the emergence of what he calls hyperconsumption, a third phase of consumer society characterized not just by the acquisition of goods, but by the pursuit of emotional experiences, immediate gratification, and perpetual novelty.

Green peace (2017).
How can we resist rampant consumerism?

Plastic jewelry is a small but telling example of this logic: cheap, cheerful, disposable, and endlessly replaceable. As a child, that disposability did not register. As a designer, it is impossible to ignore.

This project does not propose to reject objects or the joy they bring, but rather to confront the contradiction honestly. If objects matter, and they do, then how we make them matters too.

Design is not the problem; it is the solution. When material choices are made consciously and the life cycle of an object is considered from the very beginning of the design process, it becomes possible to shift our relationship with what we create and consume. Biomaterials represent one of many paths toward that shift, a new way of seeing, feeling, and making in the world that prioritizes the earth and clear material cycles over convenience and disposability.

Jewelry is one of the most personal categories of objects, worn on the body, tied to memory, identity, and emotion, yet also one of the most associated with disposability. Choosing to make it from bio-based materials is a small but intentional act of resistance and a declaration of the values this project stands for. The plastic jewelry of childhood becomes bio-resin jewelry of the present, same impulse, different awareness.

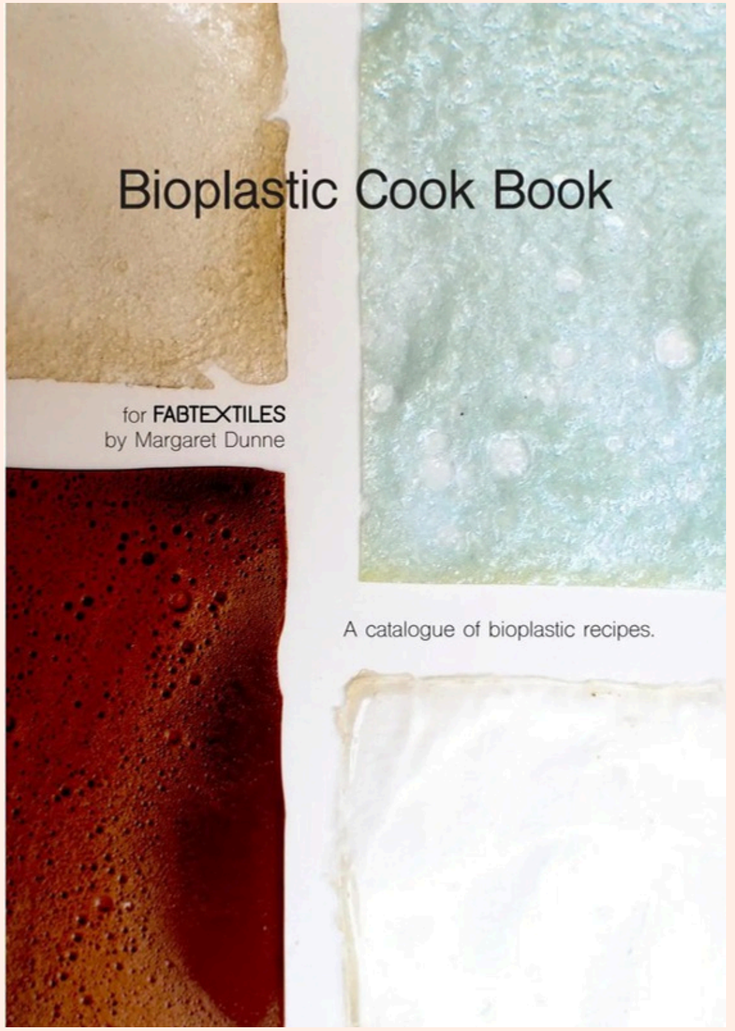
References & Inspiration

Alicia Valdes (2025)

Alicia Valdes is a designer specialized in material and waste research whose practice centers around rethinking how materials are sourced, used, and discarded. Her work challenged me to look at design not just as the creation of objects, but as a series of decisions with real environmental and ethical consequences. What drew me to her in particular was a post where she openly shares her creative and production process, the experimentation, the failures, and the reasoning behind her material choices. That kind of transparency resonated deeply with me and became something I wanted to carry into my own practice and documentation.

The Bioplastic Cookbook by Margaret Dunne was one of the first resources I turned to when beginning my experimentation with biomaterials. More than just a recipe collection, it offers a comprehensive and accessible introduction to the world of bio-based materials, covering ingredients, processes, properties, and applications in a way that is both practical and easy to follow. What makes it particularly valuable is its clarity: it demystifies a field that can feel overwhelmingly technical and invites experimentation without requiring a scientific background.

It served as a foundational guide throughout my process, helping me understand not just how to make these materials, but why each ingredient behaves the way it does.



Margaret Dunne (2018). Bioplastic cookbook

Loes Bogers (2020).
Bioresin recipe

Loes Bogers' bioresin recipe, developed during her Fabricademy journey at Waag Textile Lab Amsterdam, was also a starting point for my experimentation. What sets her documentation apart is not just the recipe itself, but the depth of context surrounding it, covering the material's historical origins, ethical implications of animal-derived ingredients, sustainability considerations, and honest acknowledgment of what still needs further research. Her transparency became both a technical reference and a model for how I wanted to approach my own documentation.

Alessia Pasquini's trendbook (Kleis II) served as a visual and editorial reference for how a physical book about biomaterials could be structured and presented. What drew me to it was its interactive quality, it demonstrated that this type of documentation does not have to be purely technical, but can also be an engaging and well designed object in itself.

Alessia Pasquini (2022).
Kleis II

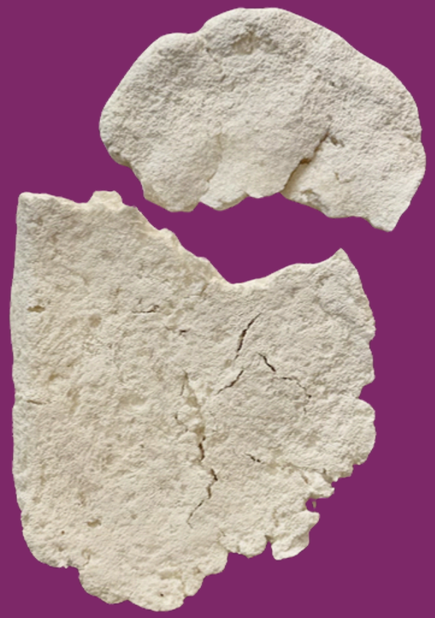
Process

My first step was gathering recipes from platforms such as Fabricademy, the Bioplastic Cookbook, and Materiom. However, I did not select them arbitrarily, I established a set of criteria to guide my choices. I prioritized recipes whose ingredients could be sourced locally or nationally, ensuring a lower carbon footprint and support for the local economy. I also looked for materials that were biodegradable, and whenever possible, I favored recipes that made use of food waste or byproducts, turning what would otherwise be discarded into a resource.

Material	sourced locally/nationally	biodegradable	foodwaste
glycerine	yes	yes	
agar	yes	yes	
gelatine	yes	yes	yes
eggshell	yes	yes	yes
xanthan gum	yes	yes	
red ochre pigment	yes	yes	
clay	yes	yes	
calcium aglinate	no	yes	

Samantha Sánchez Morales (2026).

I then categorized the recipes into two groups: bark clay bio-leather, eggshell ceramic, and bio-resin.



eggshell ceramic

bio-resin

I used three types of recipes to create a type of ceramic with this powder; my binding agents were gelatin, xanthan gum and sodium alginate.
Binding agents are substances used to hold particles together.

To disinfect the eggshell and obtain homogeneous mixtures for experimentation, it is necessary to turn the shell into a fine powder.

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Biomaterials.

Eggshell ceramic recipes

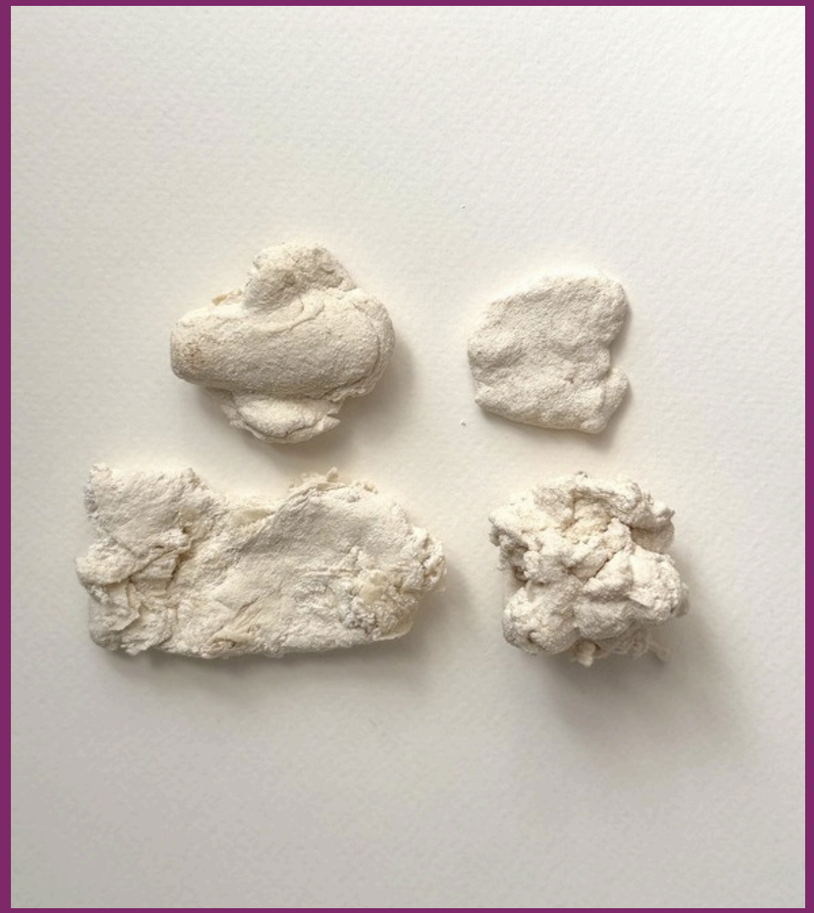
Xanthan gum:
100 g of eggshell powder
100 ml of water
4 g of xanthan gum

Instructions:

1. Add xanthan powder to the water and stir until it starts to thicken. To completely dissolve the lumps that are formed at the beginning, use a mixer or wait longer.
2. Add the powder until they are mixed in a smooth paste.
3. Fill a extruder container with the paste (i used a 20 ml sryinge), create your object and store it at room temperature until it completely dries.

Ana (2026)
Materiom.

Samantha Sánchez Morales (2026)
Biomaterials.



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Biomaterials.

Gelatin:
24 g eggshell powder
12 ml water
5 g gelatin

Instructions:

1. Mix water an gelatin in a pan (the water should have a medium high temperature).
2. Add eggshell powder and mix until a slightly viscous and sandy like paste is reached.
3. Pour the mix into a mold and let it dry in room temperature. You can accelerate the demolding process by putting it in the freezer and then taking it out of the mold and let it dry in room temperature.

Sofia (2026)
Materiom.

Sodium alginate:
20 g of eggshell powder
22 ml of water
5 g of calcium alginate

Instructions:

1. Sieve the alginate in a bowl and then add the water, mix thoroughly so that no lumps remain.
2. Gradually add the 20 grams of eggshells into the water-alginate mixture until a paste clay-like is formed.
3. Put your clay into a mold or shape your object by hand.

Samantha Sánchez Morales (2026)
Biomaterials.

Kochhar, M (2026).
Materiom.

Bio resin

10 g of gelatin
2 g of glycerin
70 ml of water
* I reduced the quantities of the original recipe*

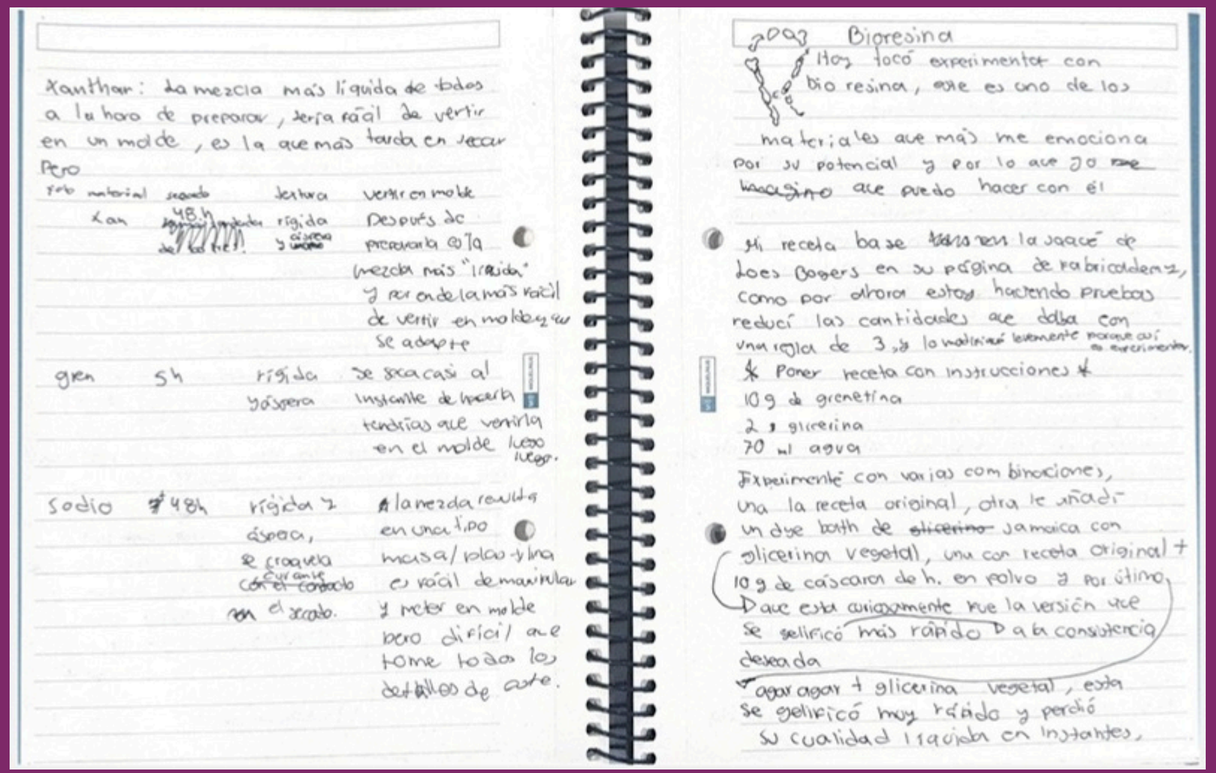
1. Bring the water to a boil, then add optional natural dye, glycerin, and gelatin, keeping the temperature below 80°C and stirring very gently with a spoon to avoid bubbles

2. Simmer the mixture between 60–80°C for at least 20 minutes up to an hour without letting it boil. The longer you cook it, the more water evaporates, which reduces shrinkage and gives a thicker liquid, ideal for larger castings. If foam appears on the surface, remove it with a coffee filter or kitchen paper.

3. Let the mixture cool briefly until slightly gelled but still pourable, then cast it slowly into the mold from the center without moving it. Leave it to dry in a cool, well-ventilated place to avoid fungal growth.

Loes Bogers (2020).
Bioresin recipe

Once the materials were made, I analyzed their qualities based on my observations: drying time, texture, and general notes.



Samantha Sánchez Morales (2026)
Biomaterials.

Flip cards and videos of the qualitative aspects made for the book.

Material: Bio resin w/hibiscus flower dye

Drying time: 5 days

Texture: Solid, smooth surface, uniform, hard and resilient.

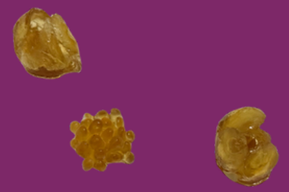
Observations: The result is a semi-thick and viscous liquid mixture. It's liquid state (the ideal moment to pour into a mold) passes quickly, so you must pour it fast. It sets quickly and its initial drying texture is like that of a gummy, after several days of drying it hardens and becomes very hard and ever so slightly flexible. My piece had a 15% reduction in width, length, and thickness, that is approximately one centimeter less in every direction.

Material: Bio resin w/eggshell powder

Drying time: 3 days

Texture: Rough surface, uniform, hard and resilient.

Observations: The result of the mixture is liquid, viscous but gritty (due to the eggshell powder), it is easy to pour into a mold but cools quickly, so you must pour it as soon as possible. The first drying stage has a gummy texture, but once fully dried it is hard and porous. I noticed that this mixture took less time to fully harden. It also had a 15% reduction in all dimensions.



Material: Bio resin

Drying time: 3 days

Texture: Solid, smooth surface, uniform, hard and resilient.

Observations: The result is a semi-thick and viscous liquid mixture. It's liquid state (the ideal moment to pour into a mold) passes quickly, so you must pour it fast. It sets quickly and its initial drying texture is like that of a gummy, after several days of drying it hardens and becomes very hard and ever so slightly flexible. My piece had a 15% reduction in width, length, and thickness, that is approximately one centimeter less in every direction. These pieces dried in less time because I divided the mixture into three parts, so logically if you want the resin to dry faster, make smaller pieces.

Material: Bio resin w/agar

Drying time: 15 days

Texture: Flexible, lumpy, easy to break and rugged.

Observations: The mixture gelled very quickly, so it had a hard time to adapt well to the shape of the mold. It took a long time to lose that gummy texture and when it dried it did not harden like the other pieces. It is flexible but does not have a homogeneous result, the mixture formed a type of clumps, preventing it from bonding together properly. It had a 15% reduction in all directions.

Material: Eggshell ceramic w/sodium alginate

Drying time: +48 hours

Texture: rigid, a little rough, easy to break and cracks when drying.

Observations: The mixture results in a type of dough/clay, it is easy to manipulate by hand, but not so much for using it in a mold, it may not capture the details of it.

Material: Eggshell ceramic w/gelatin

Drying time: 5 hours

Texture: rigid, rough, hard to break.

Observations: It dries almost instantly, which makes it difficult to mold, you have to pour it quickly into a mold before it solidifies.

Material: Eggshell ceramic w/xanthan gum

Drying time: 48 hours

Texture: rigid, rough, easy to break.

Observations: After preparing it, it is the most liquid mixture and therefore the easiest to pour into a mold and adapt to it, you can also experiment with extruding the mixture with a syringe.

Design

For the jewelry creation section, I drew inspiration from the photo I included at the beginning of my sister and I, specifically the plastic earring and locket we were wearing. I used this image as a reference and an allusion to my past, and decided to recreate, or rather reinterpret, the accessories we are wearing in the photo using biomaterials. This, in turn, is my way of shaping my future.

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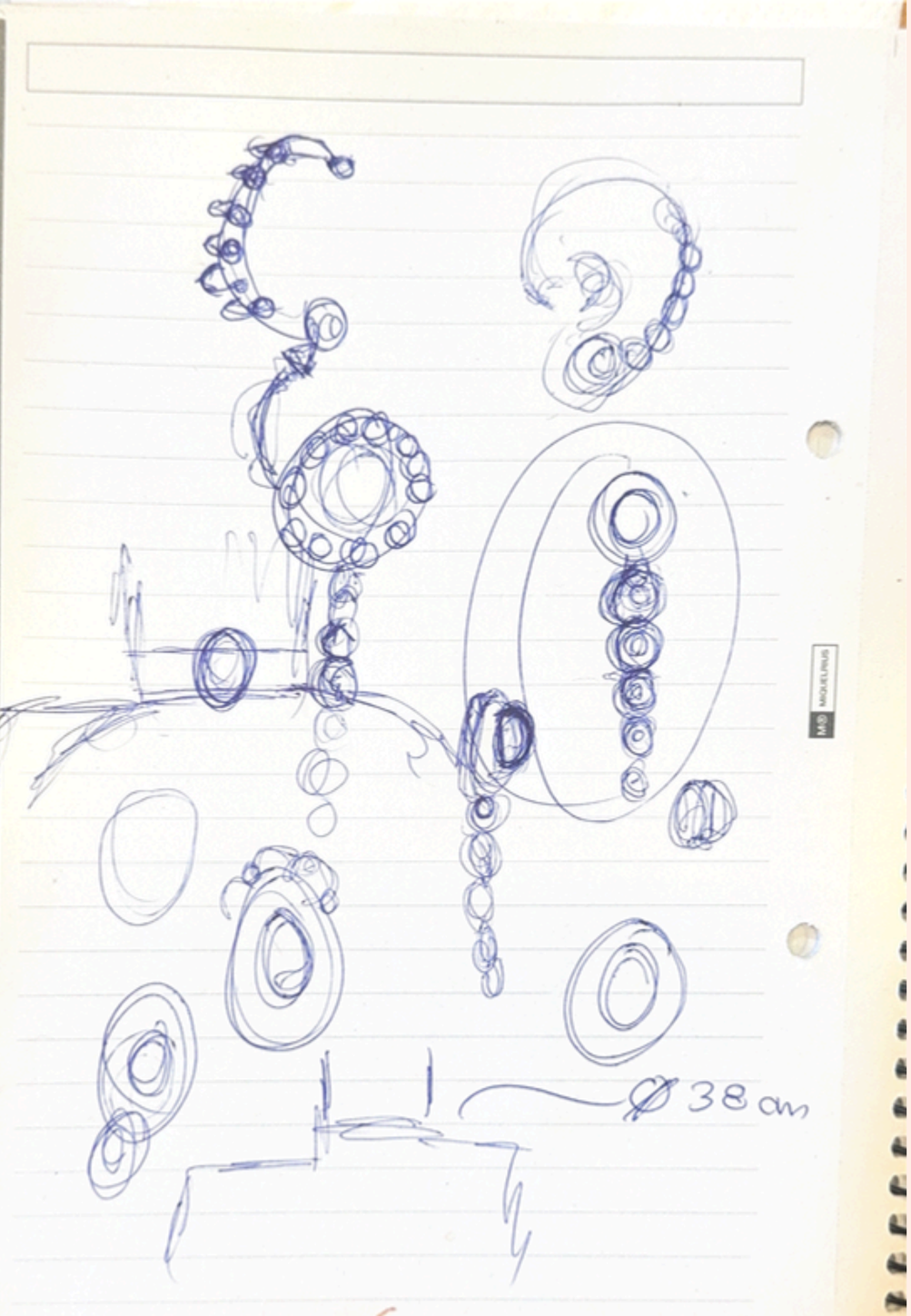

When I evaluated the behavior of the materials I experimented with, the one I liked the most and found most suitable for this project was the bio-resin. Since I used molds for its creation, it made logical sense to use this technique for making my pieces.
The main pieces are earrings, an ear cuff, a locket and a choker.

Samantha Sánchez Morales (2026)

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I then modeled my pieces in Rhino based on my sketches, and once I had them ready I proceeded to make the molds. Mold making follows the logic of positive and negative, or the inversion of volumes. A solid object (positive) creates a hollow cavity (negative), which in turn is used to replicate new solid pieces (final positives).

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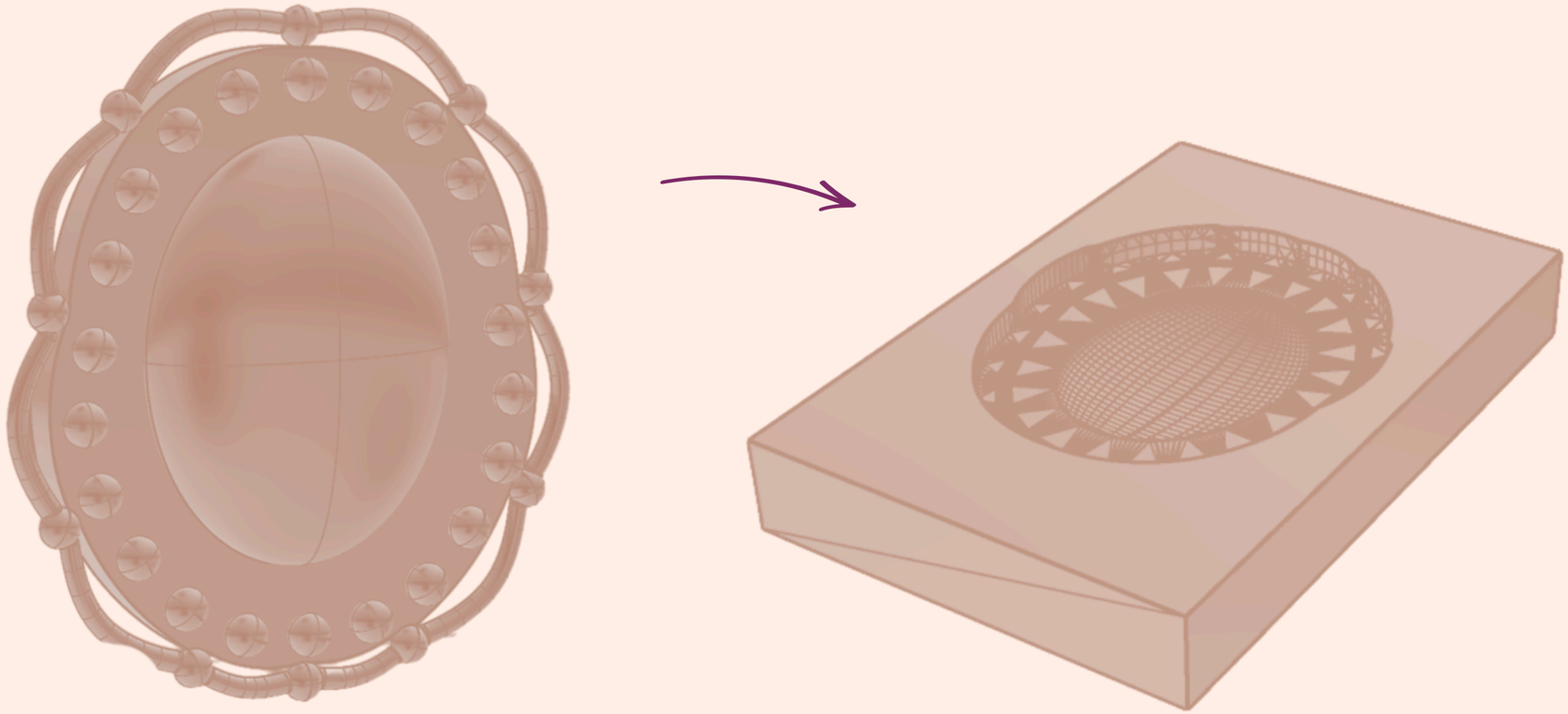

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In Rhino there is a tool to carry out this process digitally, called , Boolean difference. In my first attempt at making molds, I took my piece model, created a cube and overlapped it, then used this tool to carve my figure into the cube. Once this was done, I 3D printed it.

Mold results:

1

1. TPU molds.
I chose to print in this material because it is flexible. To hide the print lines I filled it with wood filler, which turned out to be a mistake as it detached along with the pieces. I do not think this is the ideal technique for pieces that require depth or high detail.

2

2. Silicone molds
Good for capturing details, and the final piece is very easy to demold.

3

3. PLA molds.
This plastic is rigid but ideal as a base for the silicone mold. For this mold, I placed my positive and a barrier around it to contain the silicone. I also made this removable base so the final piece could be taken out easily. This material can be sanded and repaired comfortably; for this one, I did use plastic filler.

These are the final pieces, resulting in ear cuffs, chokers, earrings, and lockets. For these, I made variations to the bio-resin recipe, some with hibiscus flower dye and others with eggshell powder.

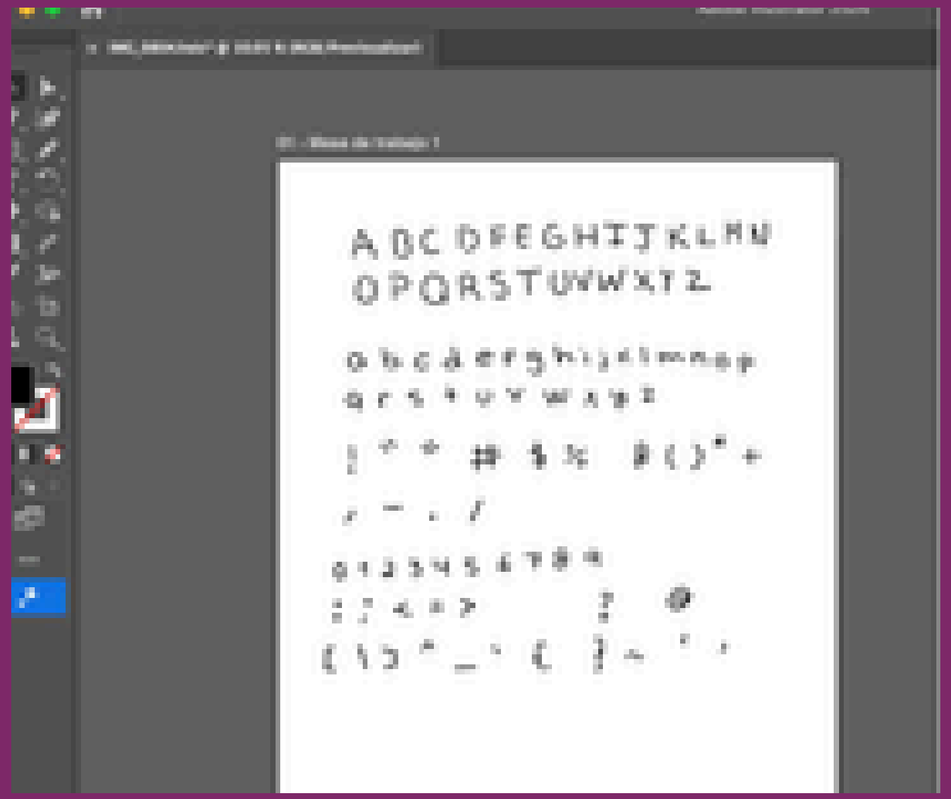
Samantha Sánchez Morales (2026)

Book creation

I wanted this book to feel a little like you were reading my diary, full of scattered notes that, by the end, all come together and make sense: an invitation into my mind. While I love the chaos and cross-outs of a diary because they feel personal, it wouldn't have been very clear to the reader, so I decided to give it an editorial style, like a zine (a small, self-published booklet, usually made independently and with a very personal or niche focus), so it would keep my personal style while still presenting the information in an organized way.
Printing this diary was important to me, a way of making it tangible in some sense. I love the feeling of printed books, so I decided that adding interactive physical elements would bring a new layer of experience to the reader.

The way the book is narrated is entirely based on the order of the notes in my real diary, arranged more or less chronologically, following how the project developed. So it starts with material experimentation, recipes, observations, and an explanation of the jewelry collection concept and its inspiration, then moves into the modeling and printing of the molds, and finally the end result.

To make my book more personal, I turned my own handwriting into a font. I did this through a plugin for Adobe Illustrator called Fontself.



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BoM (bill of materials)

Material	Qty	Price (MXN)
Glycerine	1 L	$21.500
Agar	70 g	$15.500
Gelatine	66 g	$5.000
Clay	1.03 kg	$3.150
Egg (eggshell)	12 pcs	$7.500
Xanthan gum	250 g	$9.000
Red Ochre	100 ml	$4.790
Silicone	—	$1,000.00
Total		**$1,664.40**

GALLERY

Notes on creation

Samantha Sanchez Morales

This journal documents an exploration into the world of bio-materials, an experimental journey of trial, error, and discovery through the creation of jewelry pieces made from bio-resin. Equal parts personal and technical, it traces the process of reinterpreting childhood memories through sustainable design, asking three fundamental questions along the way: Who was I? Who am I? Who do I want to become?

A document for curious minds, makers, and anyone who believes that design can be both deeply personal and a force for change.

After a few days of drying, I evaluated and observed the qualitative properties of each material.

For the cards to see the data sheets


1
3
1. TPU molds.
I chose to print in this material because it is flexible. To hide the print lines I filled it with wood filler, which turned out to be a mistake as it detached along with the pieces. I do not think this is the ideal technique for pieces that require depth or high detail.
2. PLA molds.
This plastic is rigid but ideal as a base for the silicone mold. For this mold, I placed my positive and a barrier around it to contain the silicone. I also made this removable base so the final piece could be taken out easily. This material can be sanded and repaired comfortably; for this one, I did use plastic filler.
2
3. Silicone molds
Good for capturing details, and the final piece is very easy to demold.
Considerations:
Silicone has a high ecological footprint, its waste and the energy required to produce it are its main drawbacks, although it does not release toxic substances. Its advantage is that it can be reused many times, just like PLA. To make the most of the plastics used, I will continue using these molds to keep testing materials rather than treating them as disposable.

After a few days of drying, I evaluated and observed the qualitative properties of each material.

the cards to see the data sheets

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