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4.510 Digital Design Fabrication
Fall 2008

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Rapid Prototyping

Design by Physical Reasoning

Description

Rapid Prototyping



Generative
Methods
(Design Tools)

Description

CNC Fabrication

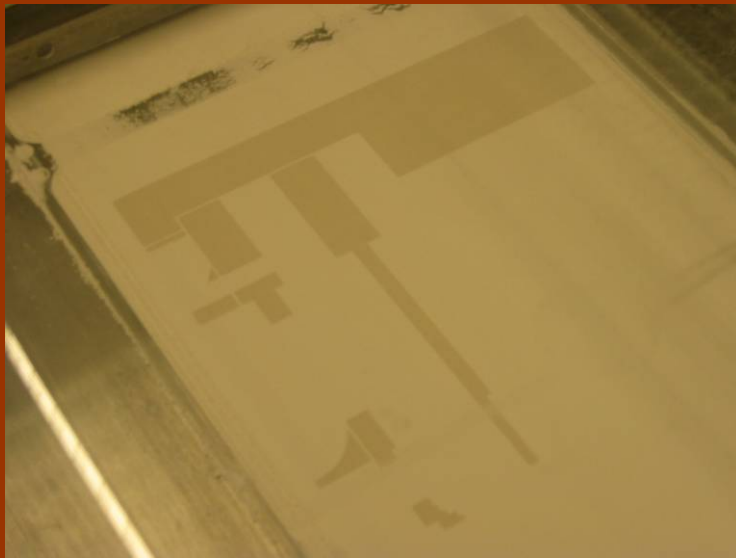
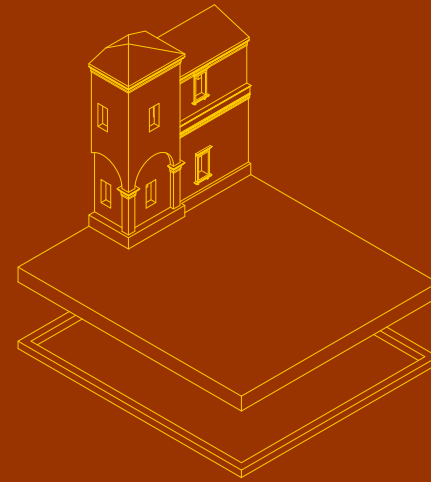


Digital Printing = Digital Fabrication

- Flexibility
- Precision
- Repetition

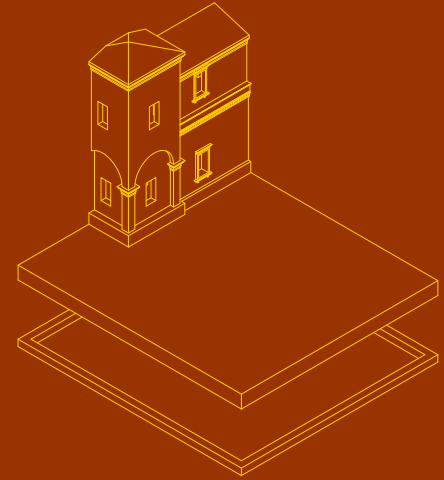
Rapid Prototyping

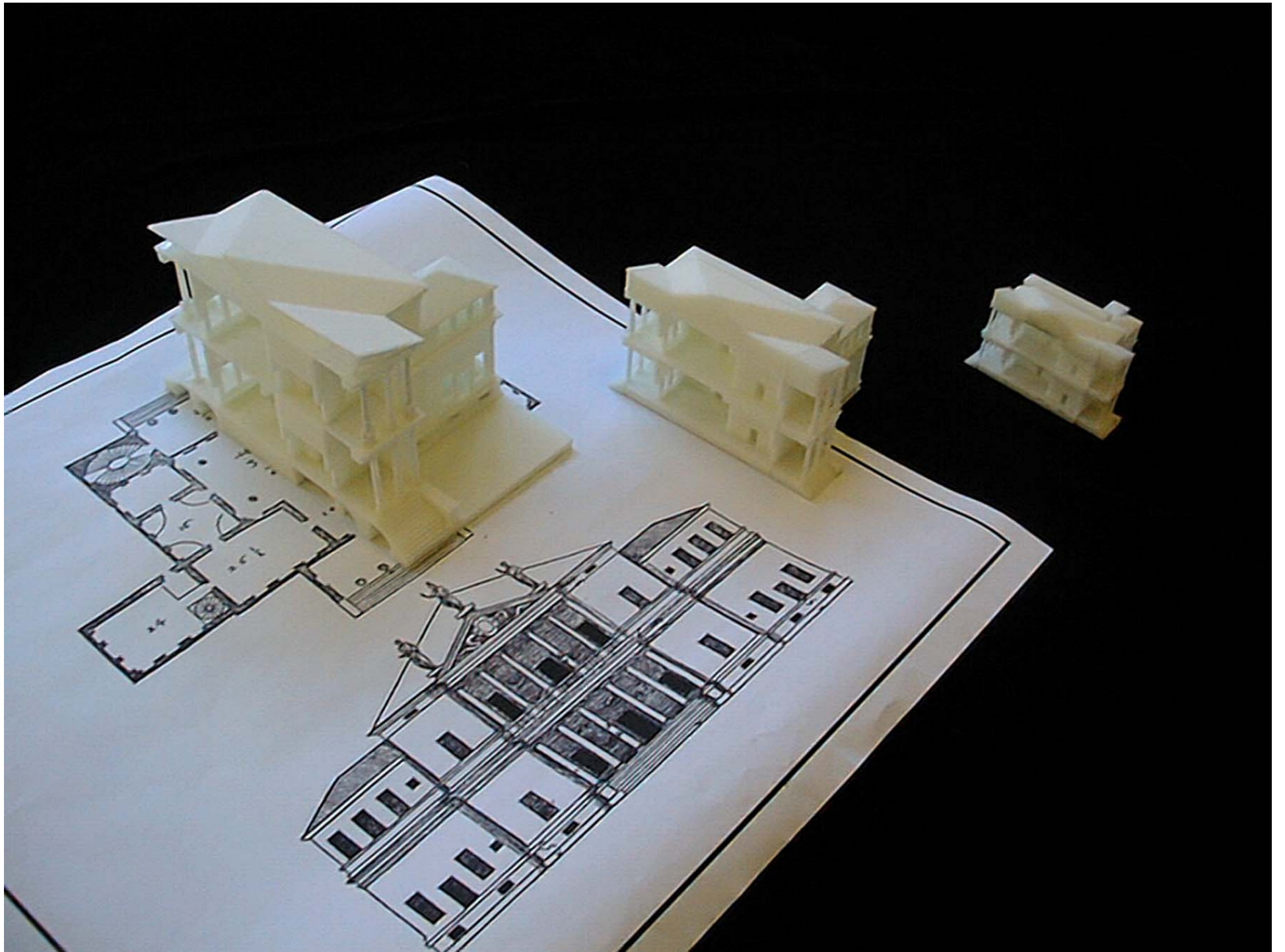
3D Printing

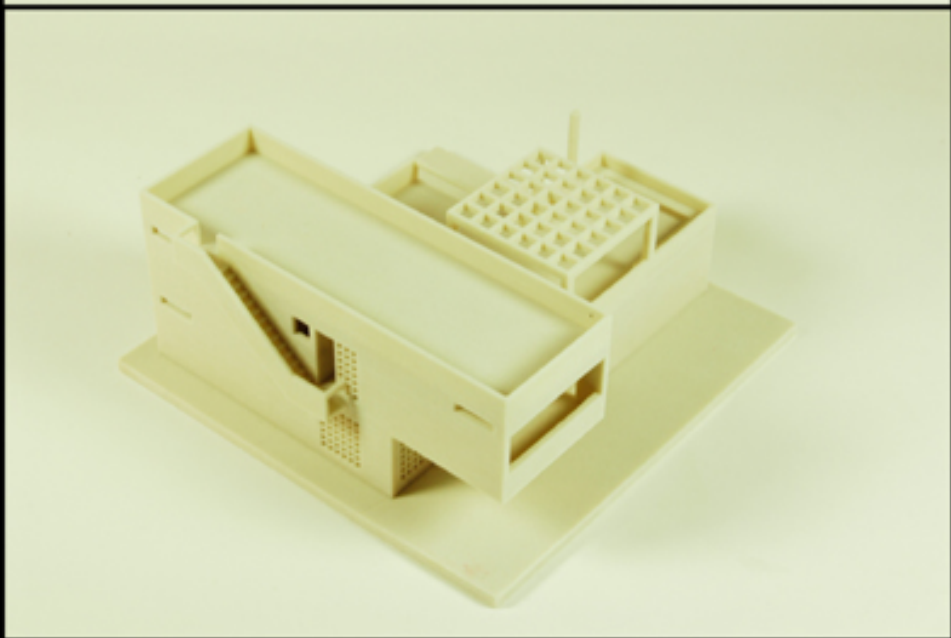
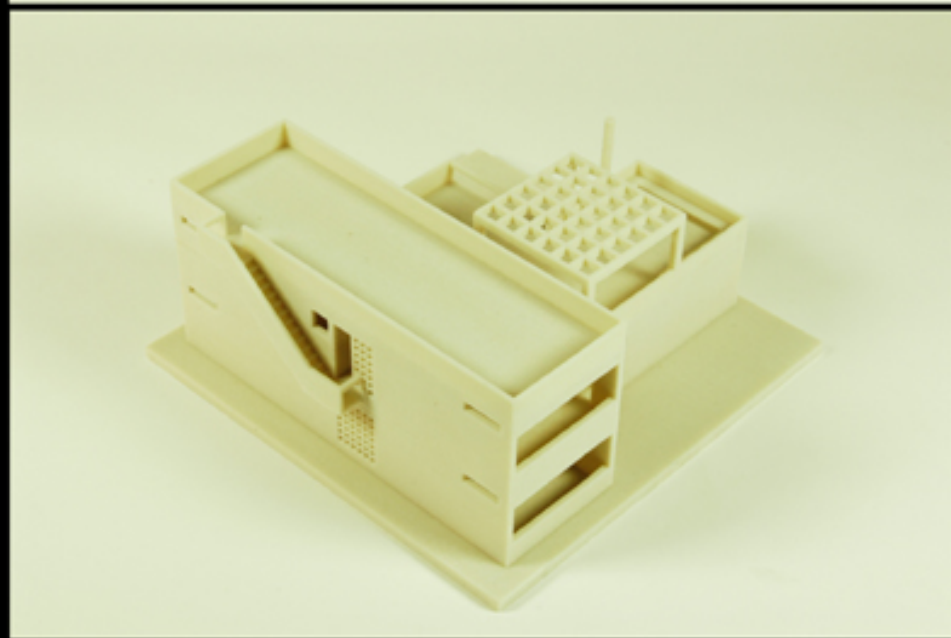
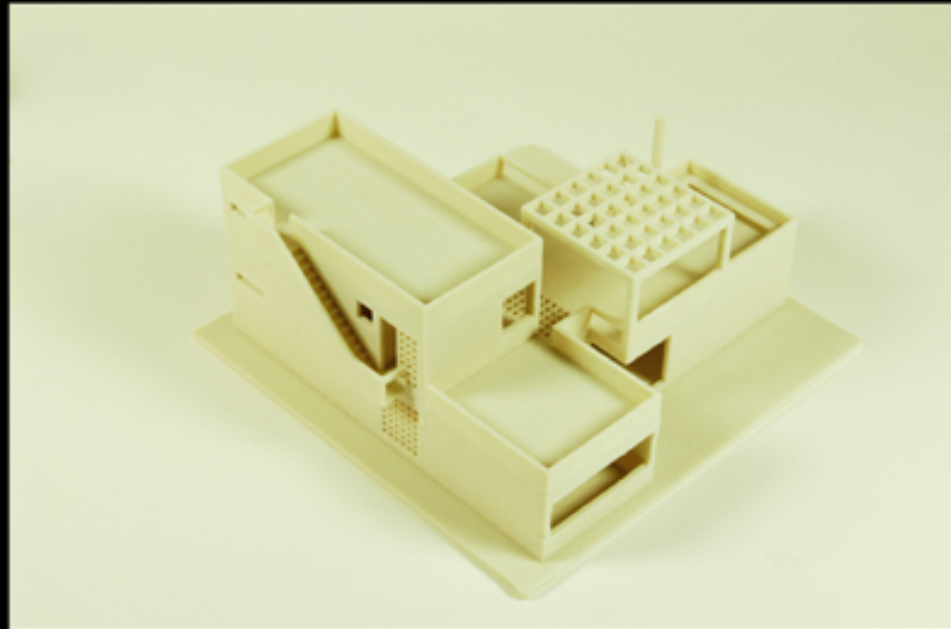


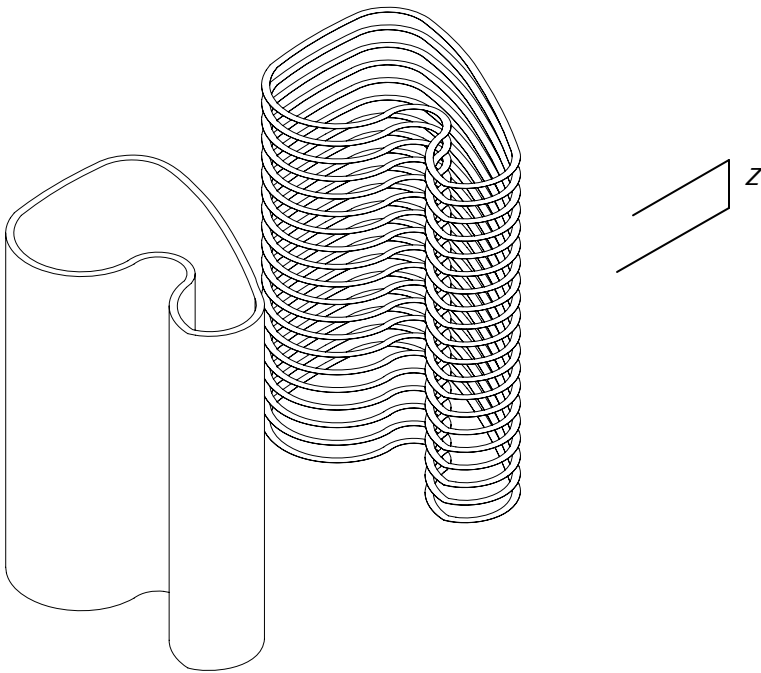
Rapid Prototyping

3D Printing









A) 3D Printer

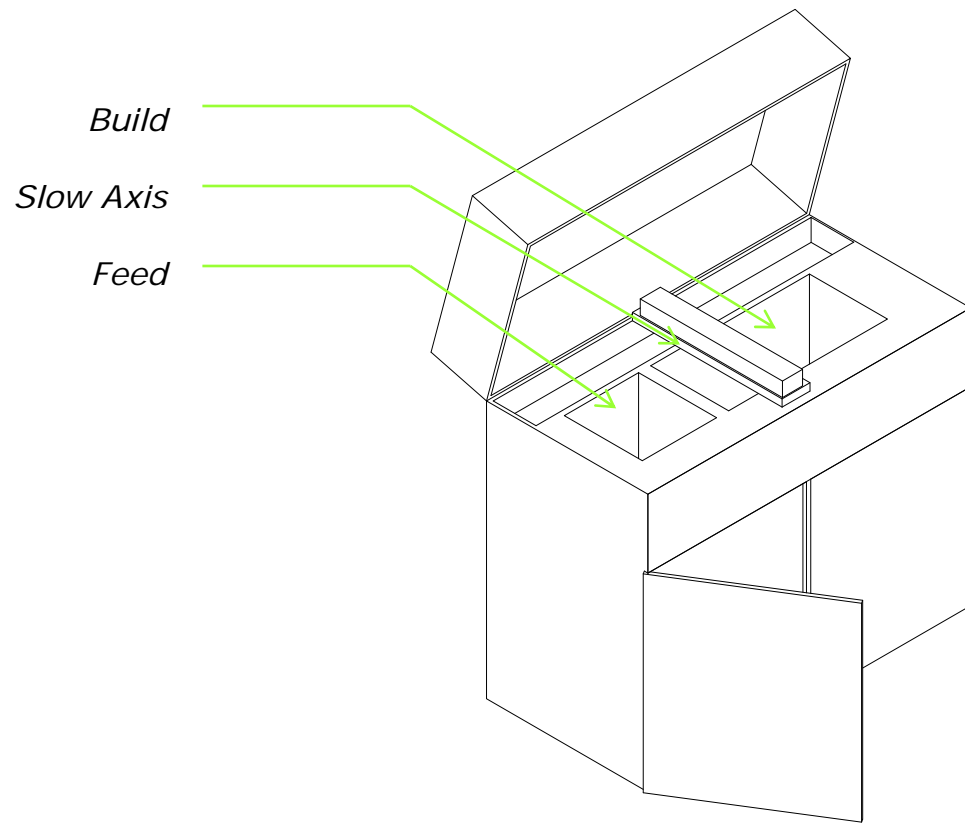
- Metal
- Plaster
- Cornstarch
- Ceramics

B) FDM

- ABS Plastic
- Rubber
- Wax

C) Stereo Lithography

- Resin



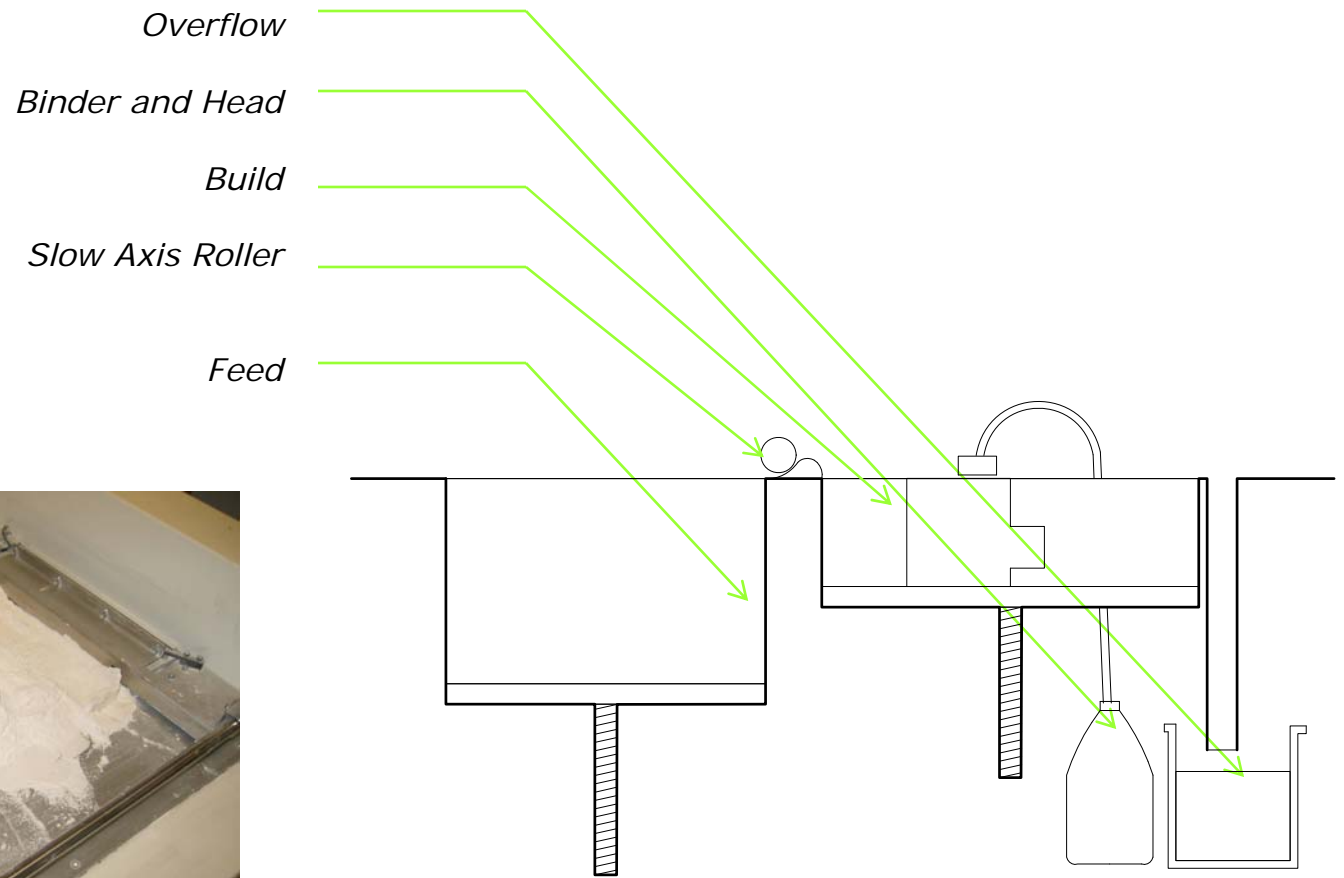
-3D Printer

- Metal
- Cornstarch

-Plaster

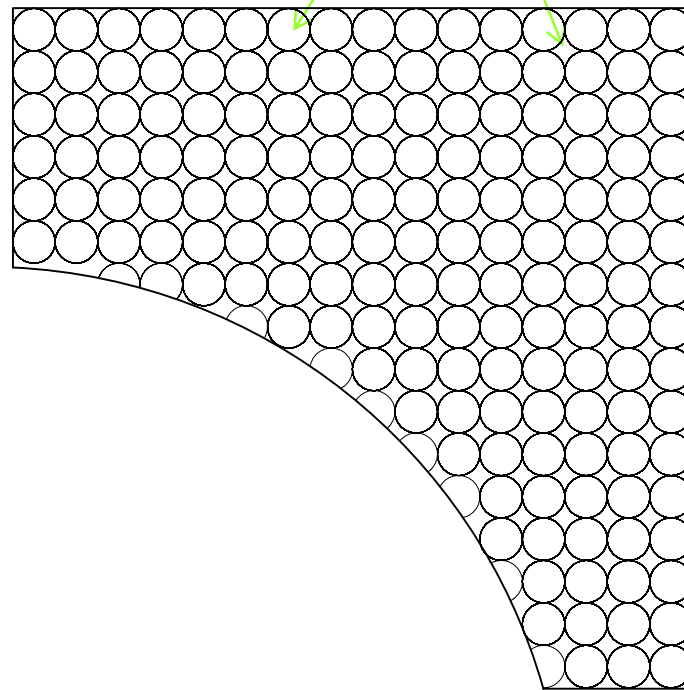
- Ceramics



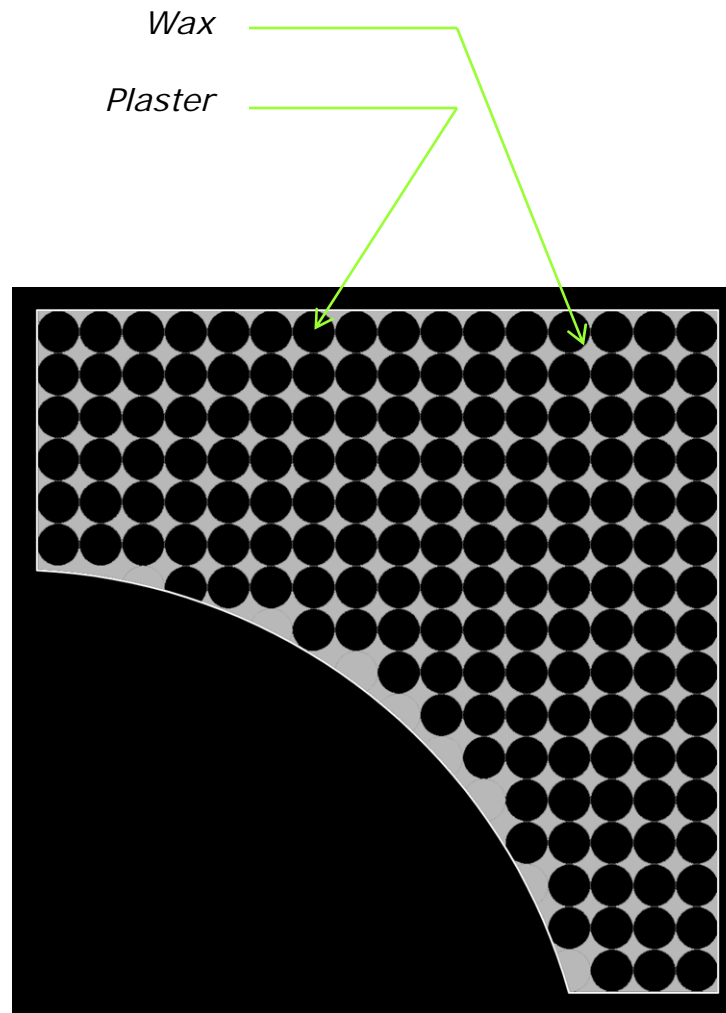


Open Spaces

Plaster



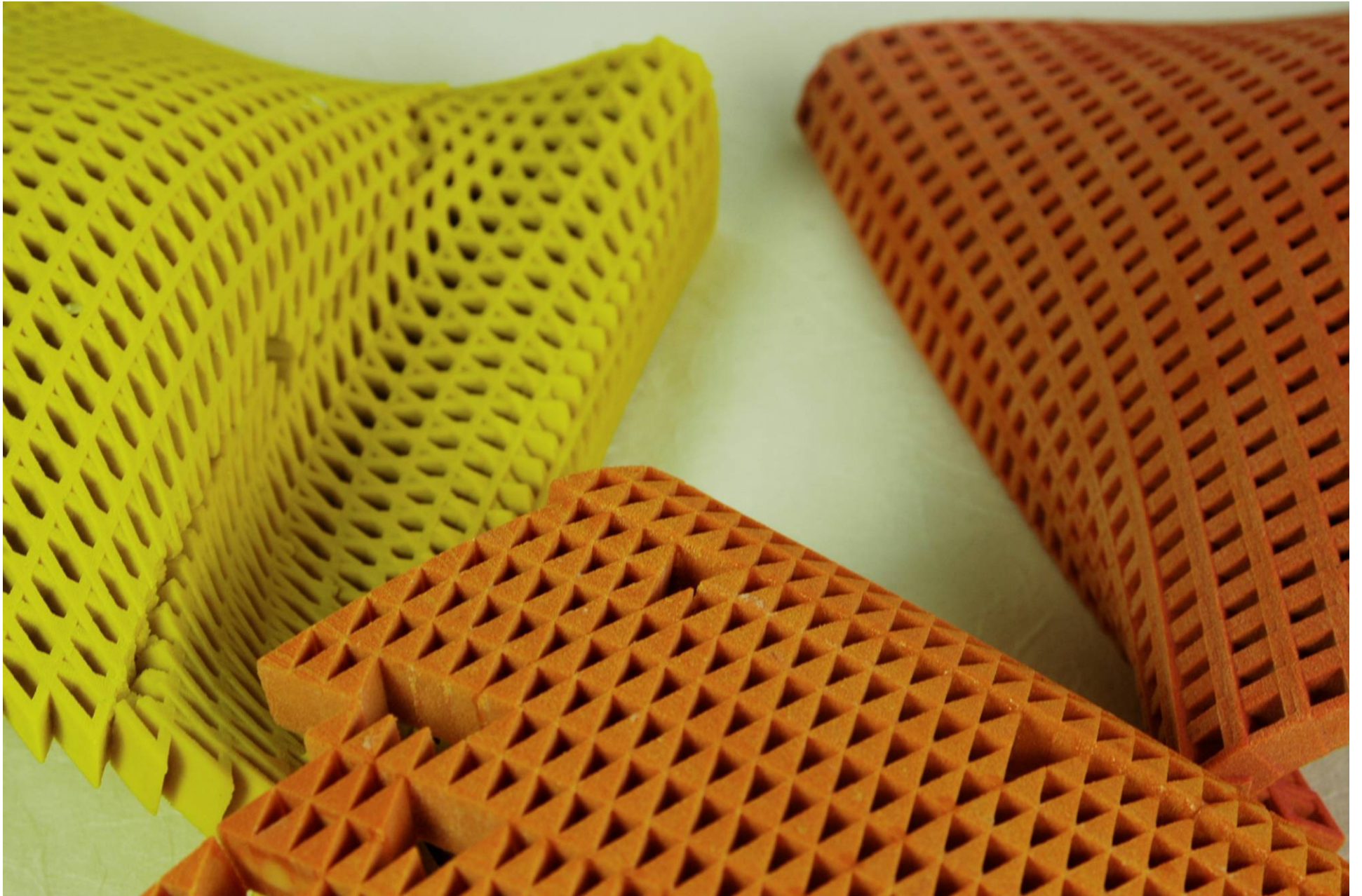
- *Advantages*
 - *Speed*
 - *Self Supporting*
 - *Low Cost*
- *Disadvantages*
 - *Low Strength*
 - *Required Post Processing*

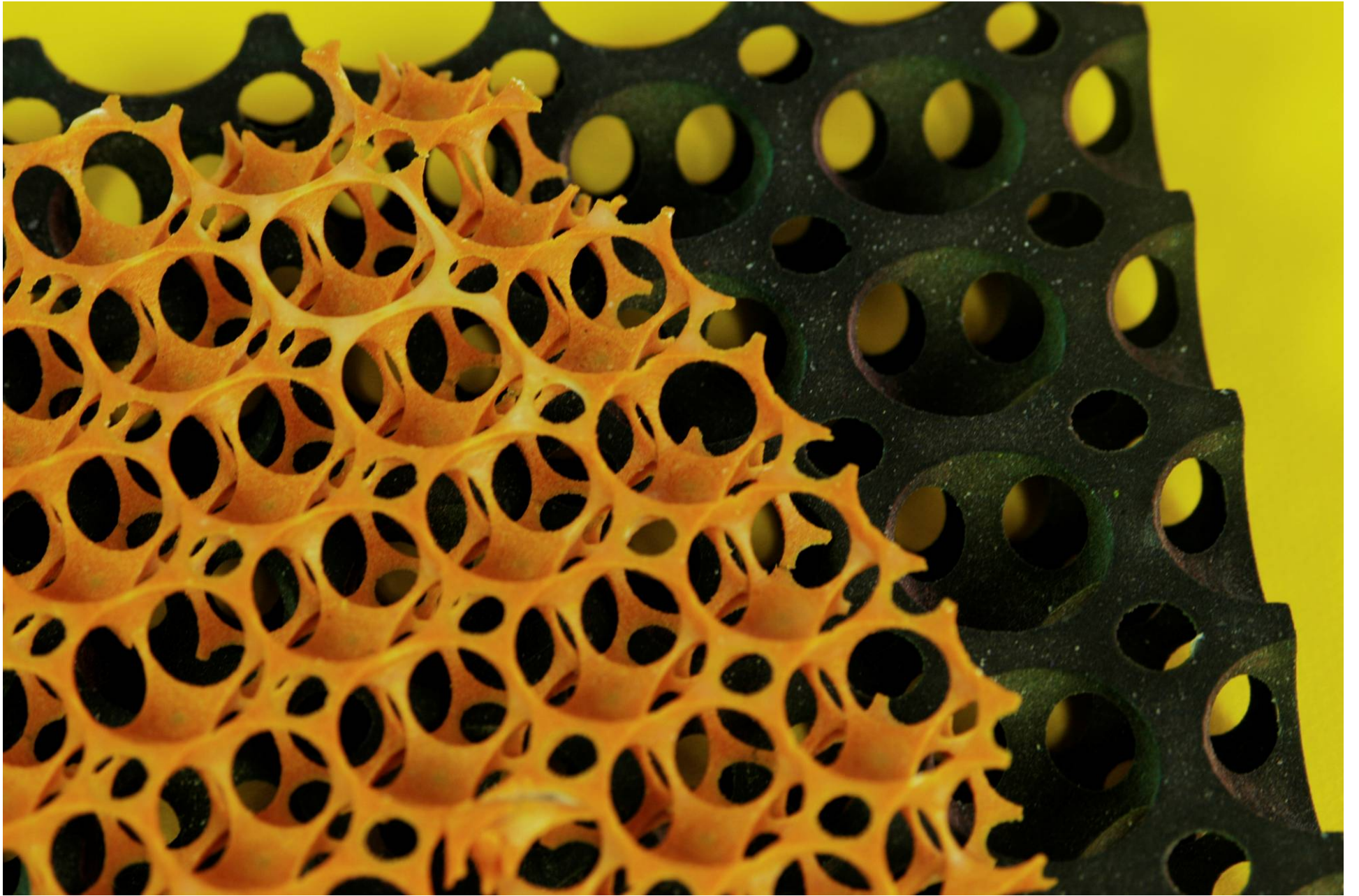


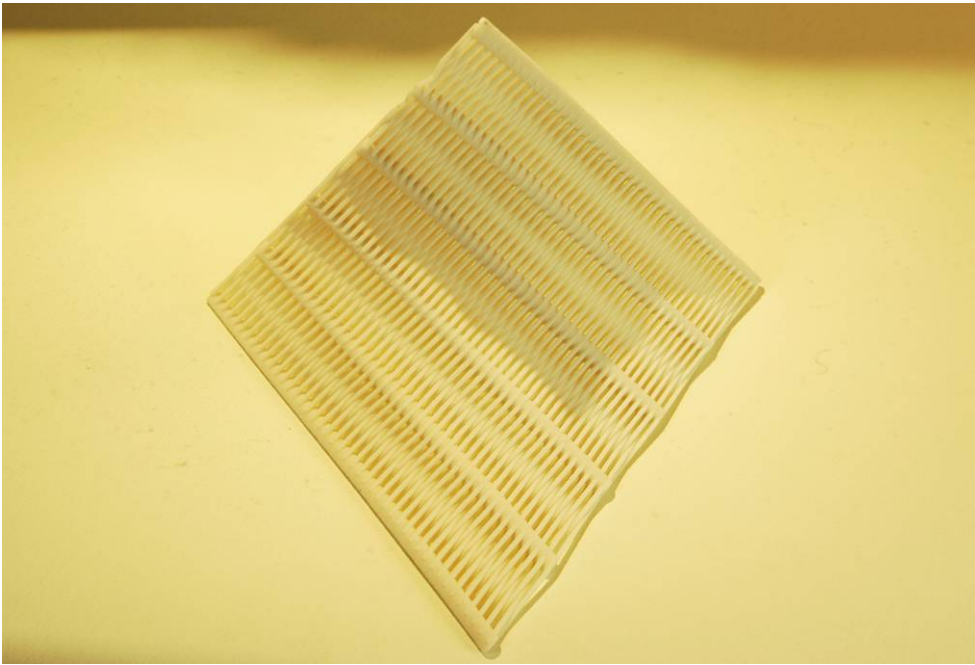
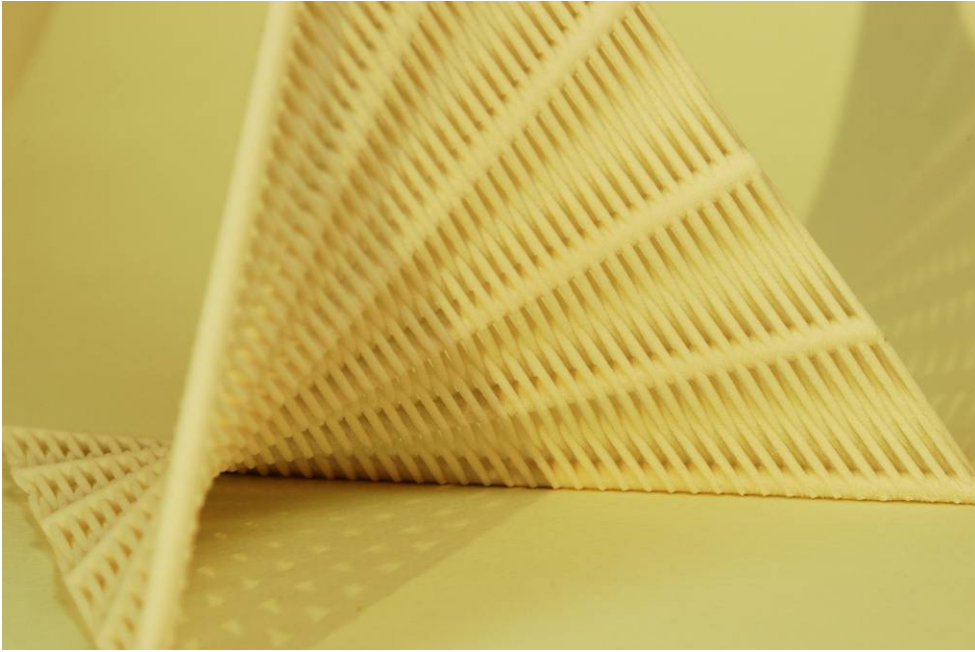


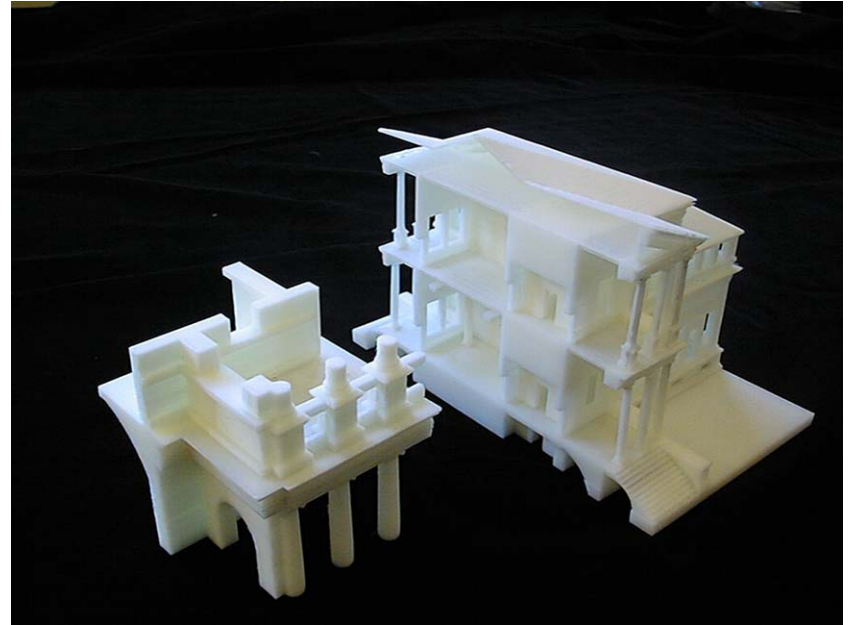












[b]

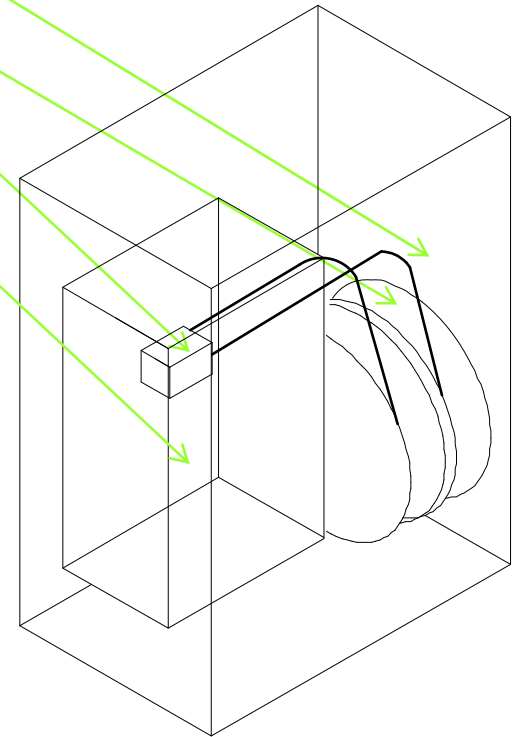
Strata Sys

Material

Support

Head

Envelope



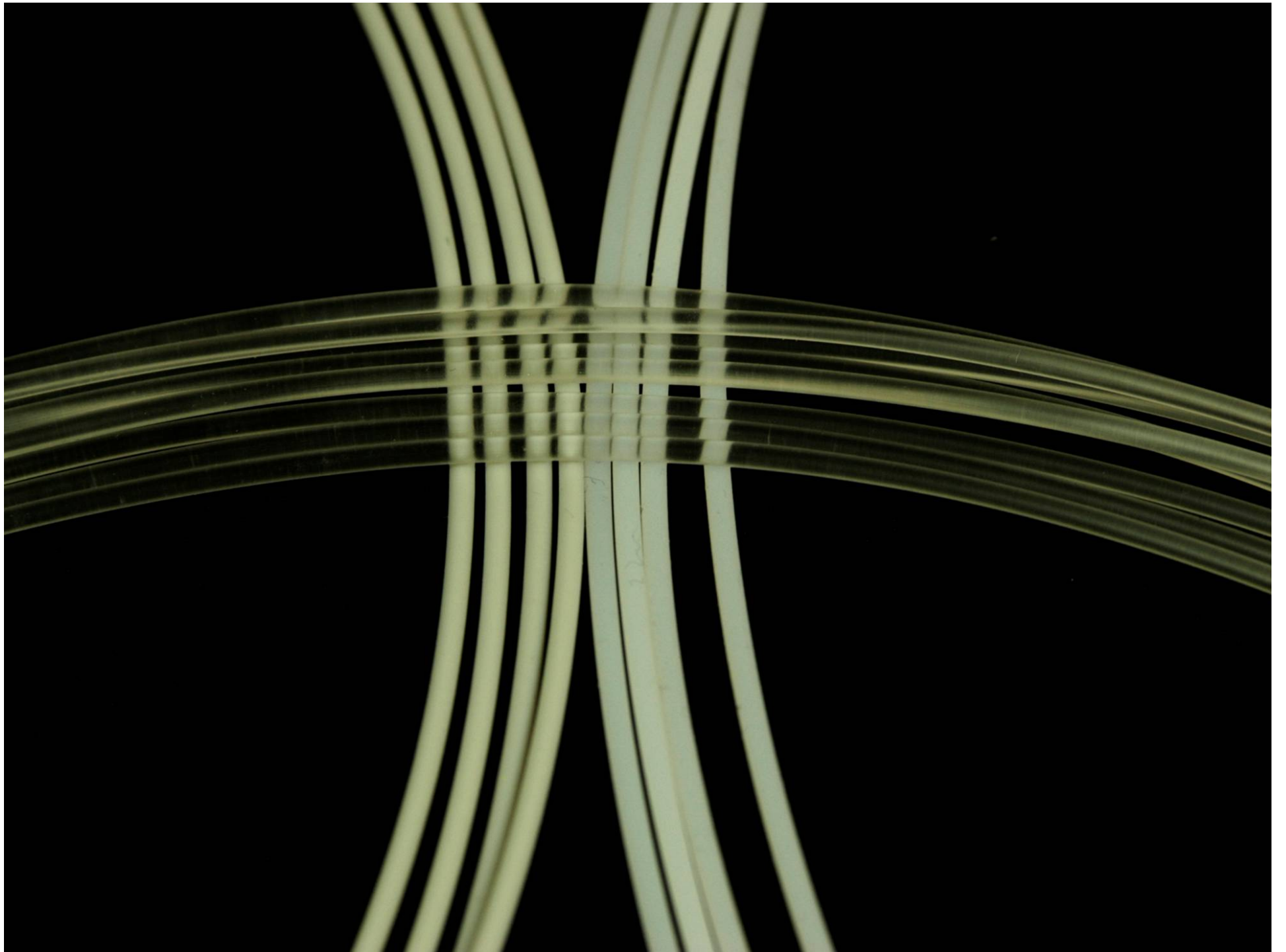
Temperature Gauges

Control Board

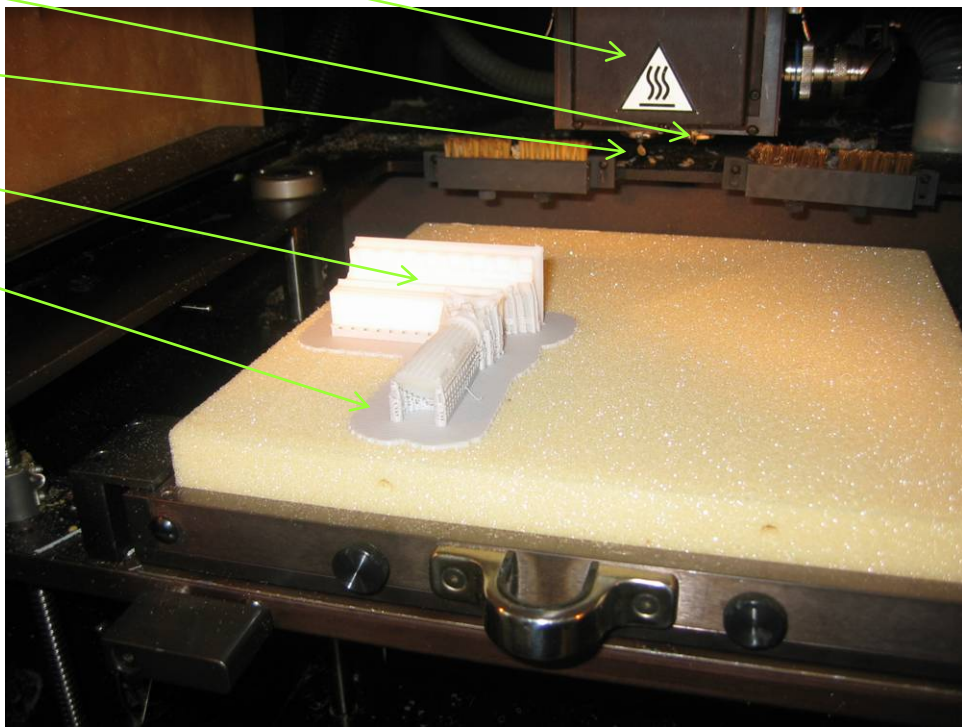
Envelope

Z Table





Head
Support
Material
Material
Support Base

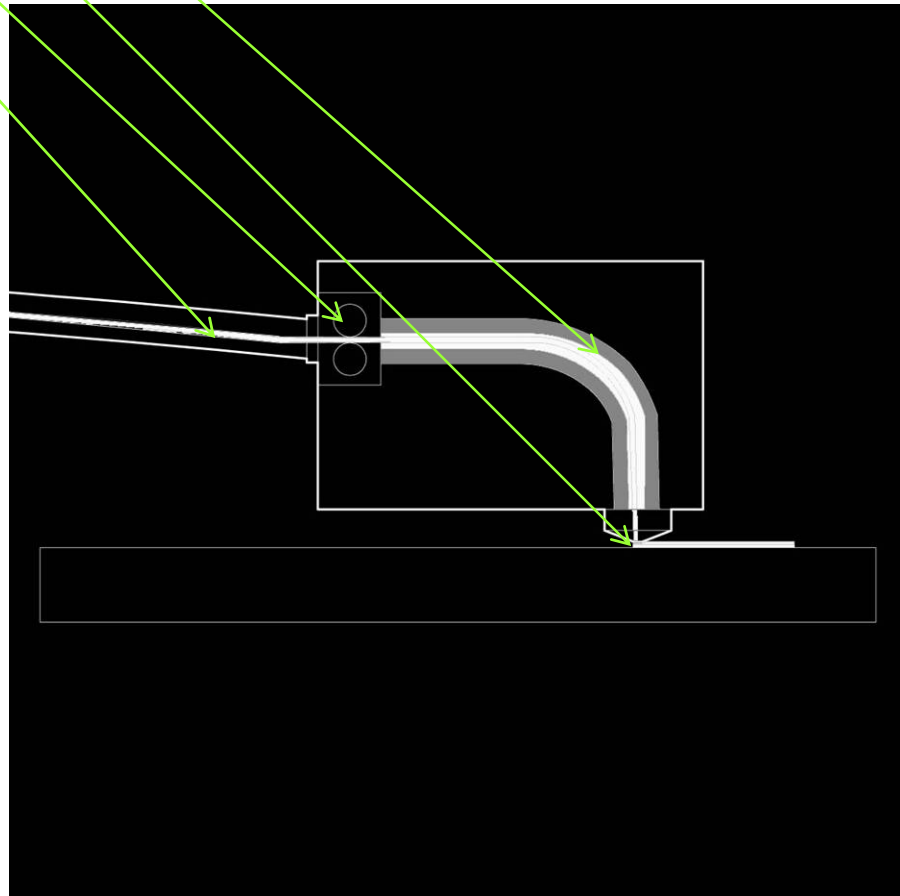


Heating Elements

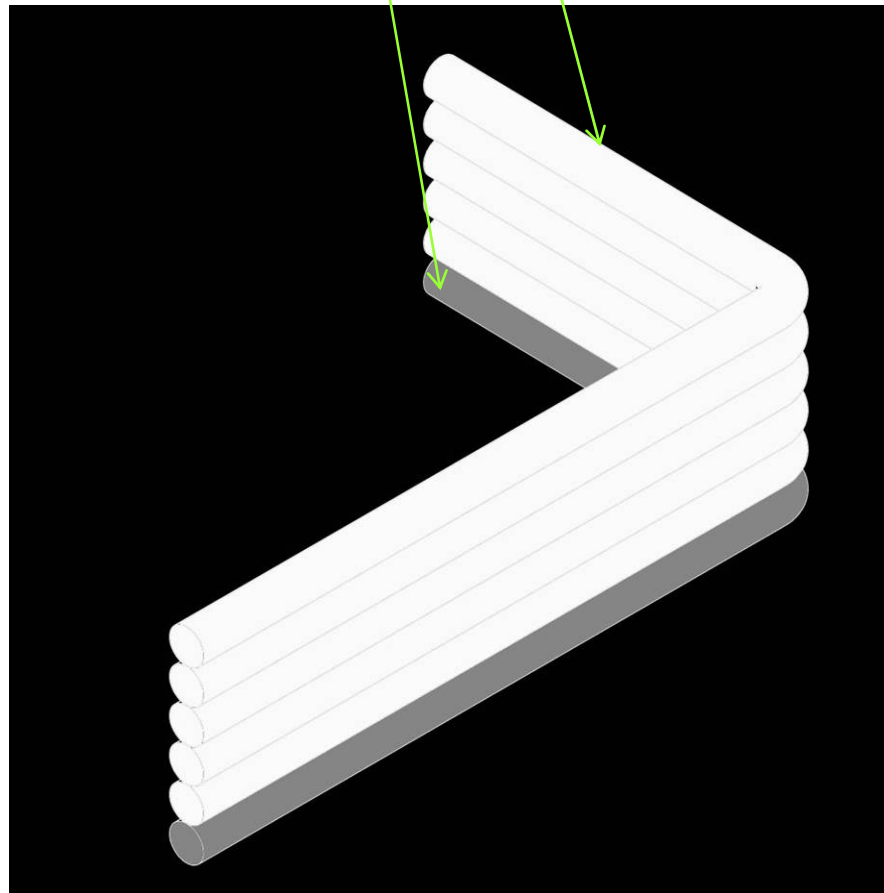
Tips

Drive Wheels

Filament



ABS Material .010
ABS Support Base .010

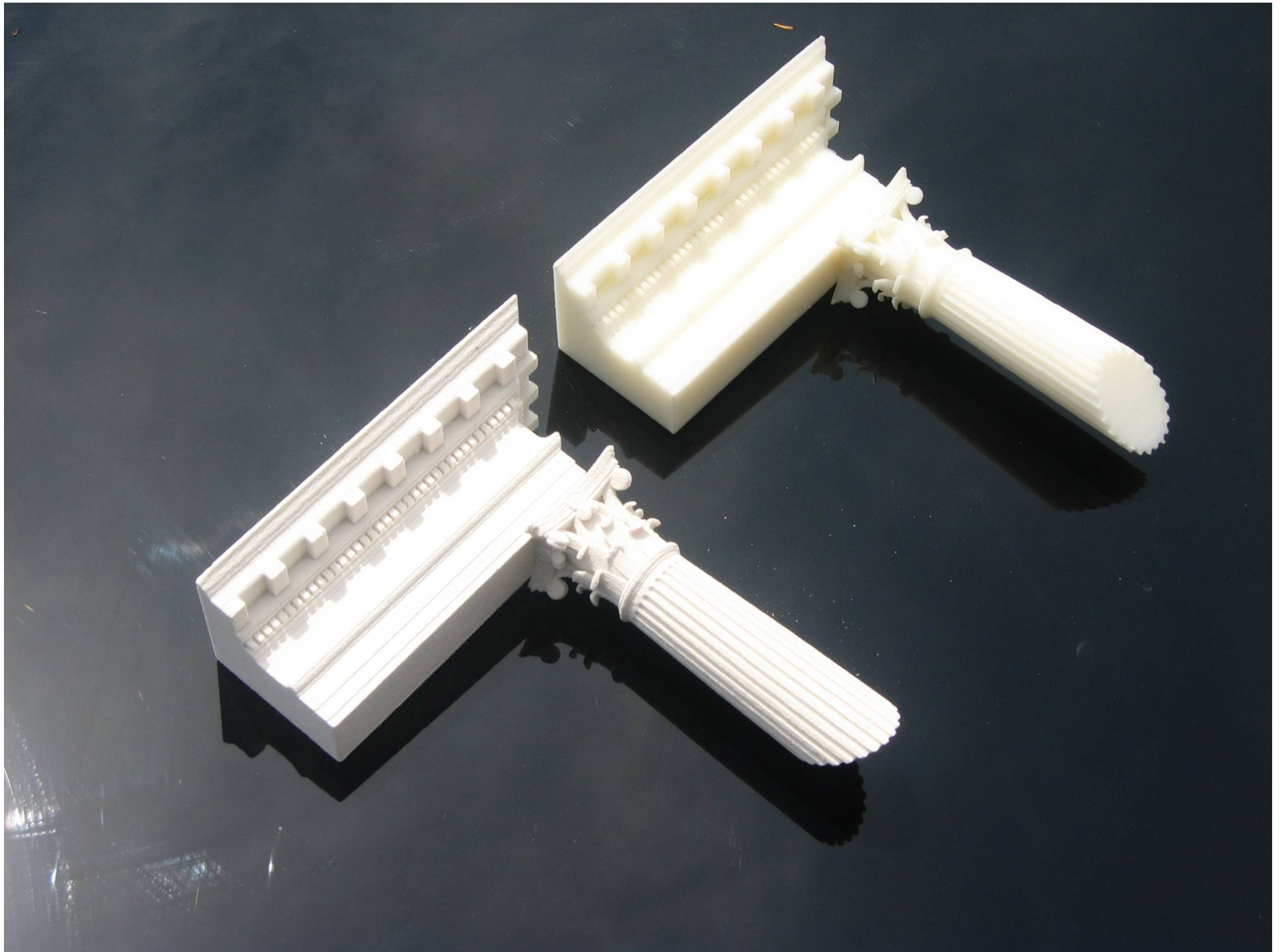


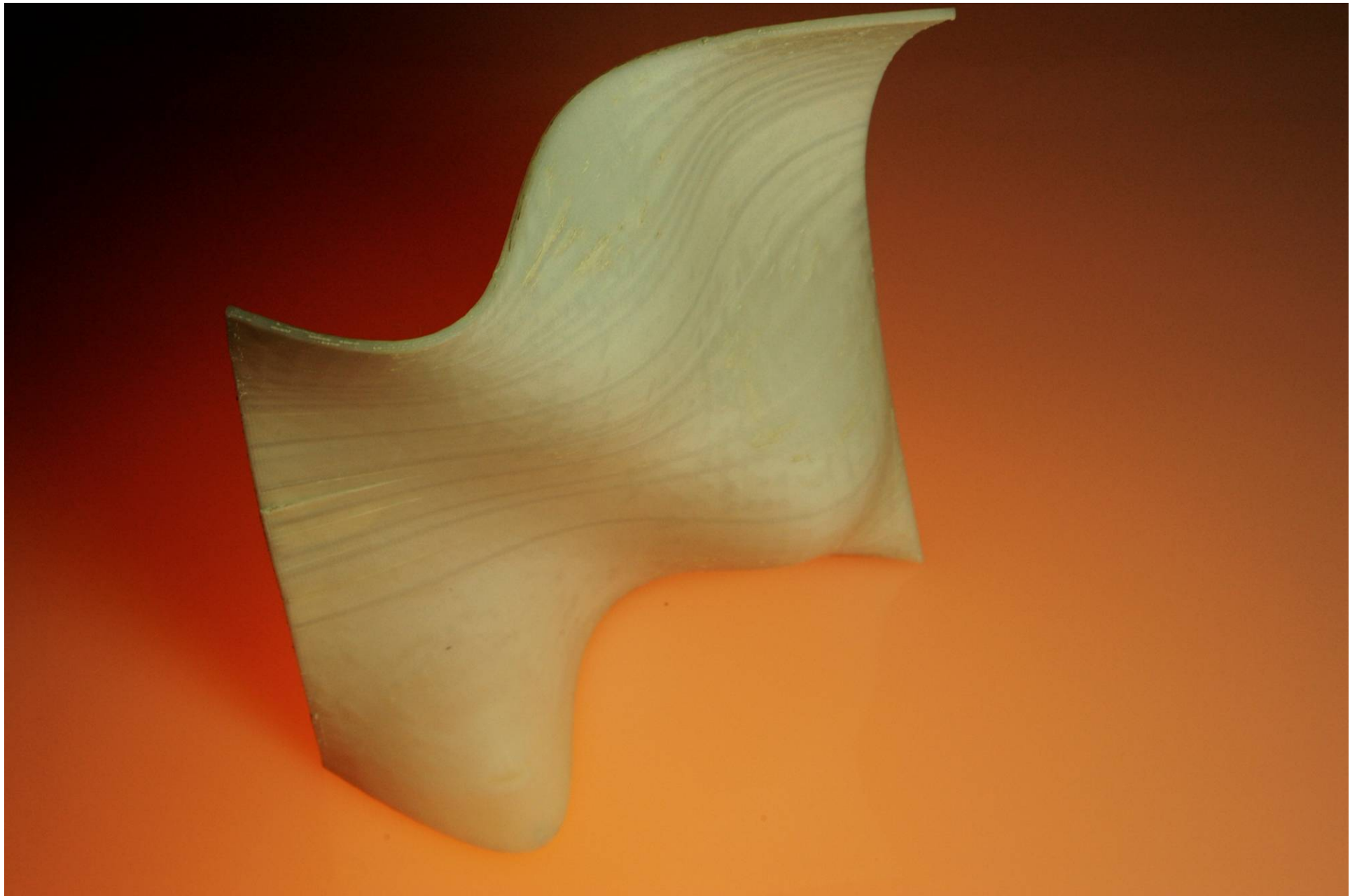
-Advantages

- *Strong*
- *Minimal Post Processing*

-Disadvantages

- *Slow*
- *Porous*
- *Hates Voids*
- *High Cost to Operate*



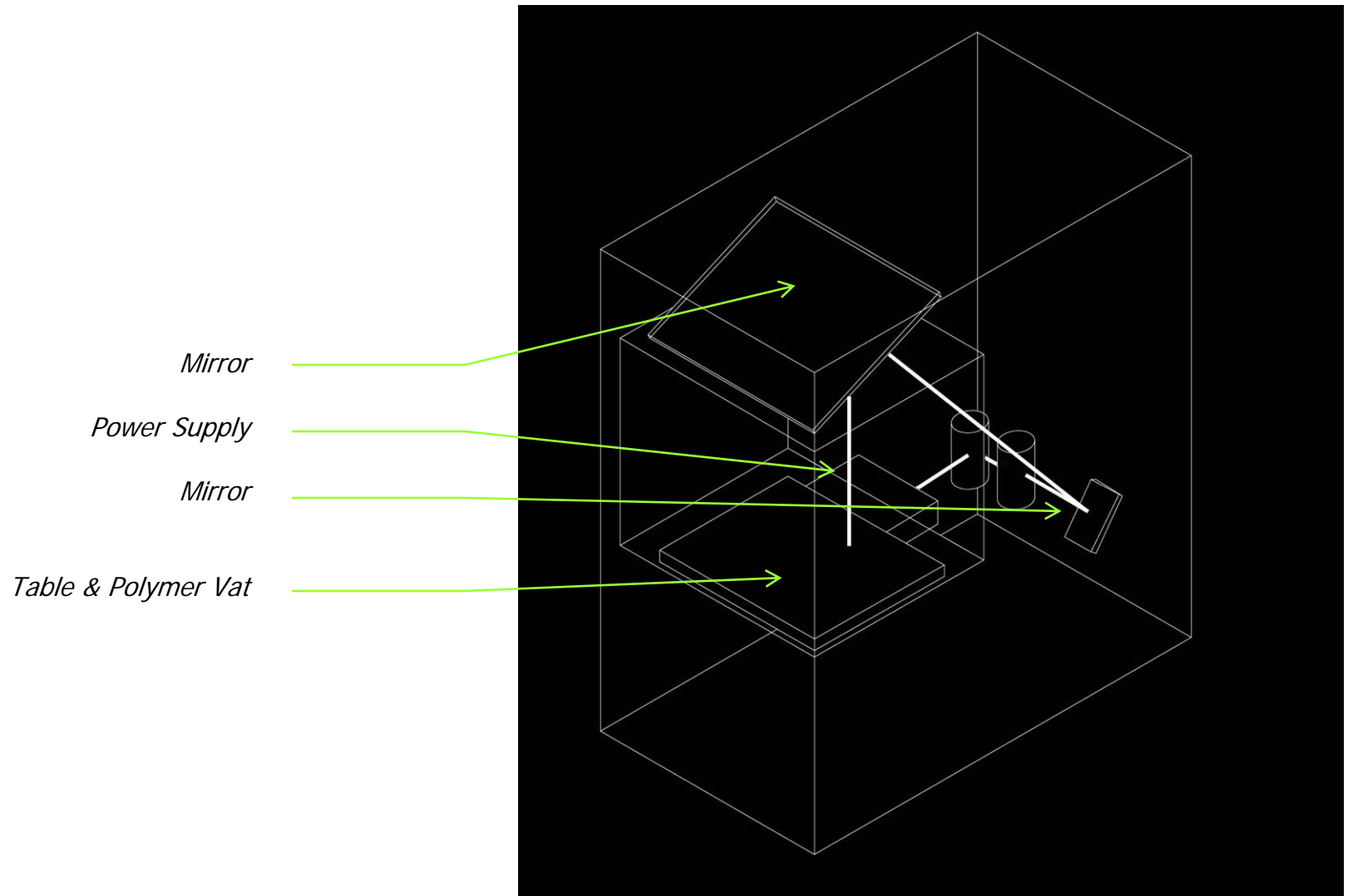






[c]

Stereolithography

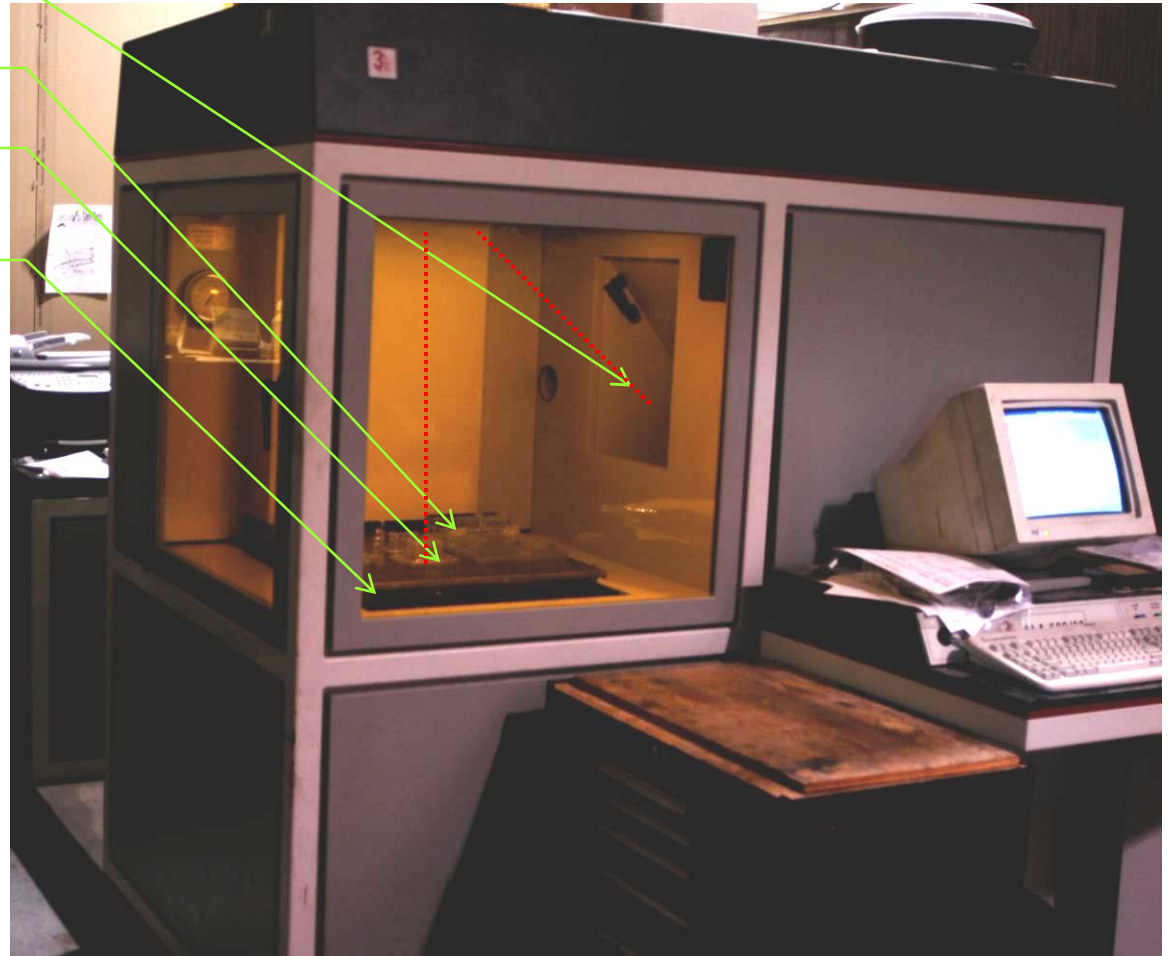


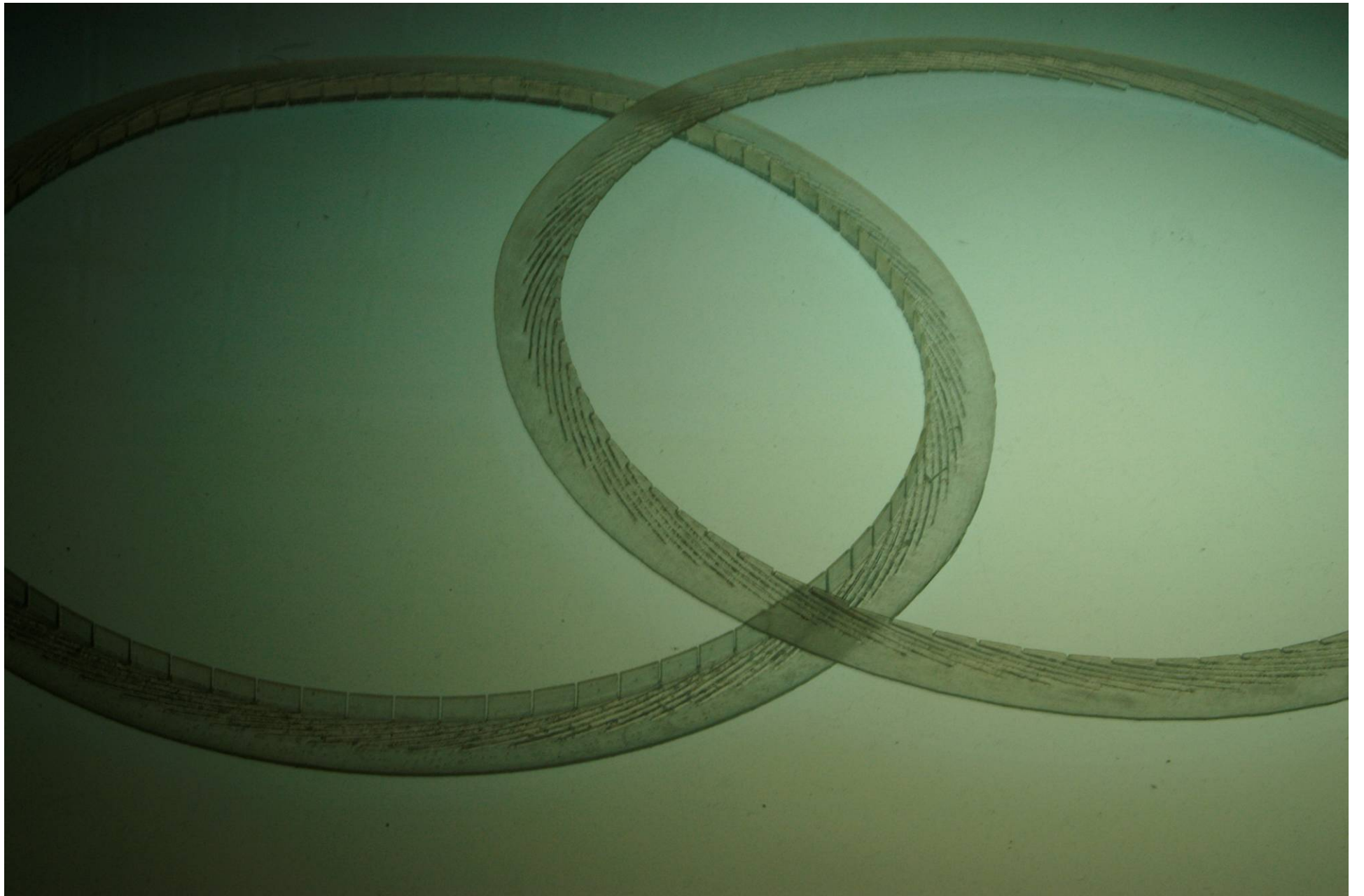
Laser Source

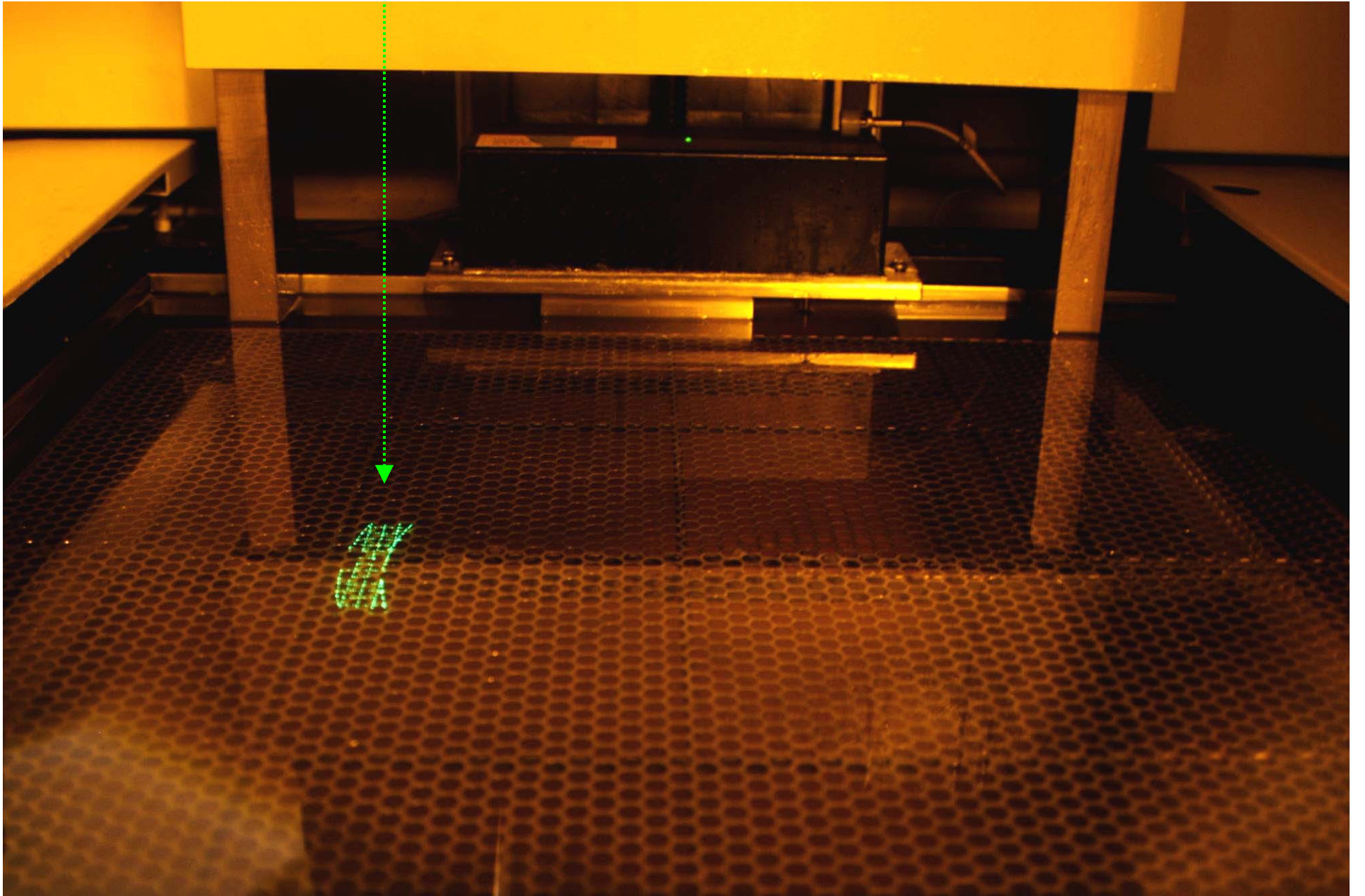
Models

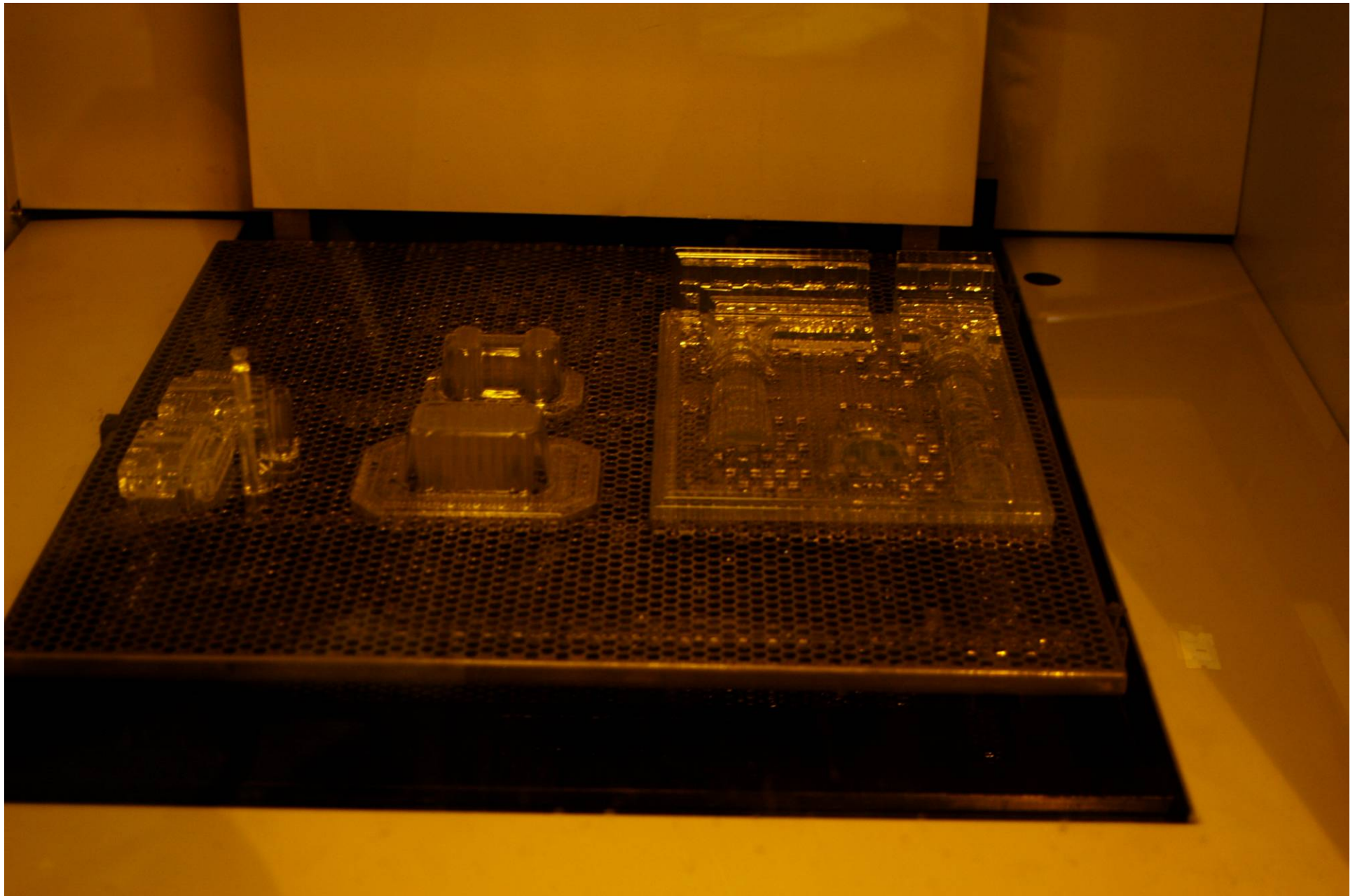
Table

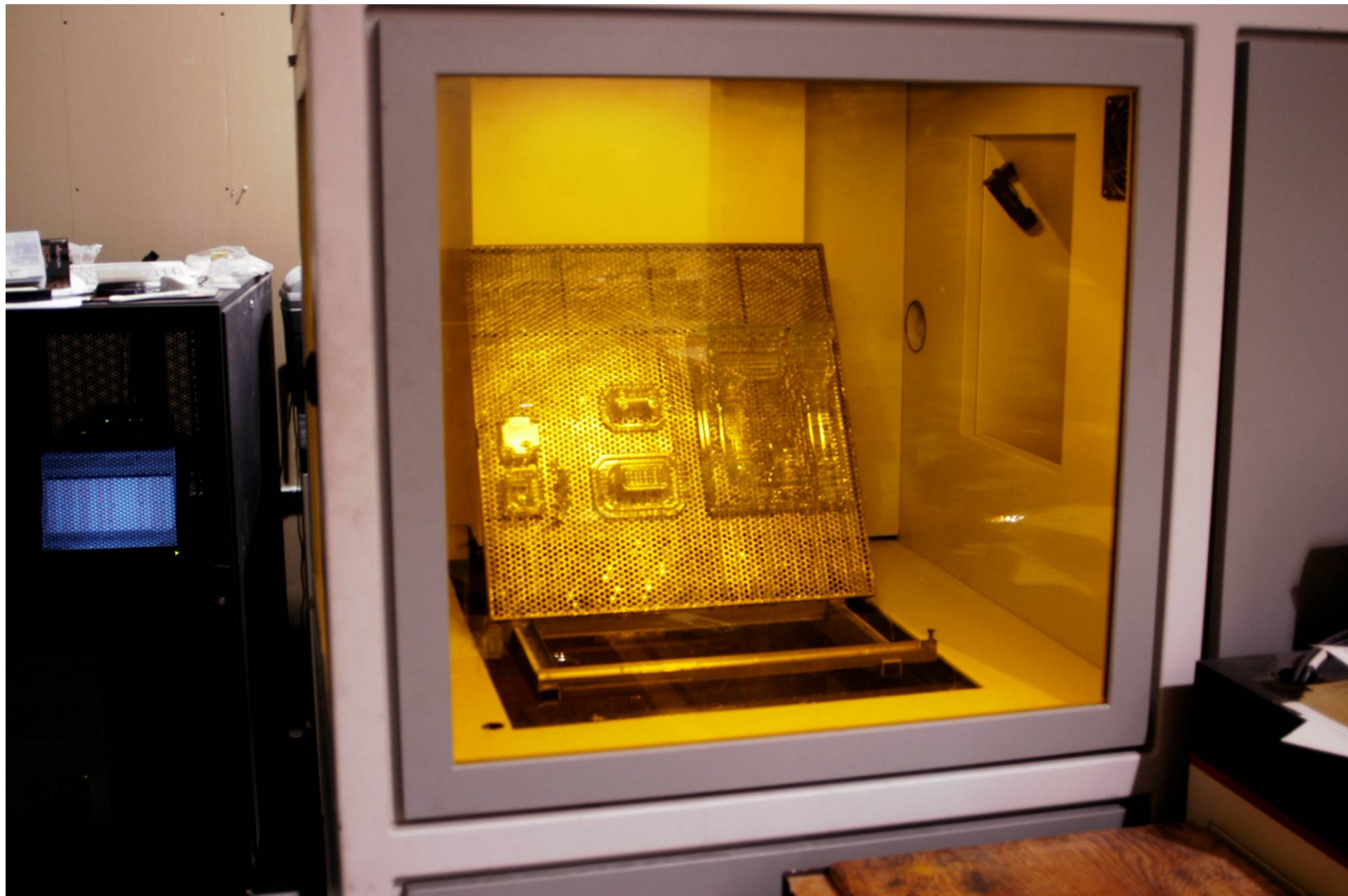
Vat











- Mirror*
 - Laser Source*
 - Skimming Knife*
 - Table & Model*
 - Vat of Polymer*
- Advantages*
- *Strong*
 - *Minimal Post Processing*
 - *Supports very thin parts*
- Disadvantages*
- *Cost*
 - *Hates Voids*
 - *High Cost to Operate*

