

Fabrication of a solid object made of mycelium composite materials

This protocol guides through the process of fabricating a 3 dimensional object starting from a healthy growing culture/bag.

Materials: Negative mold (cardboard), well colonised substrate, kitchen wrap, gloves, rubbing alcohol, spray bottle.



Part 1

- Cultivate enough mycelium for the purposes, or buy it (www.pilzmaennchen.de)
We use Reishi for this session (*Ganoderma lucidum*)
- Build a negative mold and wrap the surfaces with kitchen wrap
- Wear gloves, and clean everything with 70% alcohol; the working surface, tools and mold
HINT: Using a spray bottle with rubbing alcohol makes cleaning the wrapped mold much easier
- Break down the mycelium in bag/culture in tiny pieces with hands; the smaller, the better
- Fill the mold with the substrate; press the material
- Wrap the filled mold in kitchen film and puncture it to allow oxygen flow
- Put the mold in a favourable environment for the mushroom. Check these variables: Temperature, humidity and light conditions



Part 2

- Check the mold every couple of days. When the material is well “glued” together and if there is no contaminations, it’s ready to be taken out of the negative mold
- Remove the object carefully from the mold and put it into a bag with an oxygen filter, or simply a plastic bag closed loosely, to allow air flow
- Put the object in a favourable environment for the mushroom again and check its growth every couple of days
- Turn the object on a different side if the mycelium envelope is not growing uniformly or not as desired



Part 3

- When the object is considered ready, it needs to be dried out. The drying process requires 1 to 3 days in a row, therefore be ready! Hint for the next step: The thicker the object, the longer the drying process is. Above 5 cm of thickness, you may need to increase the number of drying cycles.
- Heat your home oven to 60-70°C (minimum)
- Put the object inside and wait 1 hour
- Touch the object to check if it’s dry. If it is, let it rest overnight. If not, leave it in the oven.
- If the object is moist, repeat the previous steps.
- If the object shows some molds on it, wipe the surface with abundant alcohol, let it dry, and repeat the drying cycles



Note 1: Expect the drying process to take around 3 days. The object can stay in the oven for hours before starting drying. Expect to find the object moist the next day.

Note 2: Until the object stays dry, microbes should not grow on it. Moths like to lay eggs on it, and larvae feed on the materials. You may consider painting it with a wood lack.