



EMERGING OBJECTS

emerging objects

is a project that became a
company that began by asking a
simple question.

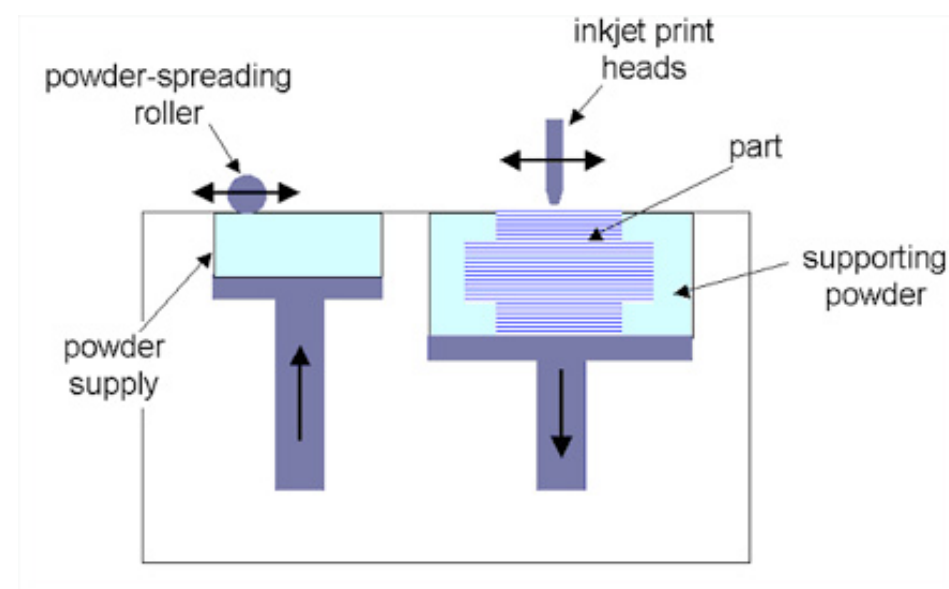
**Can strong and inexpensive
building components be produced
using 3D printing?**

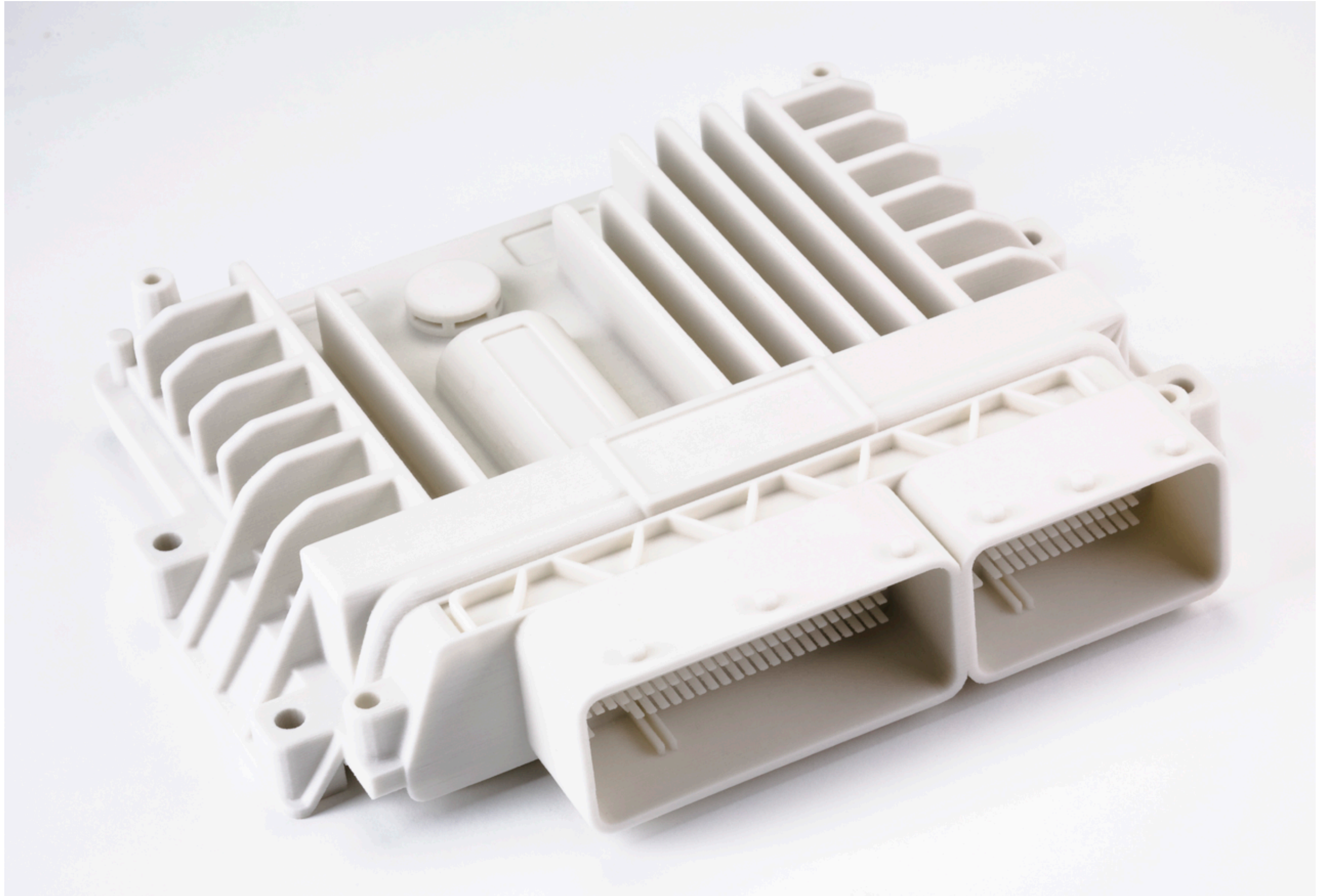
What do we do?

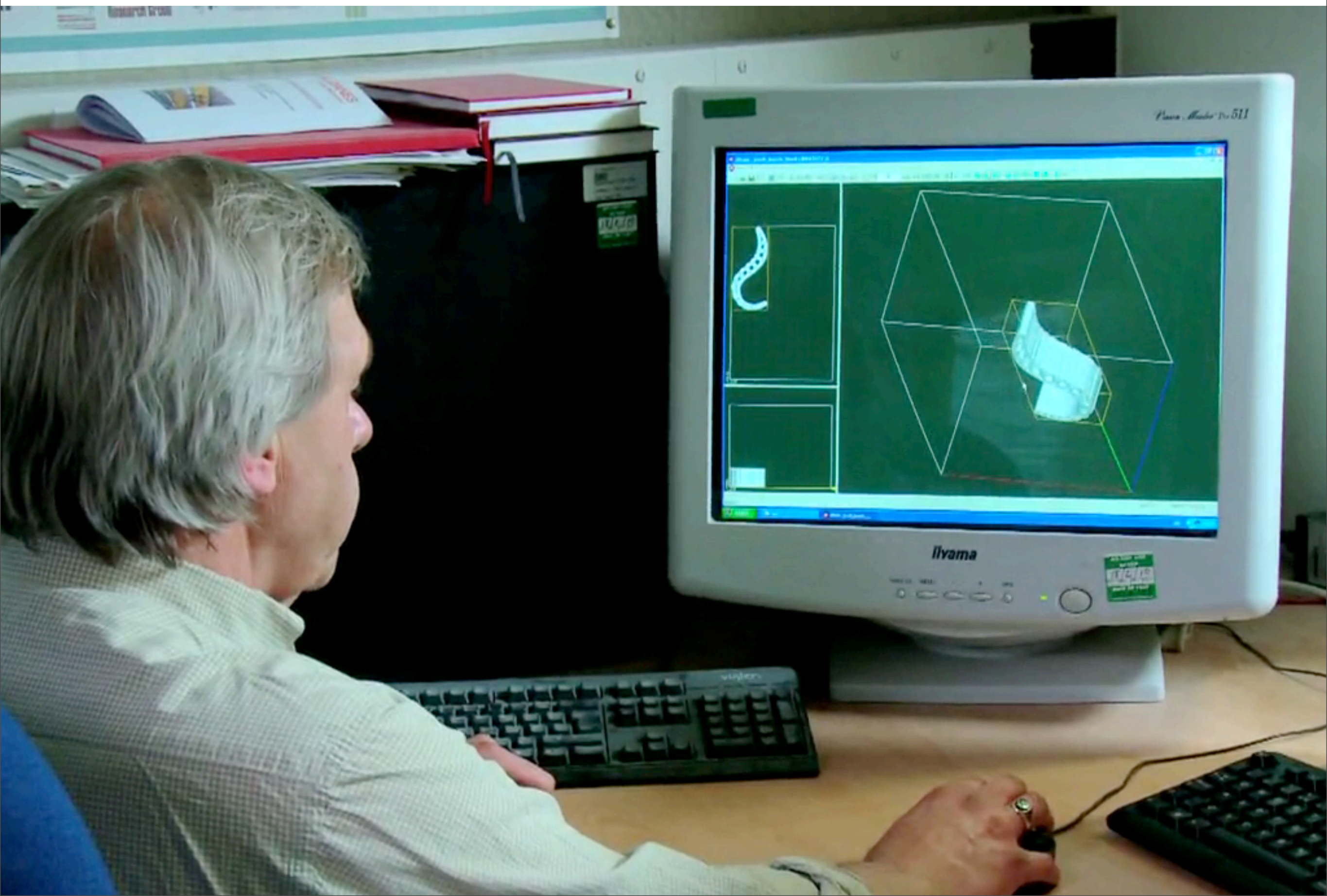
We've created inexpensive structural materials for powder 3D printing specifically for architecture.

We are developing methods to produce large-scale architectural assemblies using 3D printed building blocks.









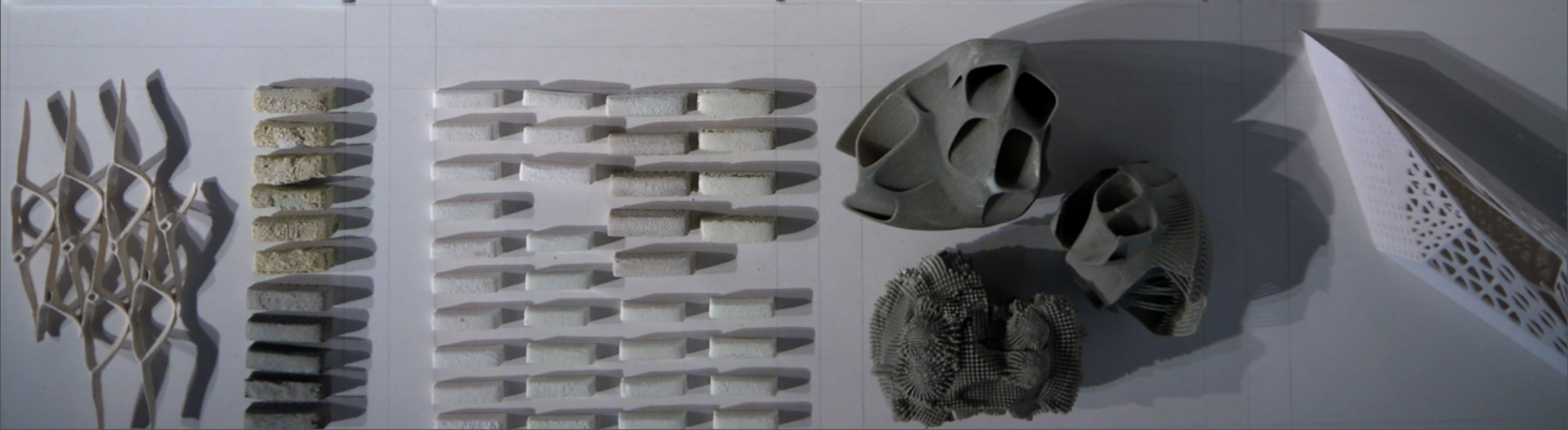
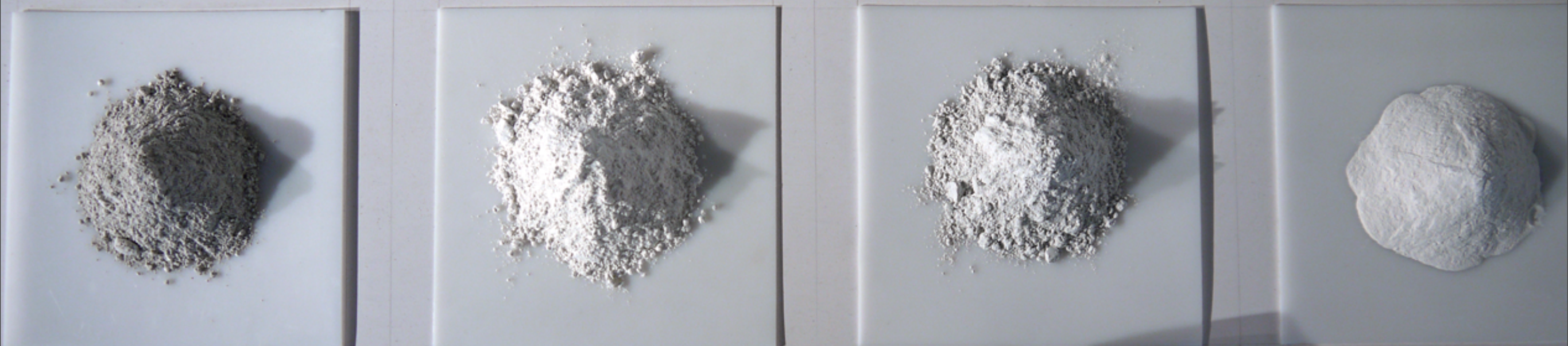
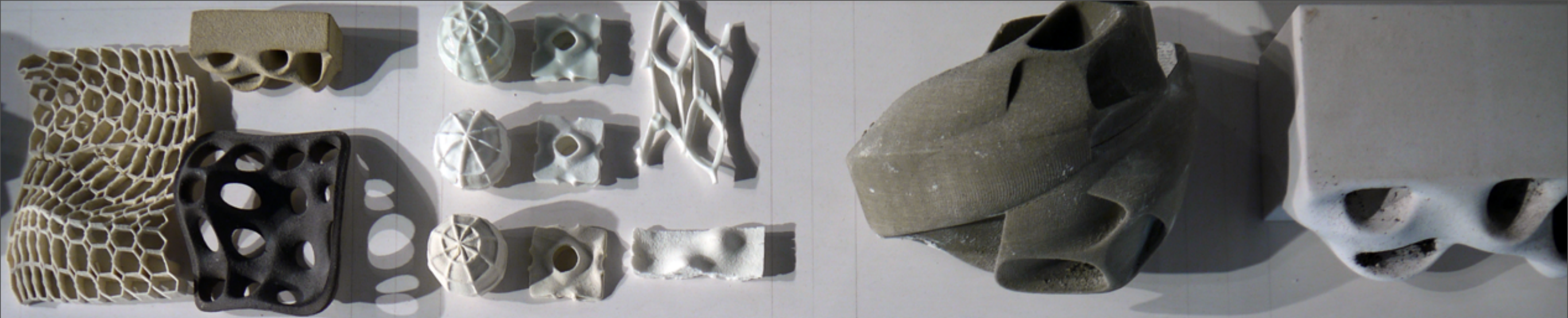
emerging objects
creates materials that are

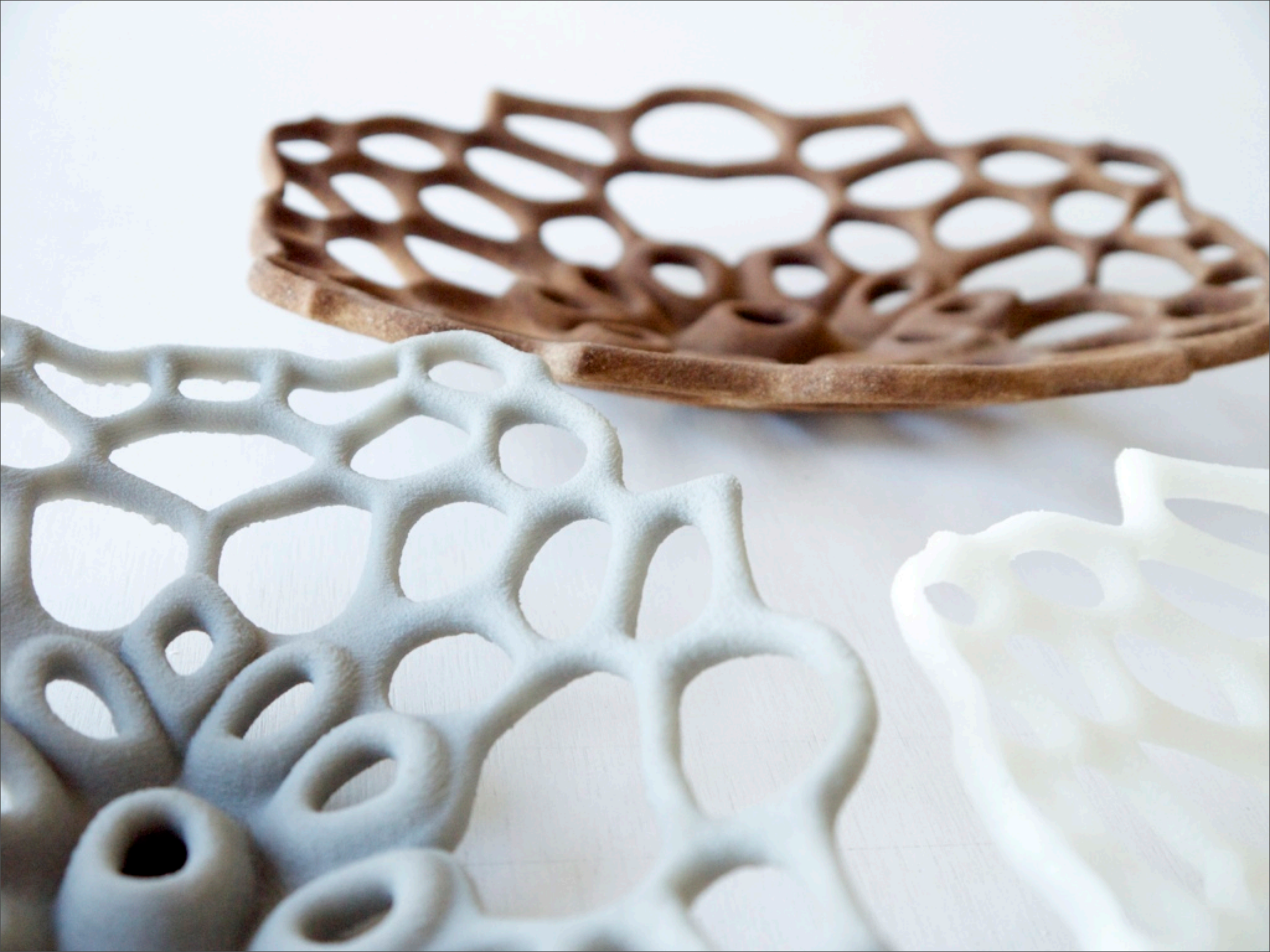
sustainable

durable

affordable

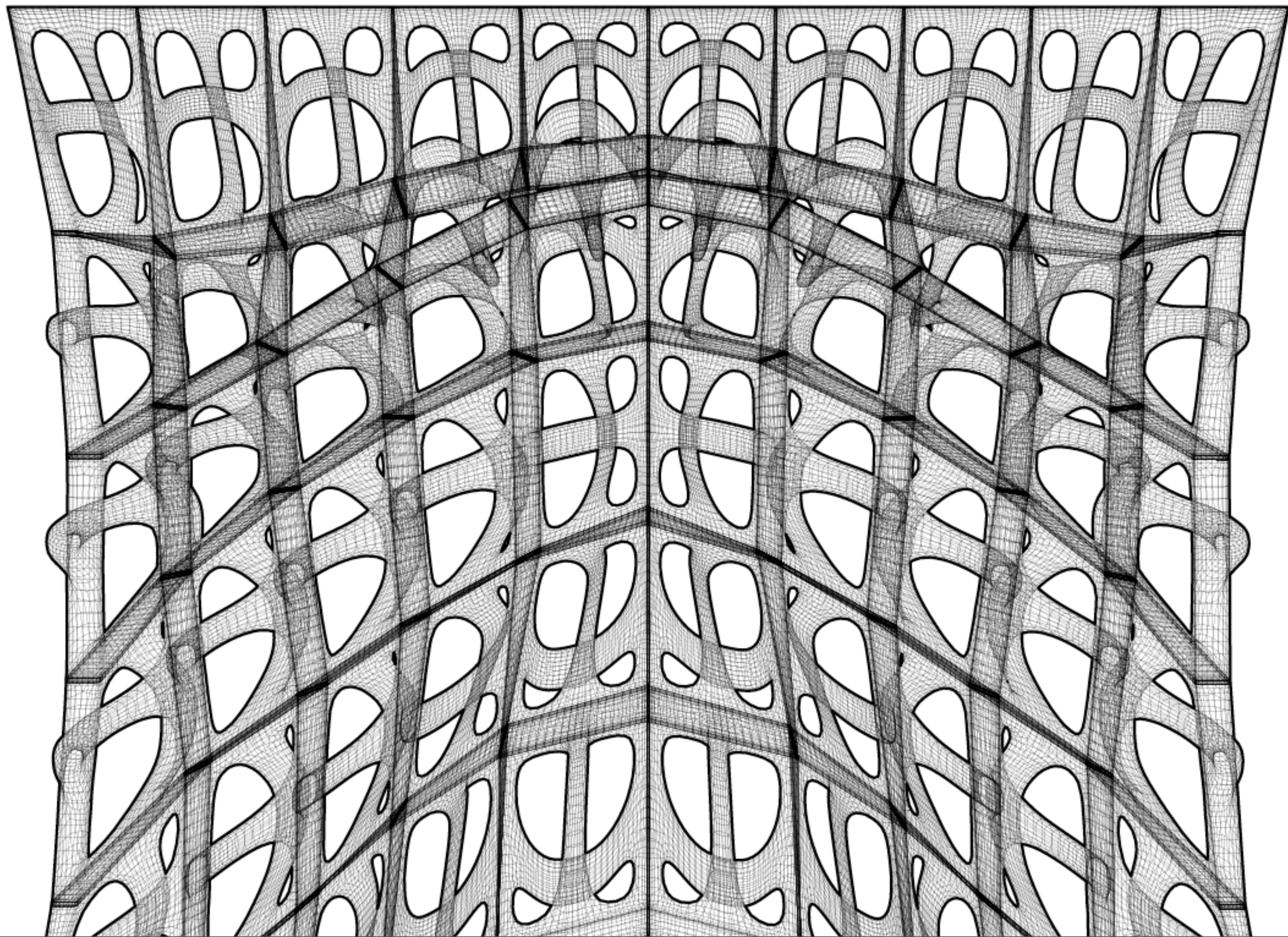
printable at architectural scales

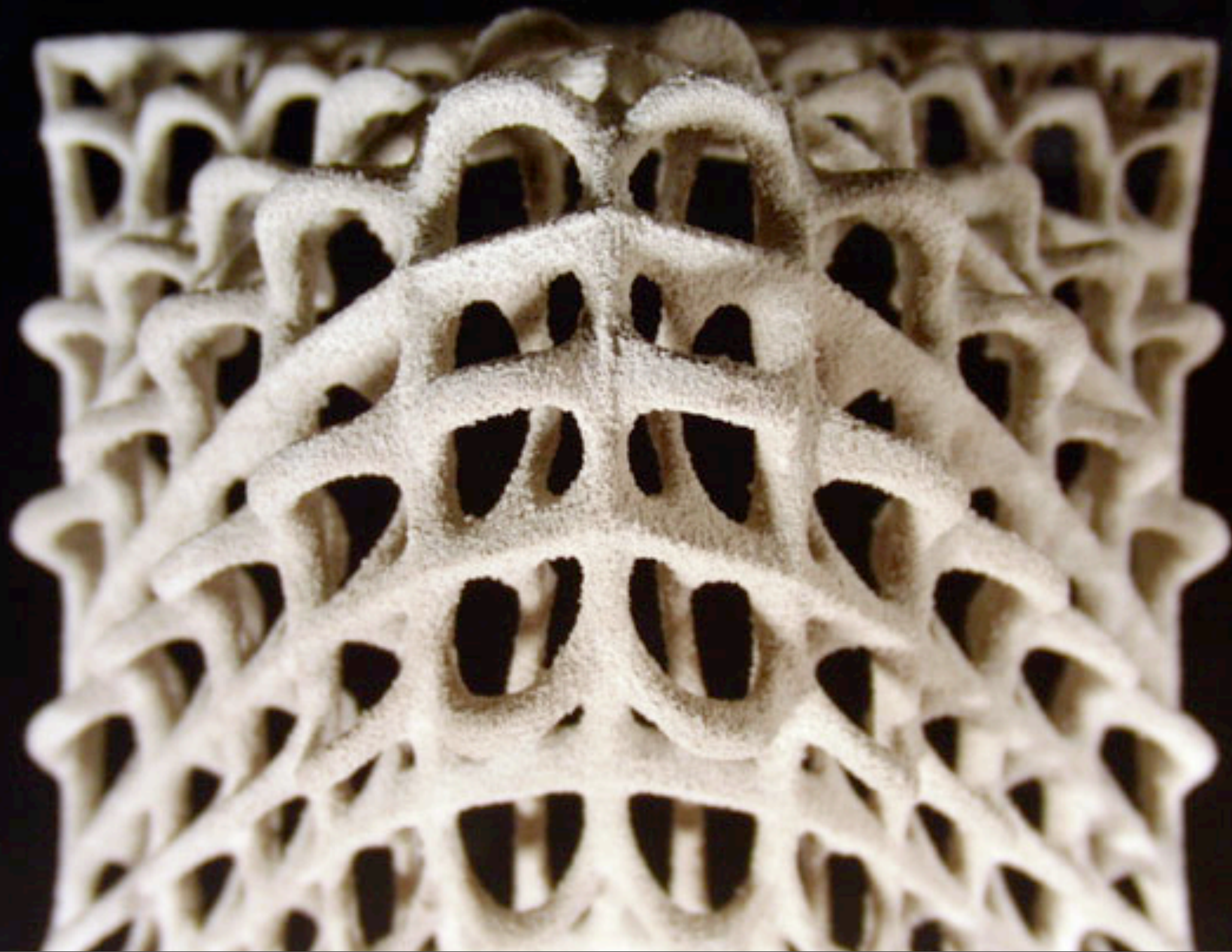


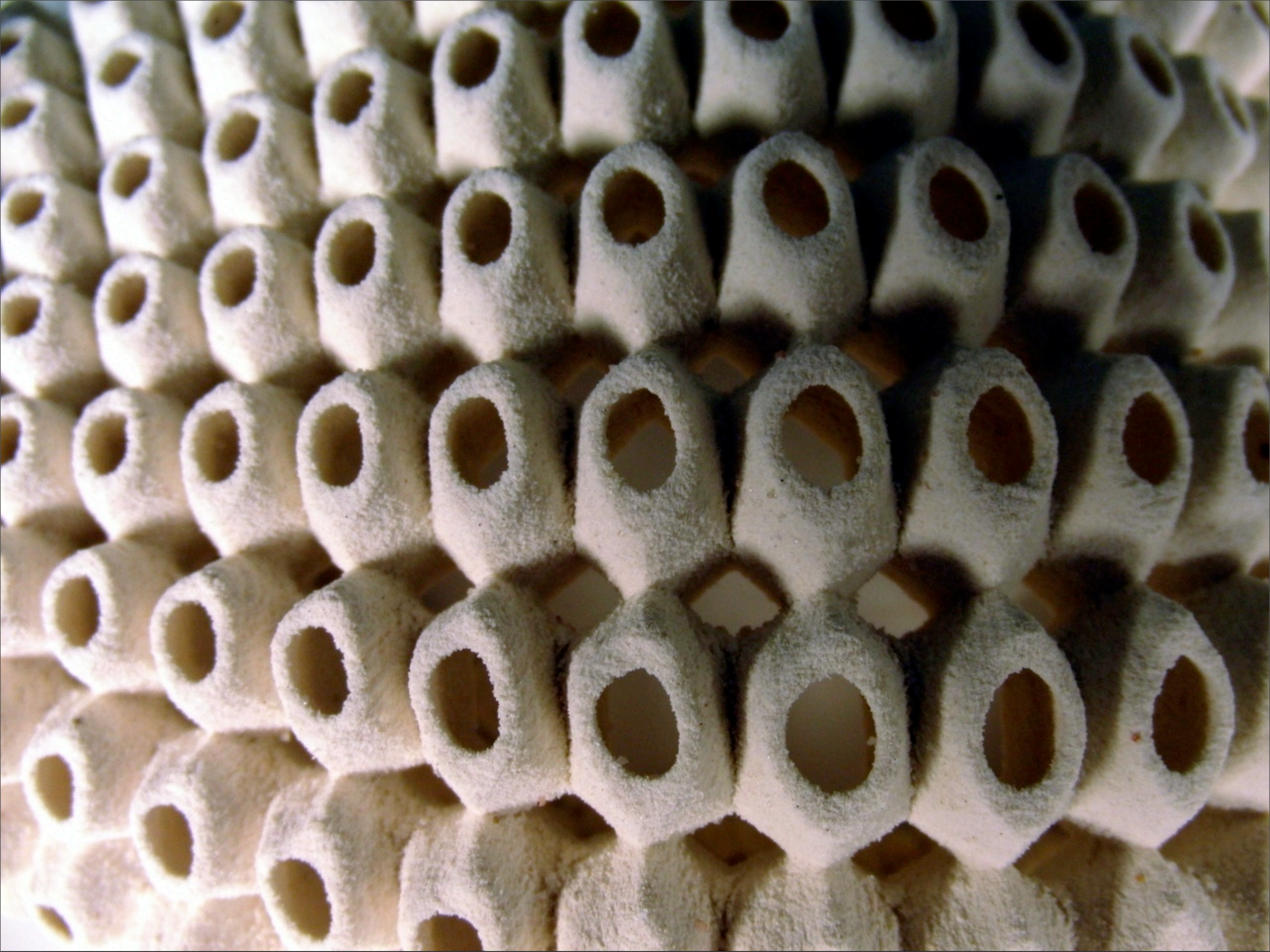


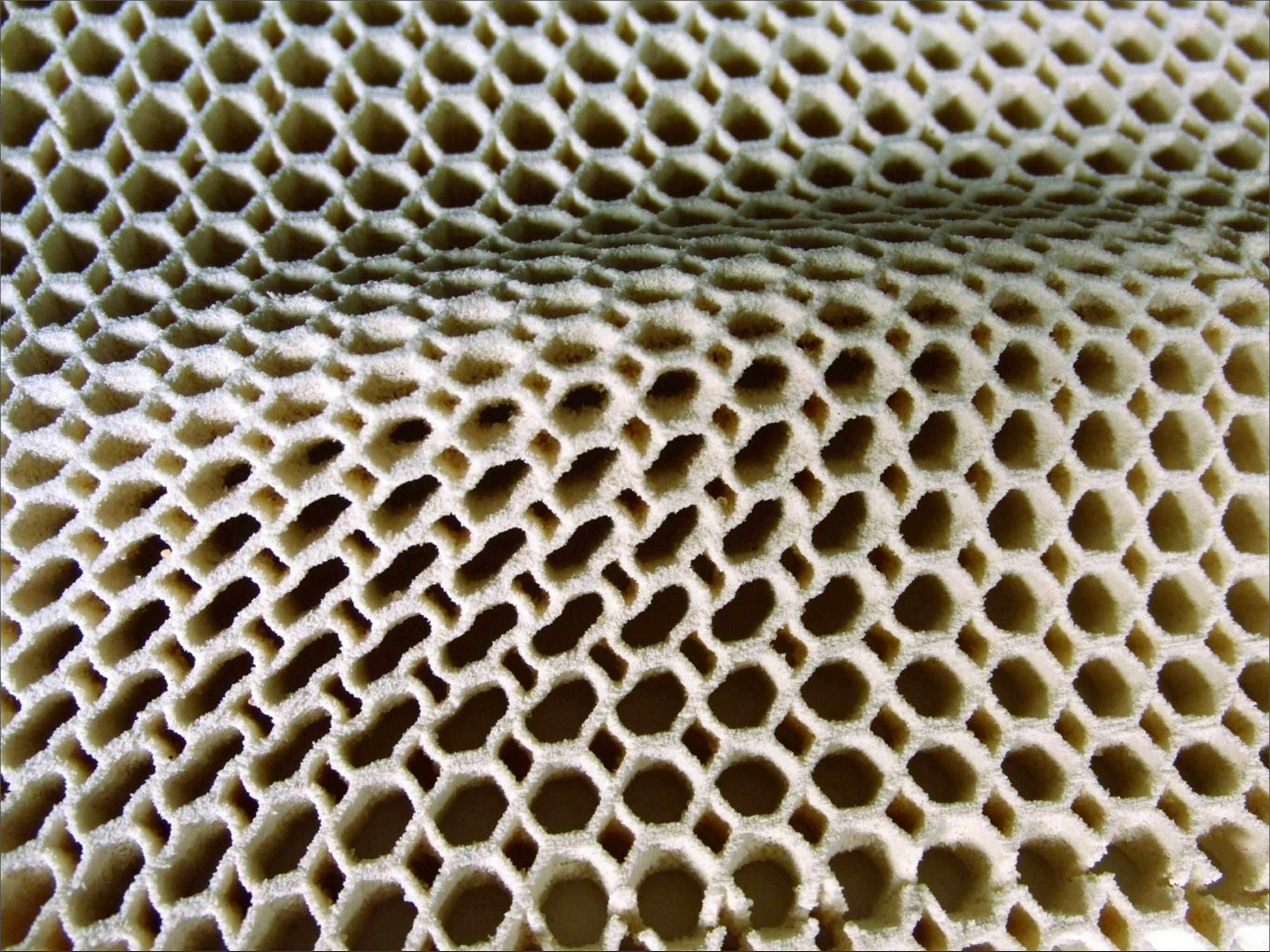
ceramic

















sand



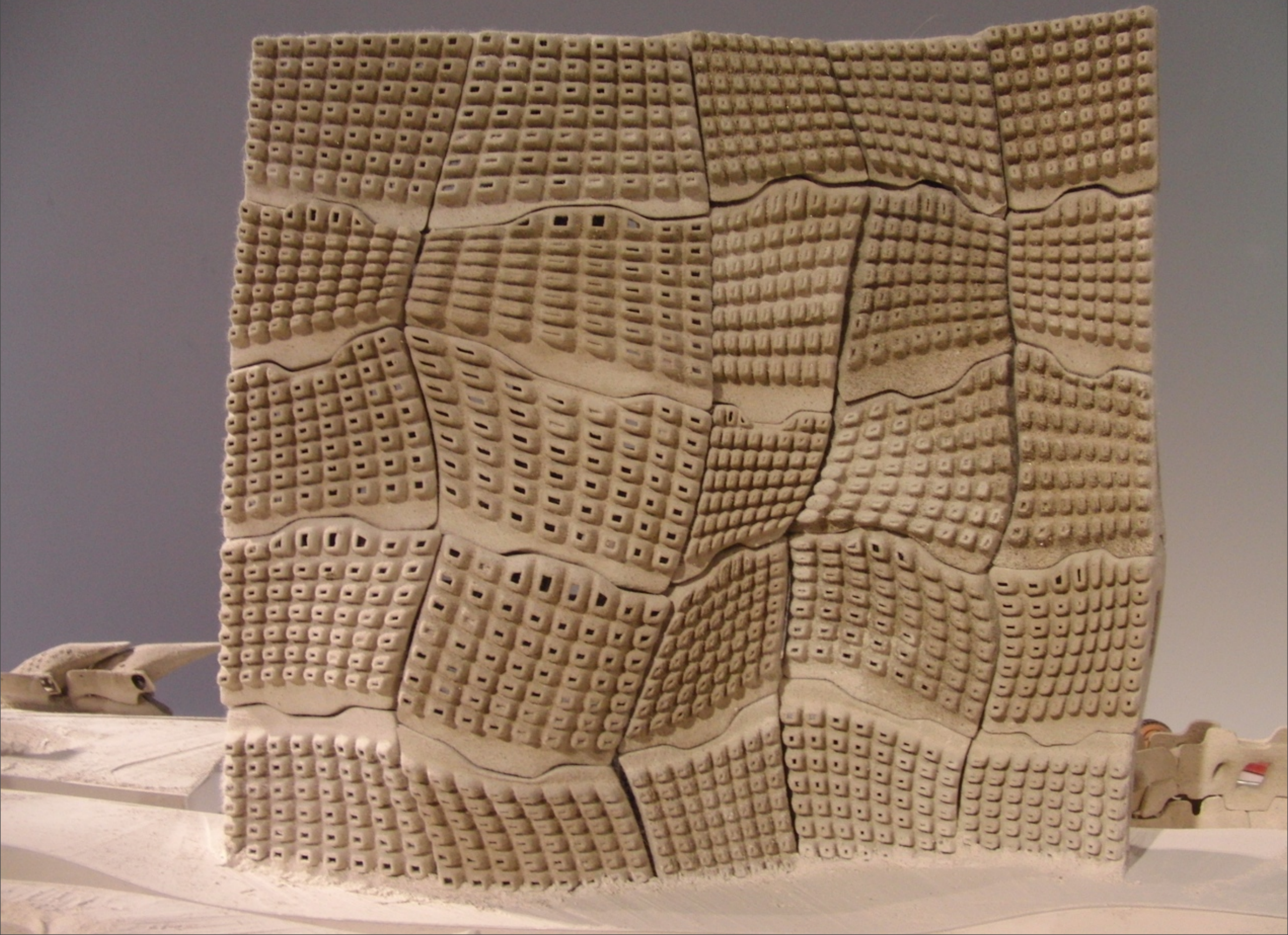


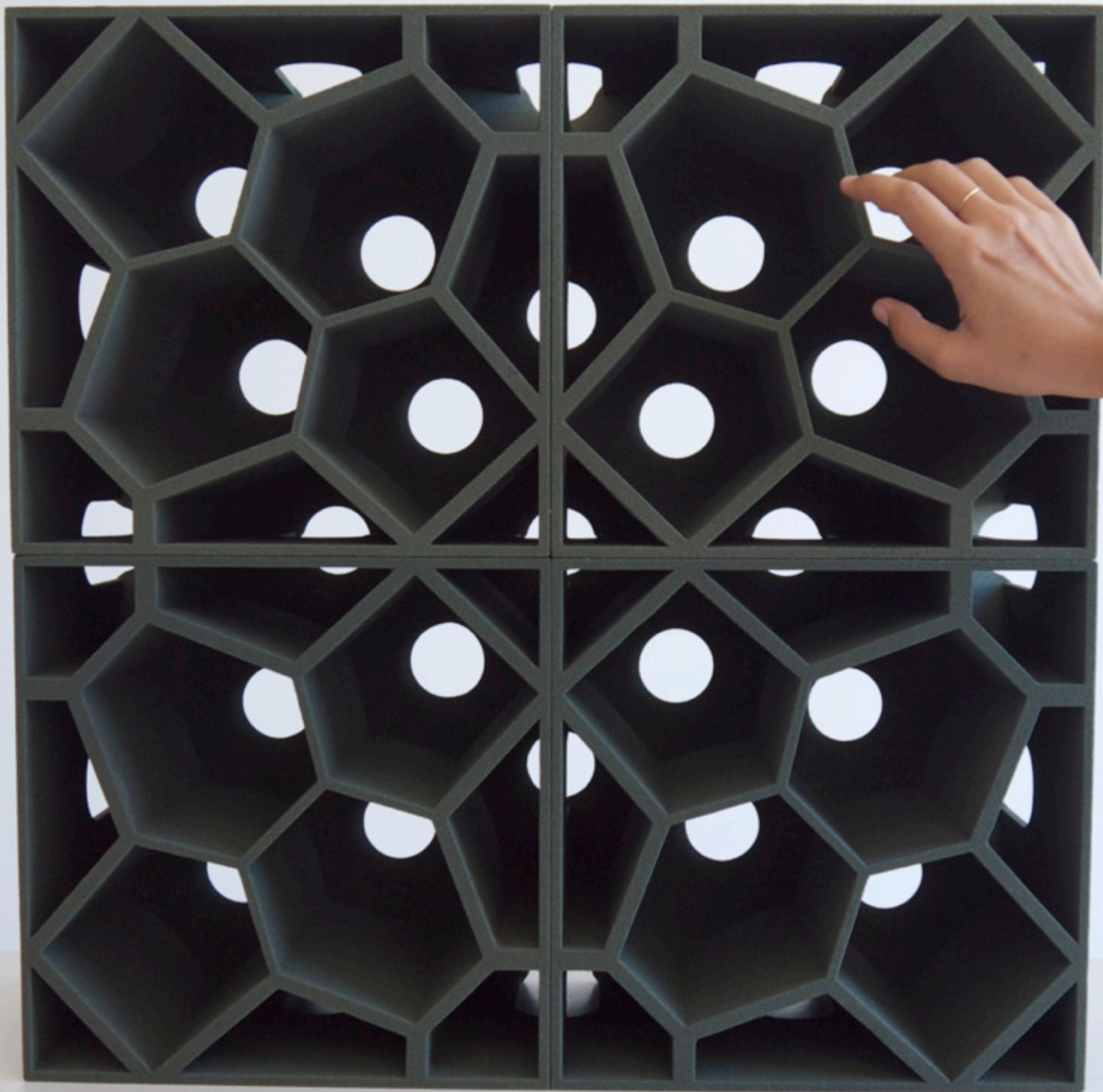


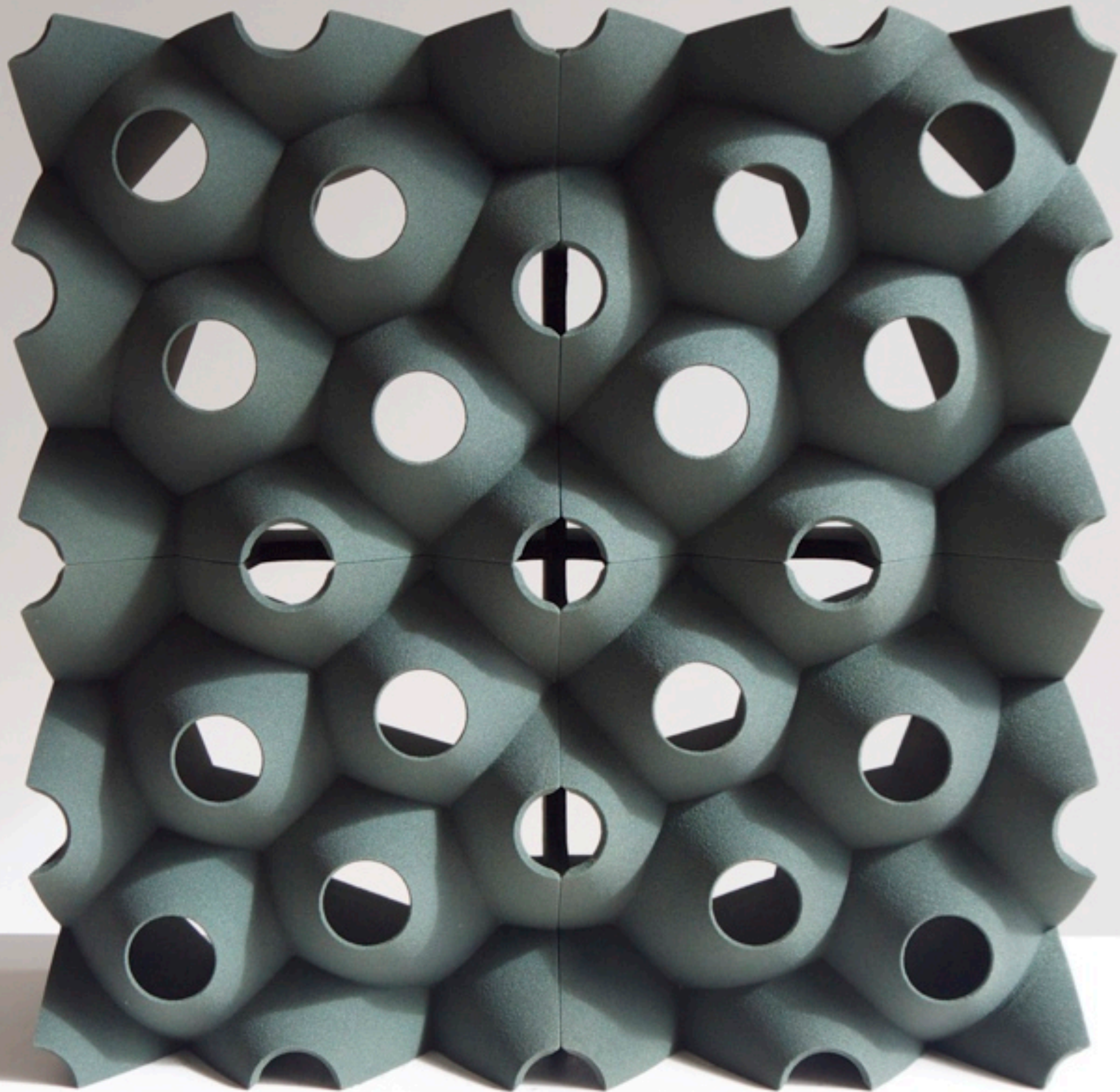


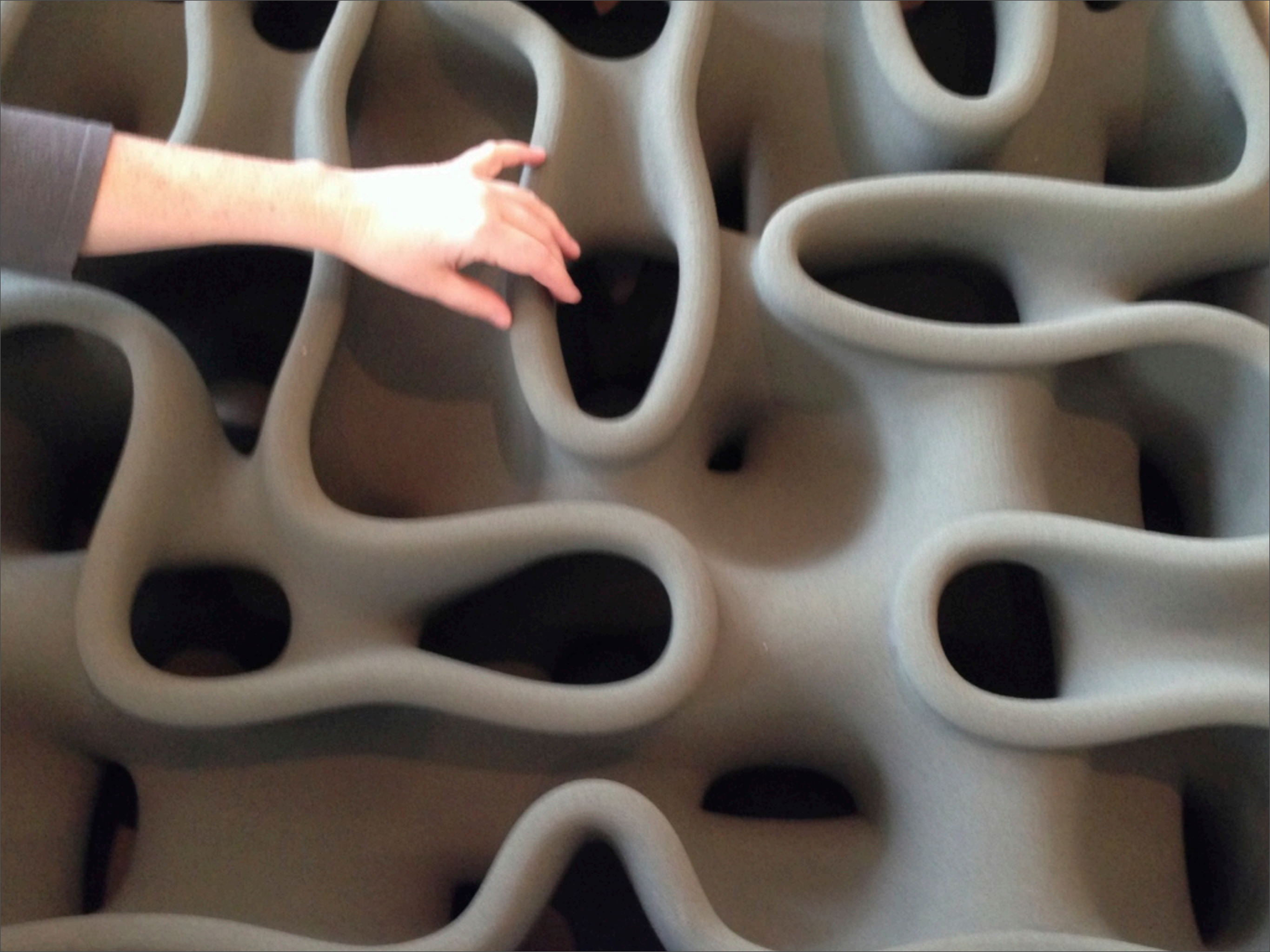














cement

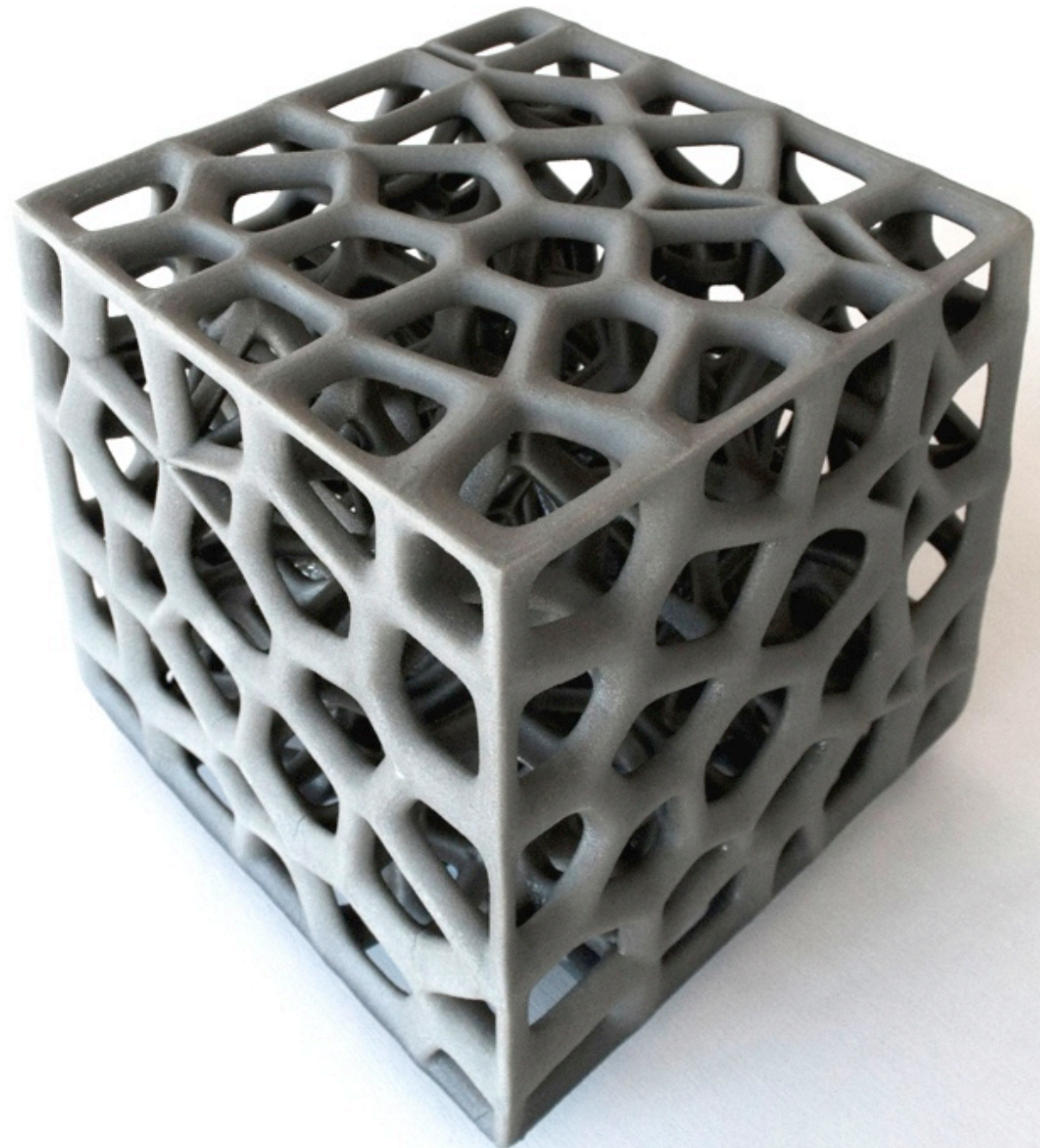


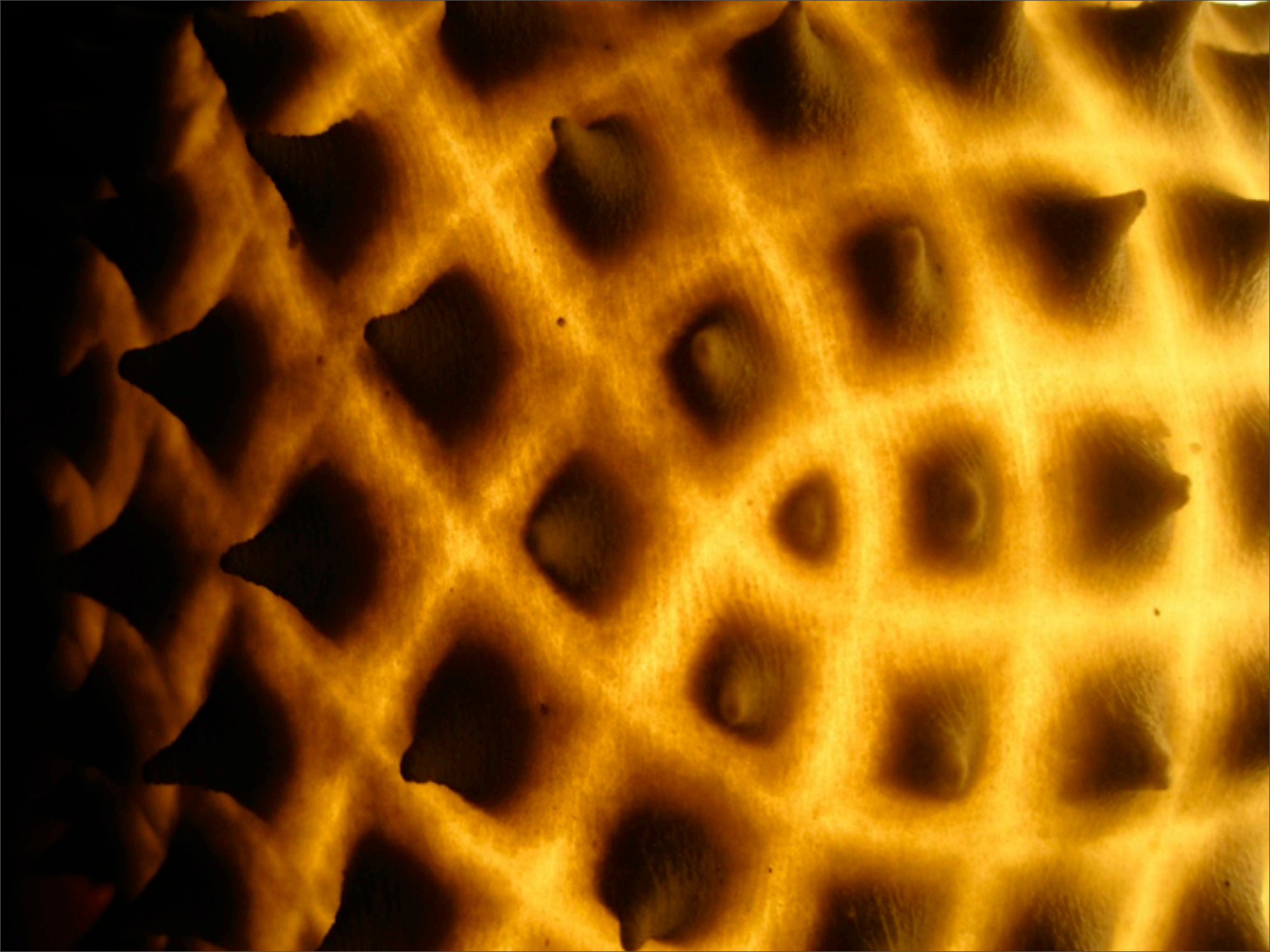
3D Printable Cement

- Cement is the most pervasive building material in the world
- Cement materials and methods need to transform for 3D printing

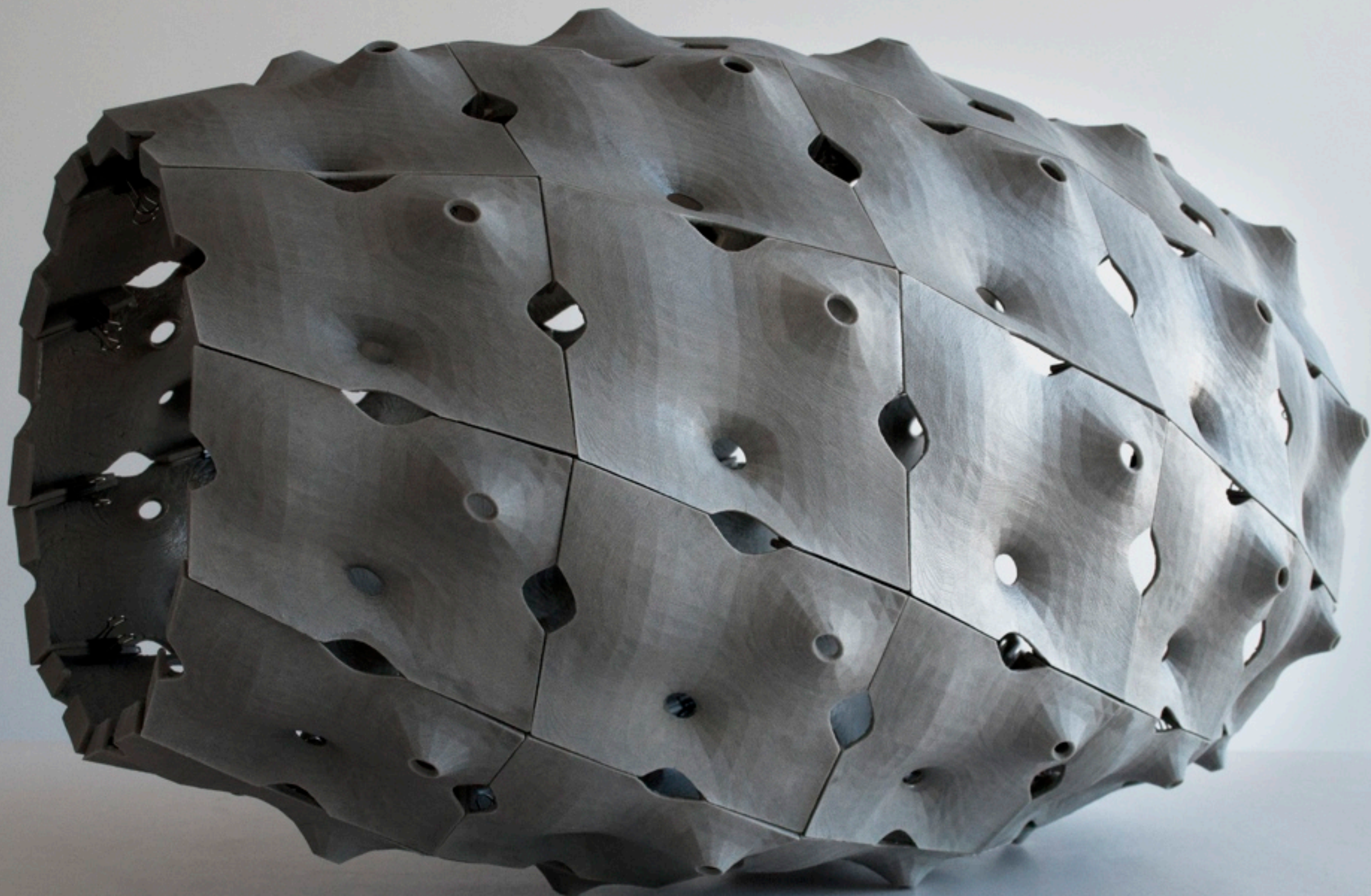
Fiber-Reinforced Cement Polymer for 3D Printing

- Expands cement's capabilities, as no formwork is required
- Allows for "File to Fabrication" process
- Patented process
- Structural capabilities
- Typical Concrete: 3,000 psi
- **Emerging Objects Fiber-reinforced Cement Polymer: 4,700 psi**











Mass Customized Building Blocks

- developing unitized building block systems to allow for complex forms and assemblies
- using parametric software to facilitate production

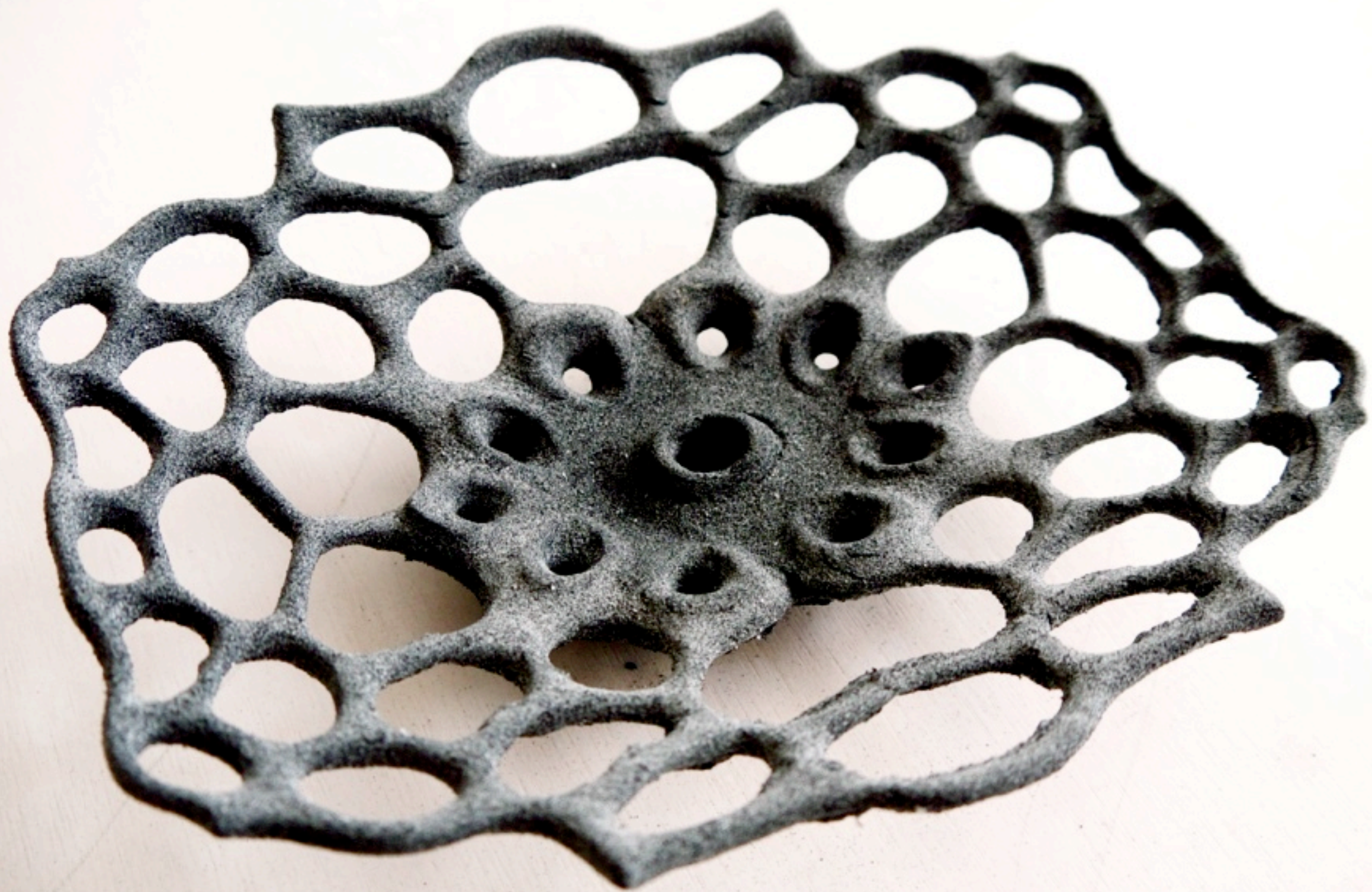


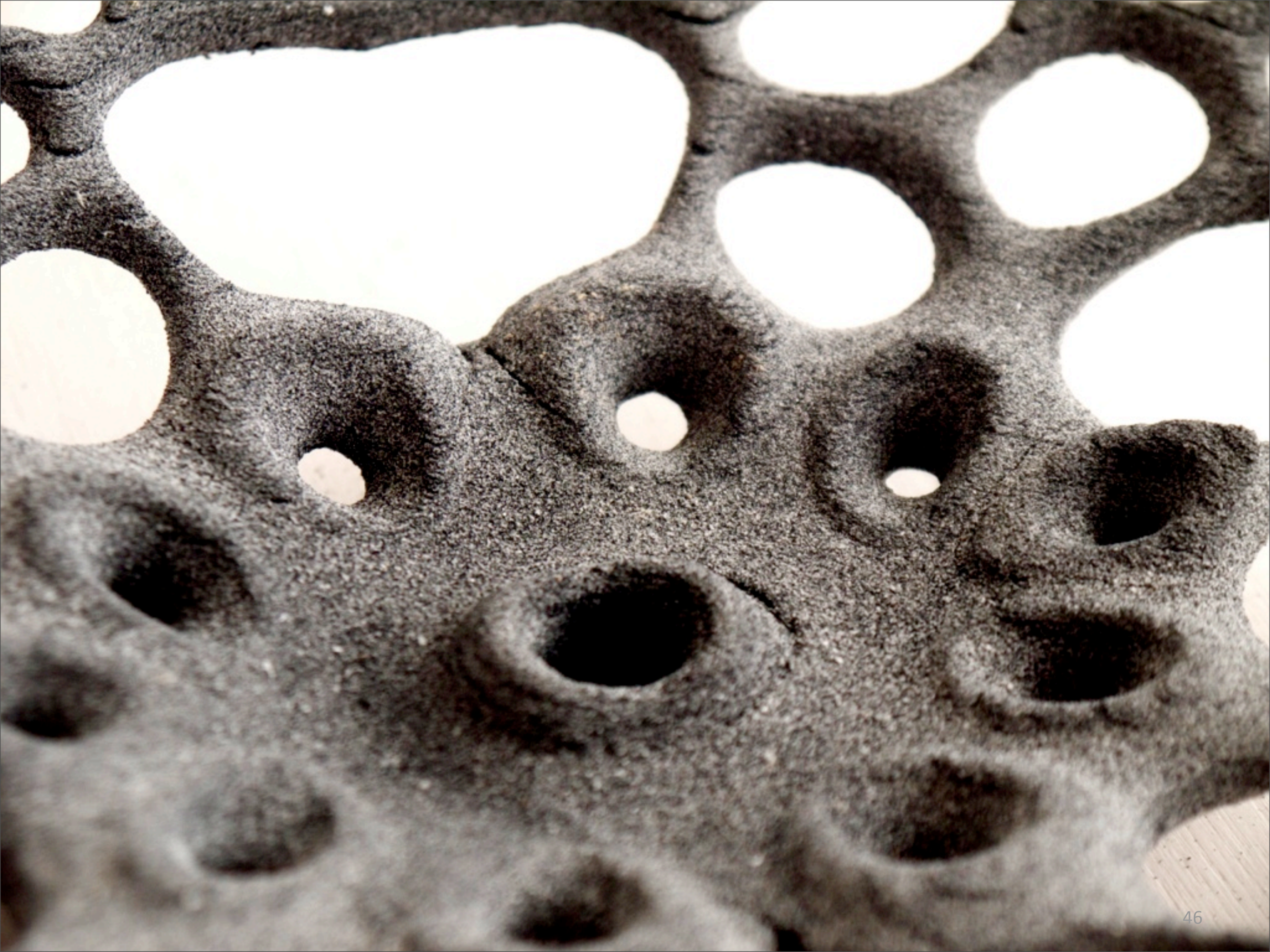


rubber

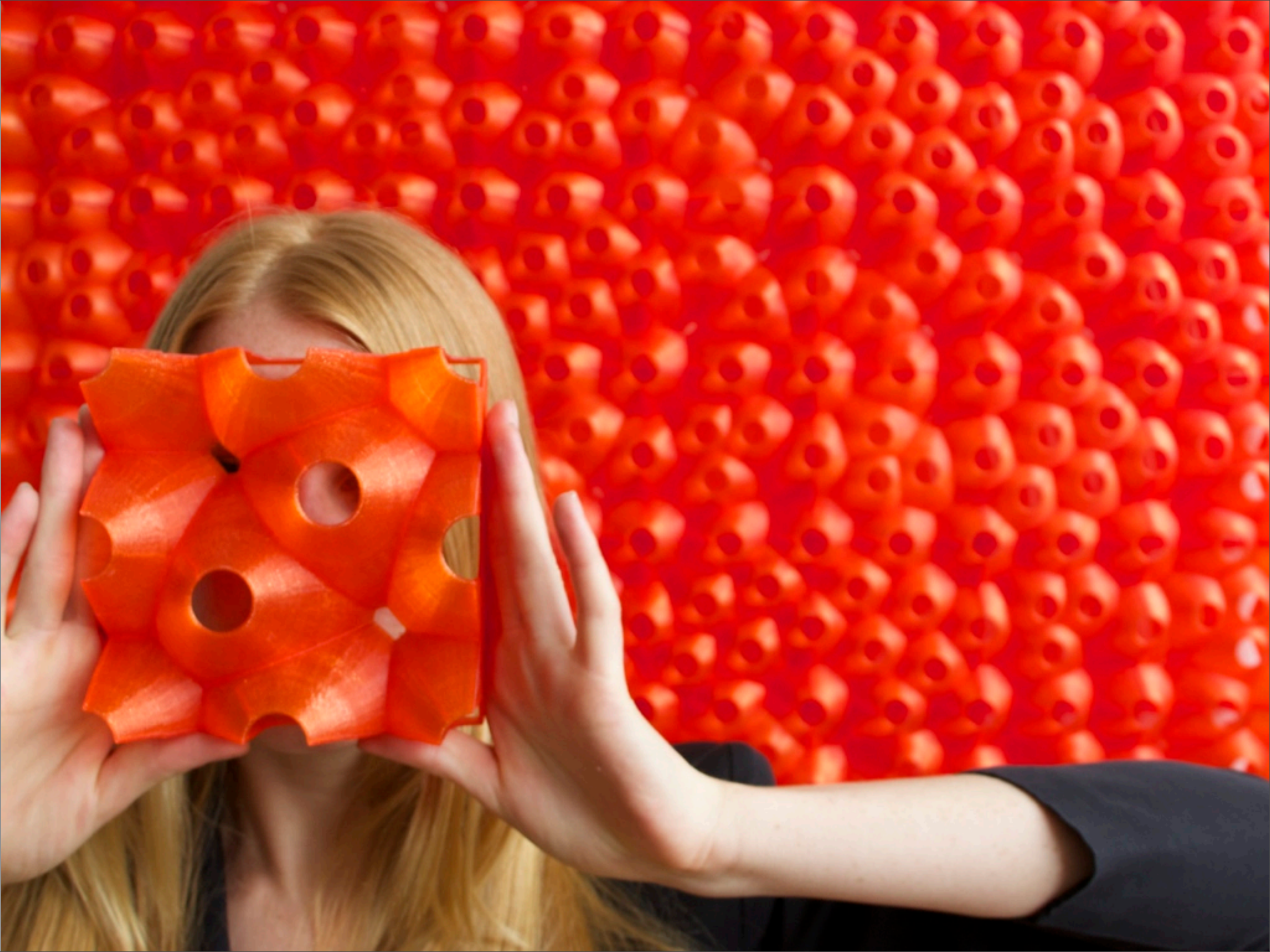


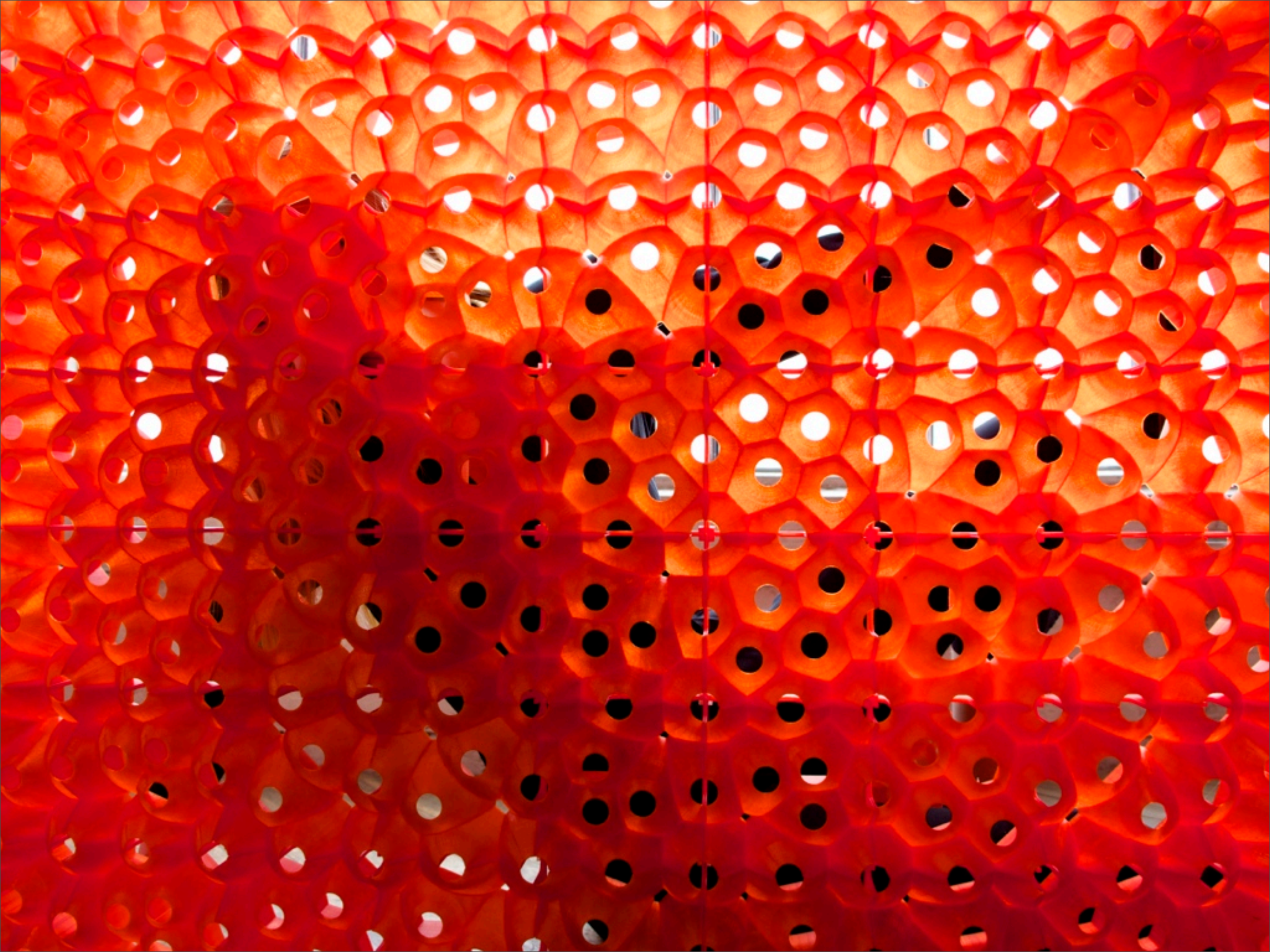


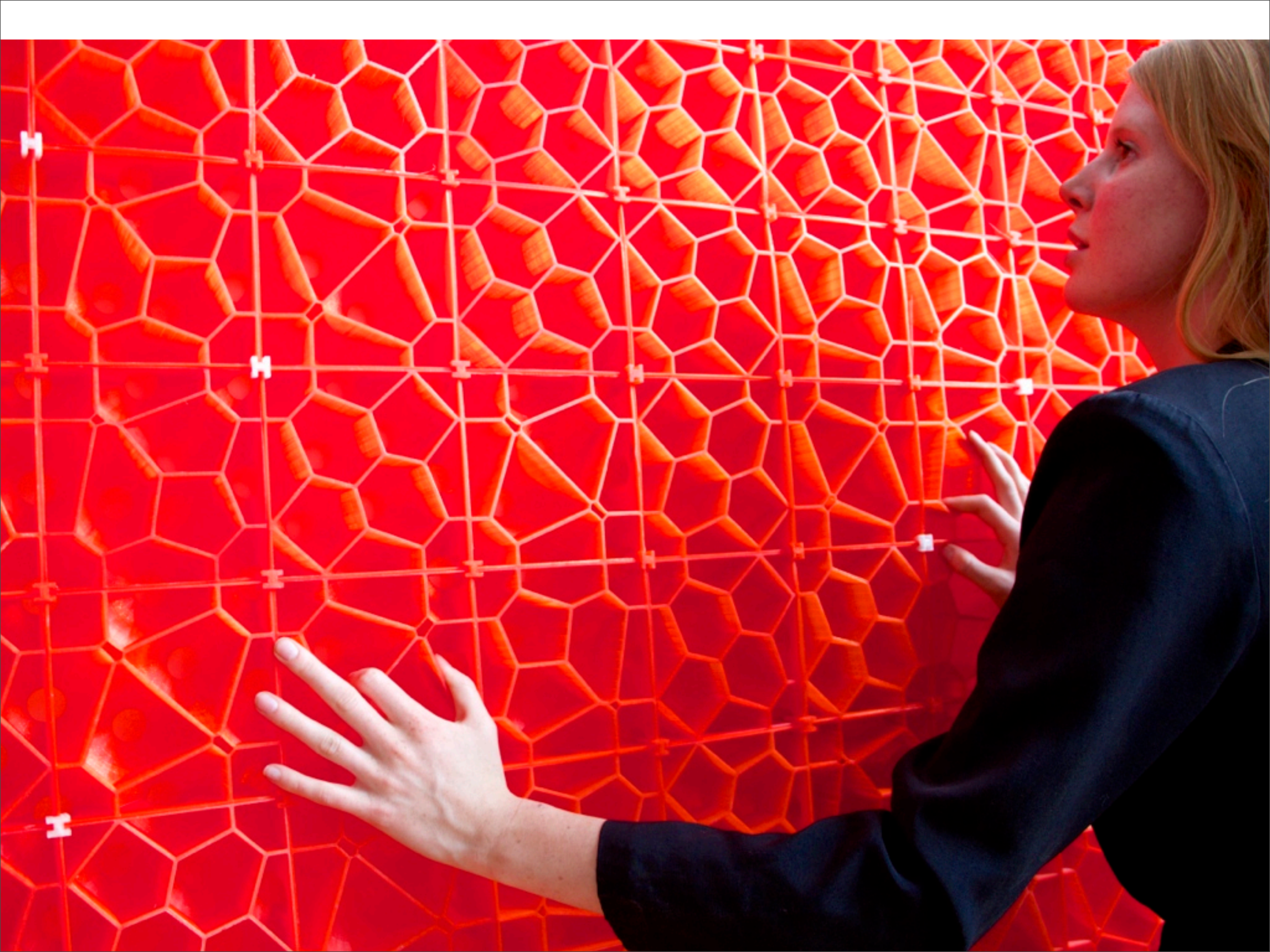




plastic







wood



3D Printable Wood

- Utilize recycled wood from the construction and demolition industry
- Produce complex forms without producing waste



3D Printable Wood

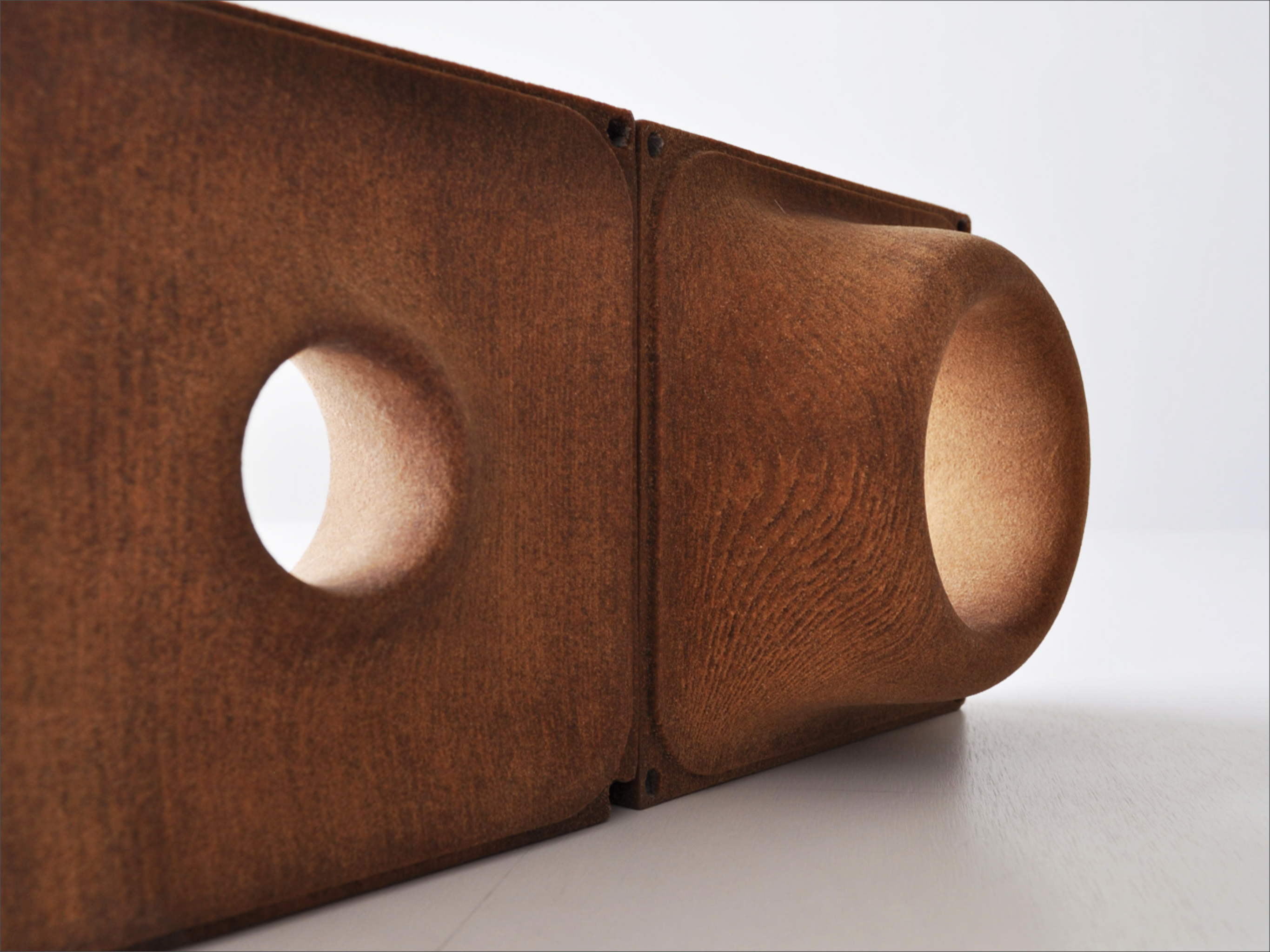
- Superior Structural Strength
- Typical compressive strength of a 2 x 4 = 536 psi
- **Emerging Objects wood = 902 psi**



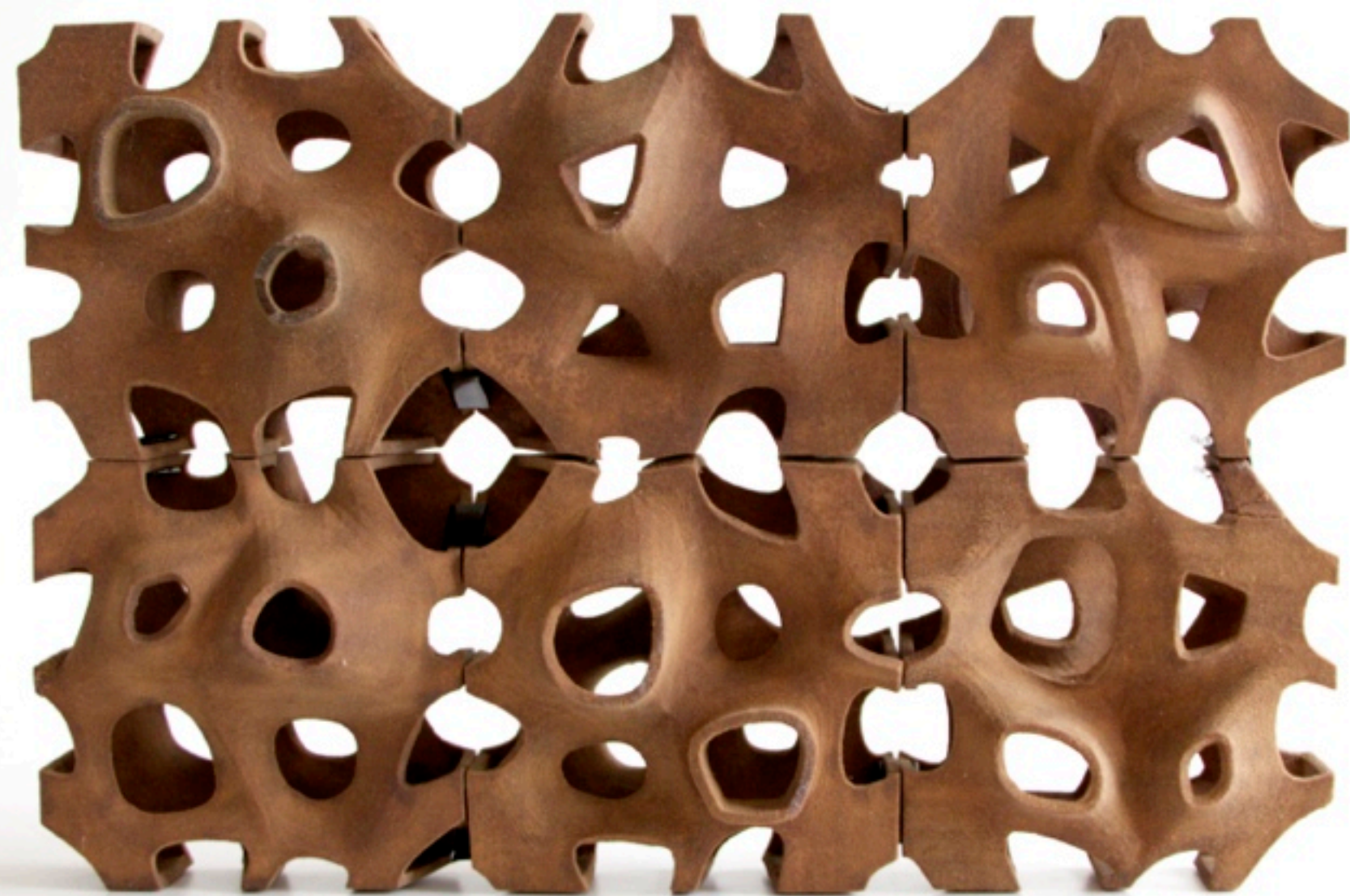




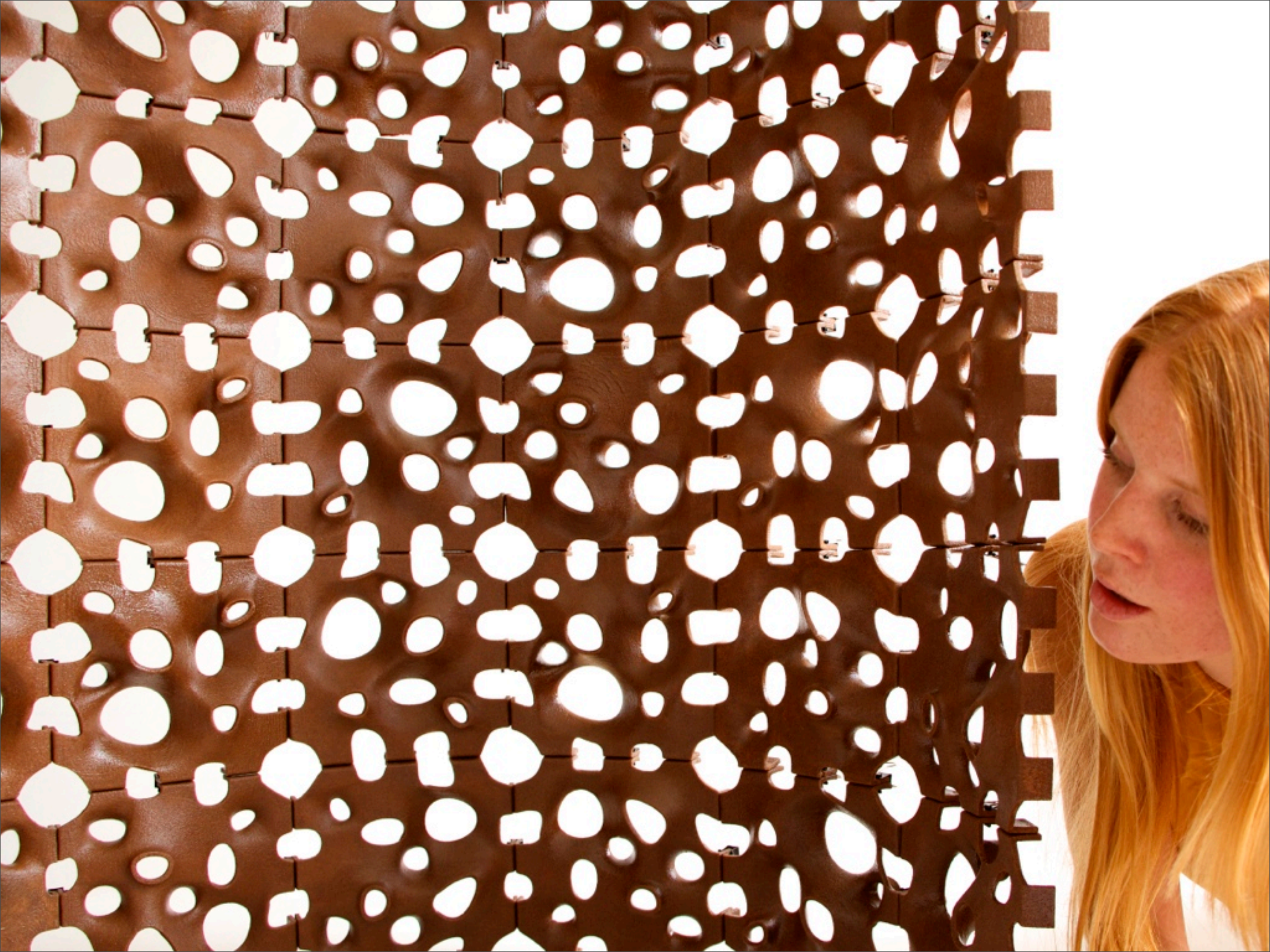


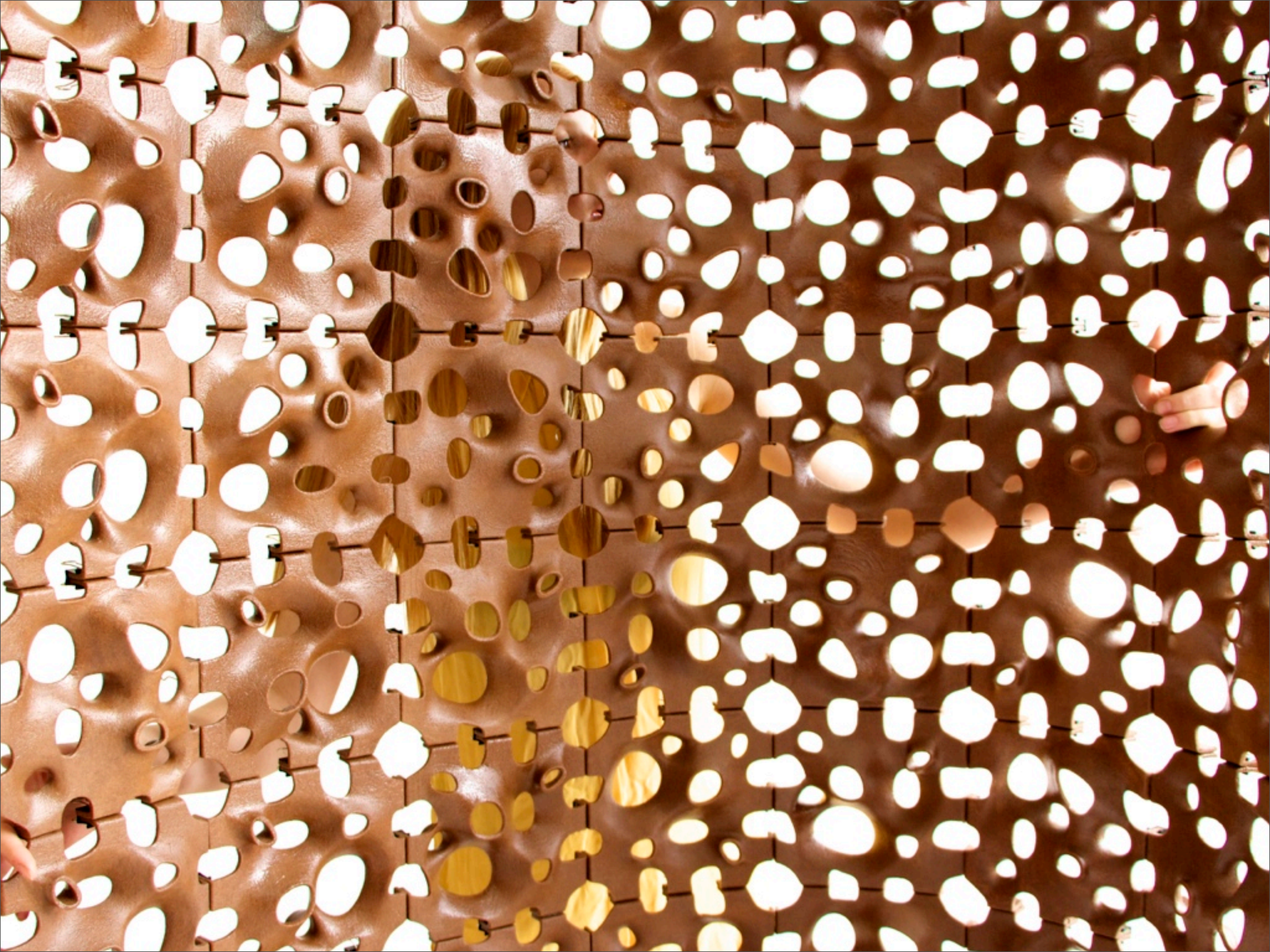












paper

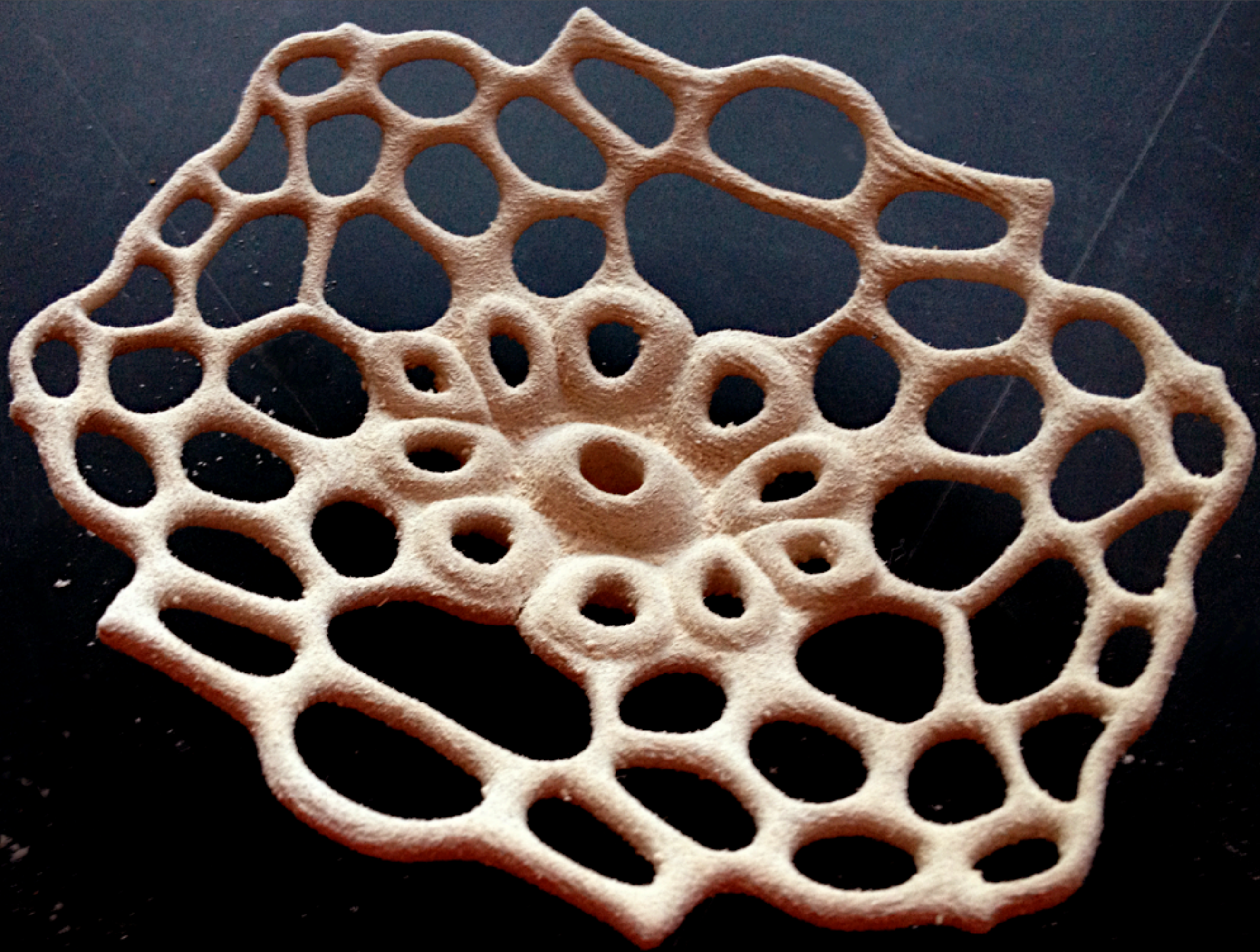








chocolate







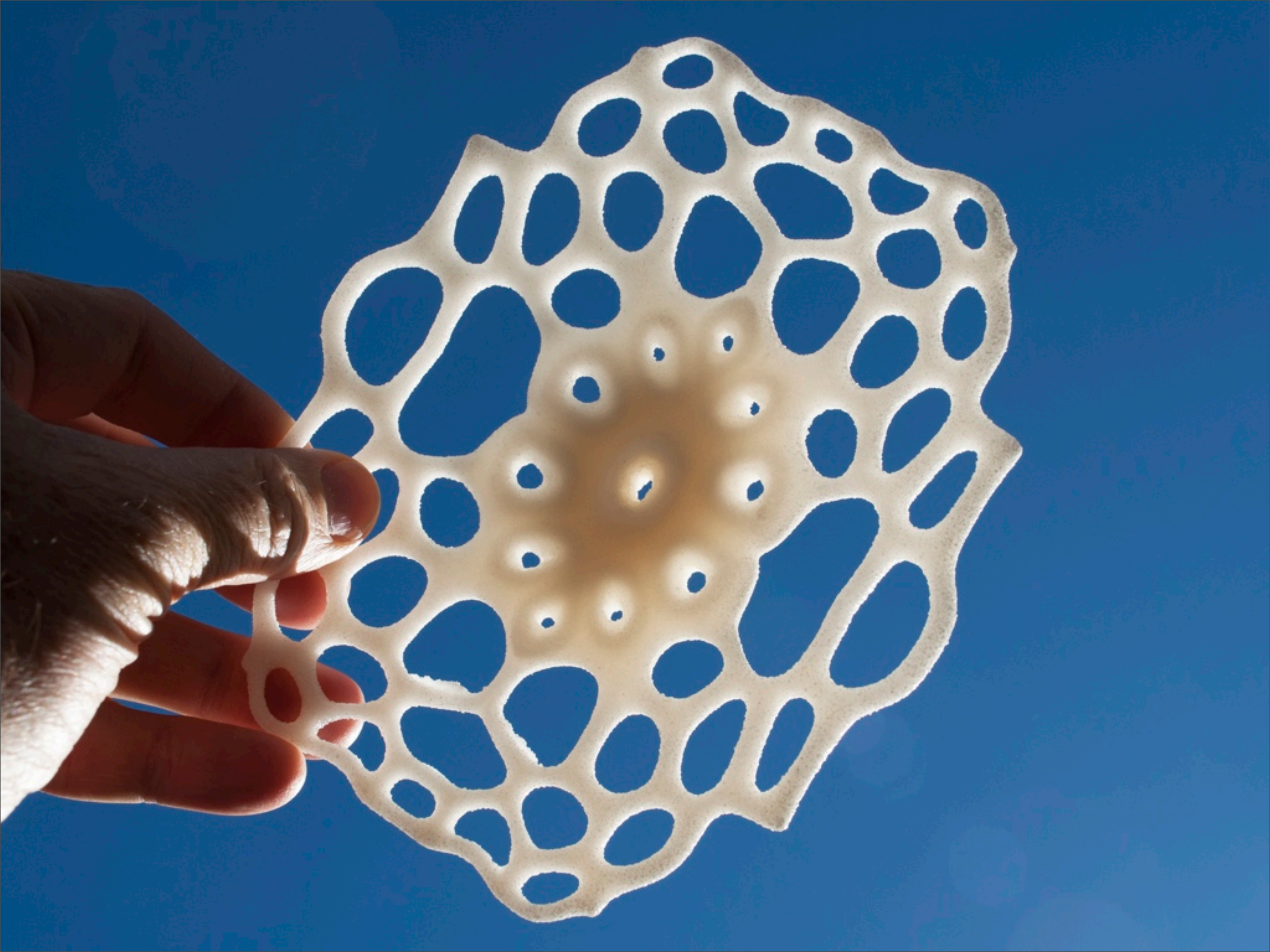
salt



Local Materials

- Salt is a renewable resource
- Salt is inexpensive
- Salt is harvested through evaporation
- Structural capabilities possible







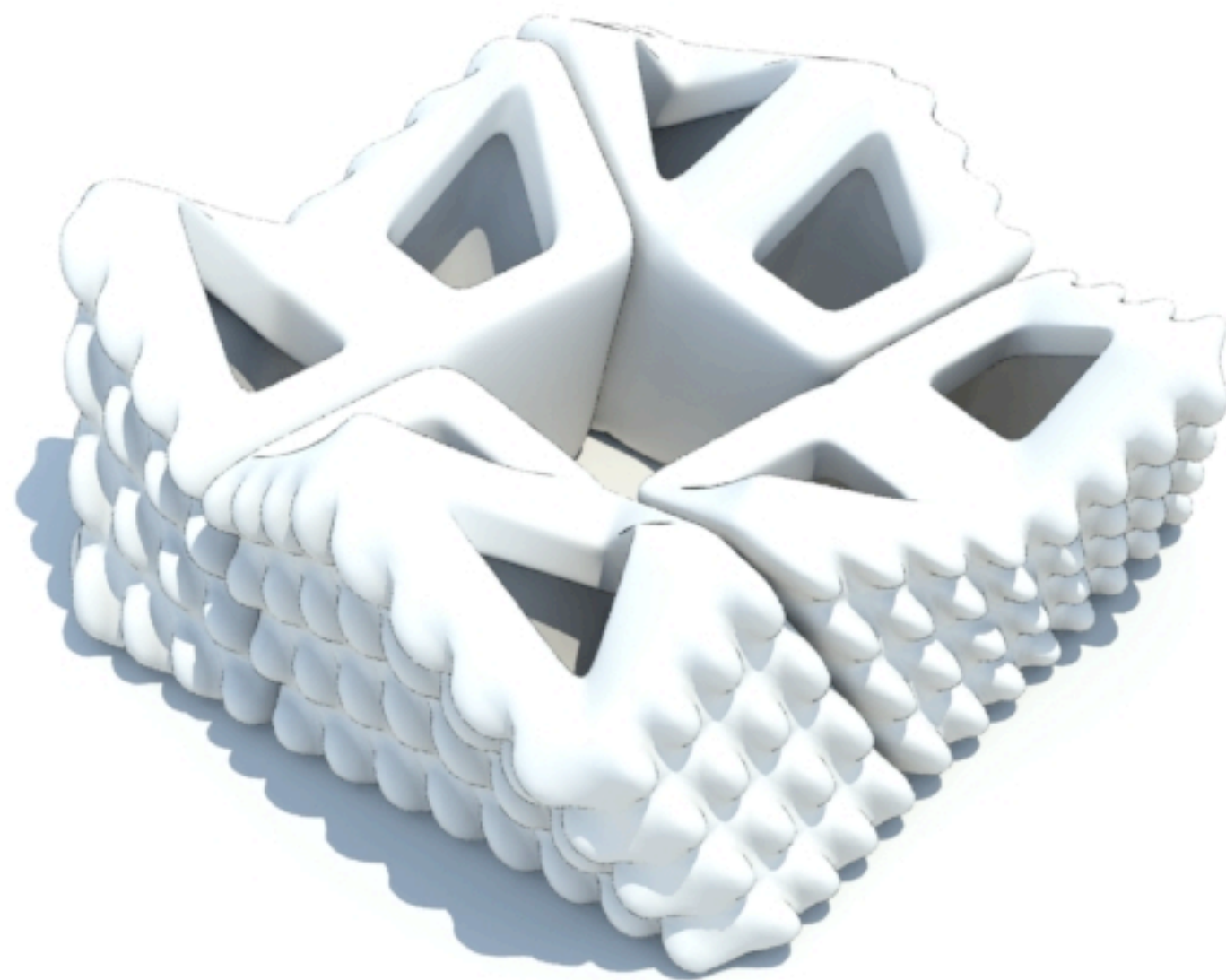
A 3D printed model of a complex mechanical assembly, possibly a microfluidic device, is shown against a dark blue background. The model is a light beige color and features a rectangular frame with internal structures, including two prominent vertical pillars and a network of smaller channels and components. The text "ultrafine resolution" is overlaid in white, bold, sans-serif font in the center of the image.

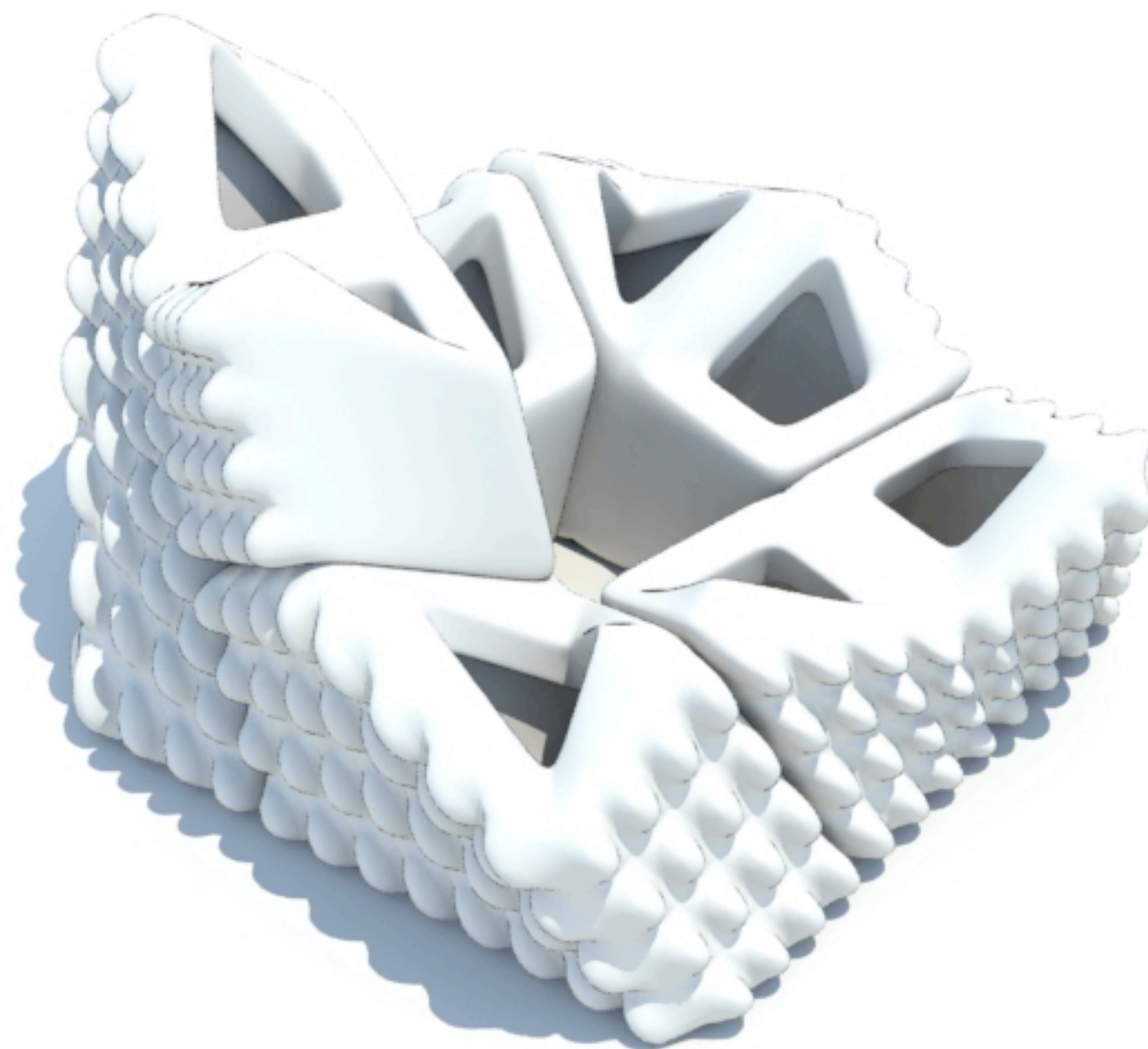
ultrafine resolution

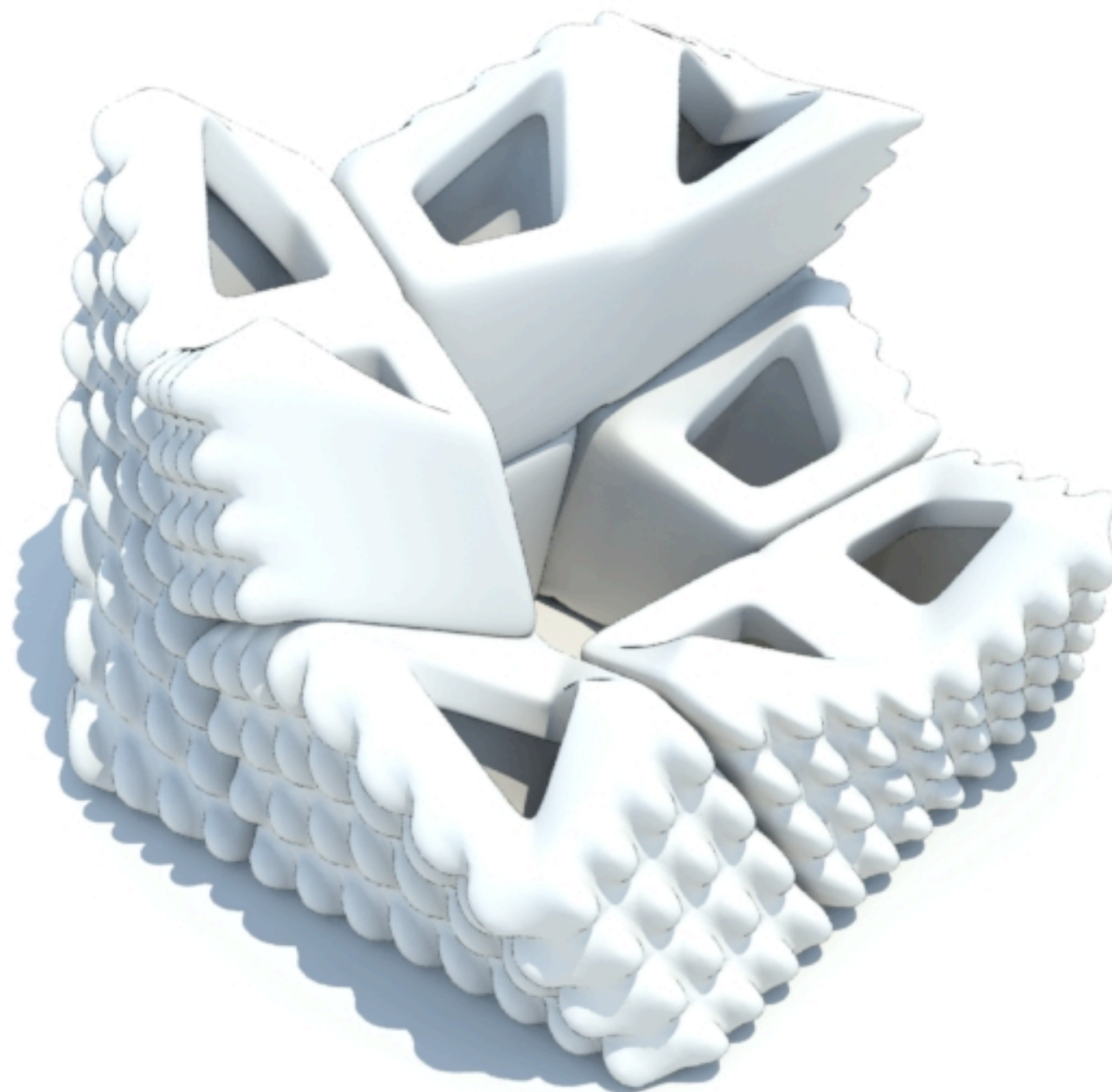
proof of concept

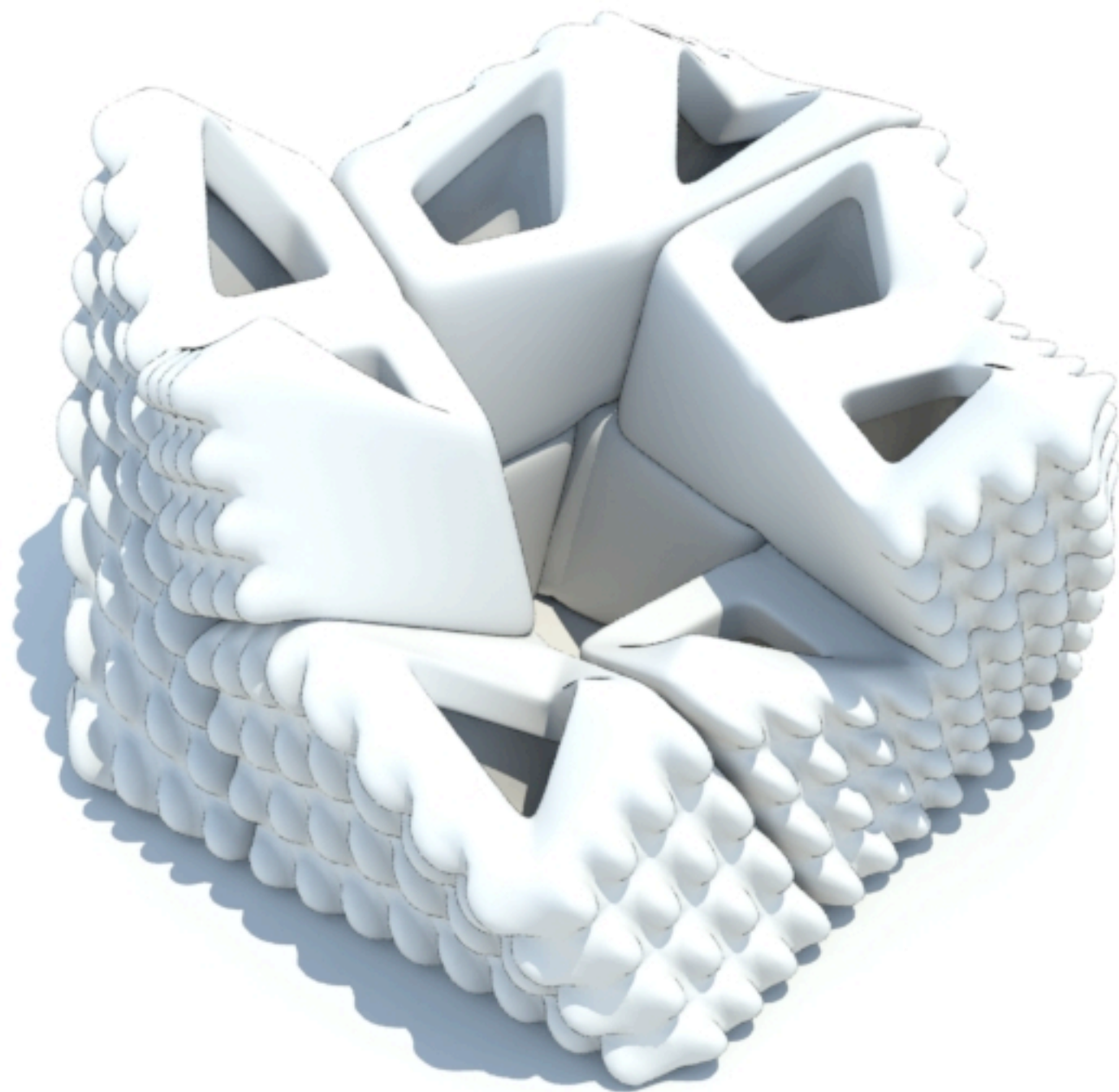
quake column

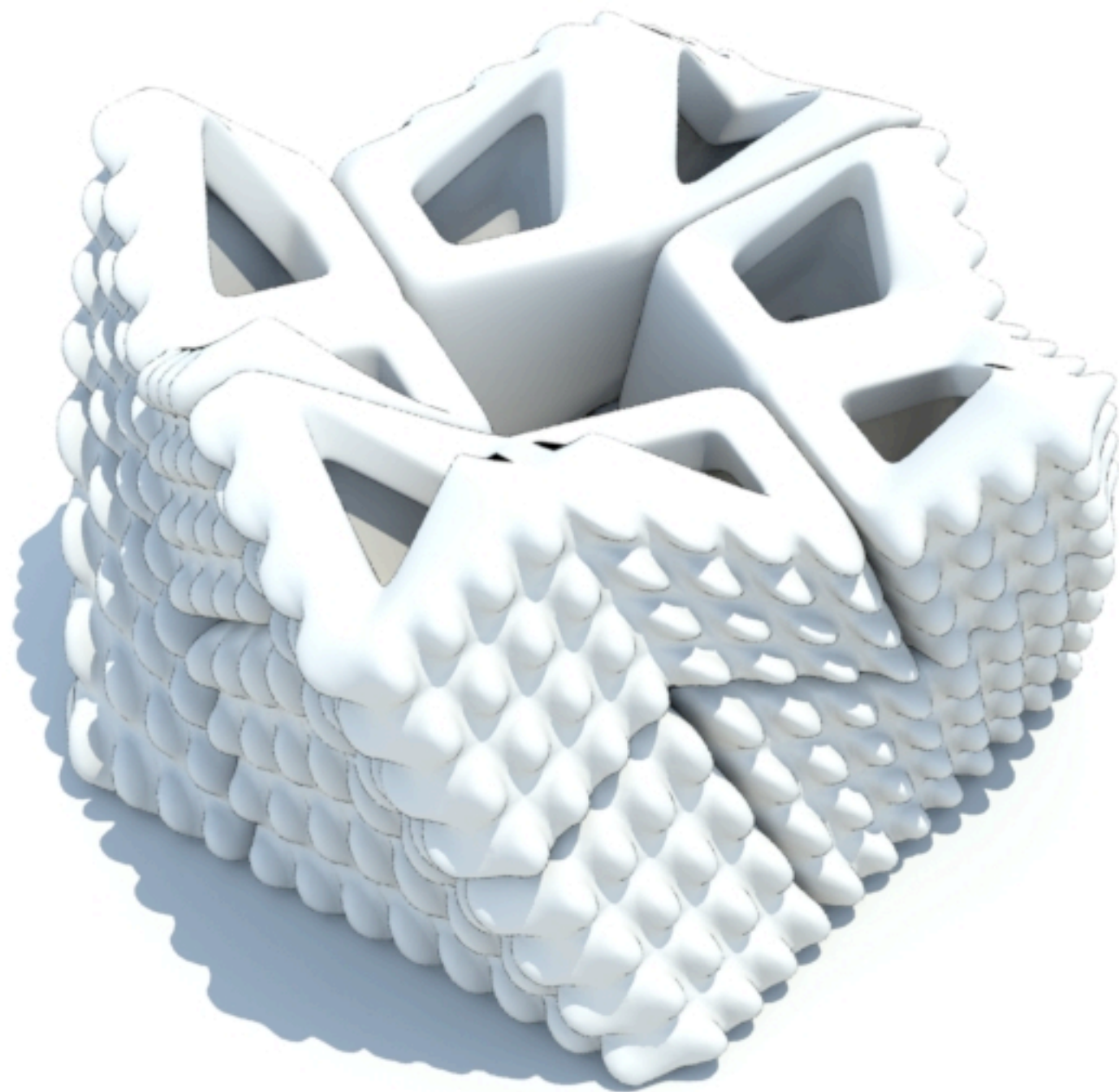


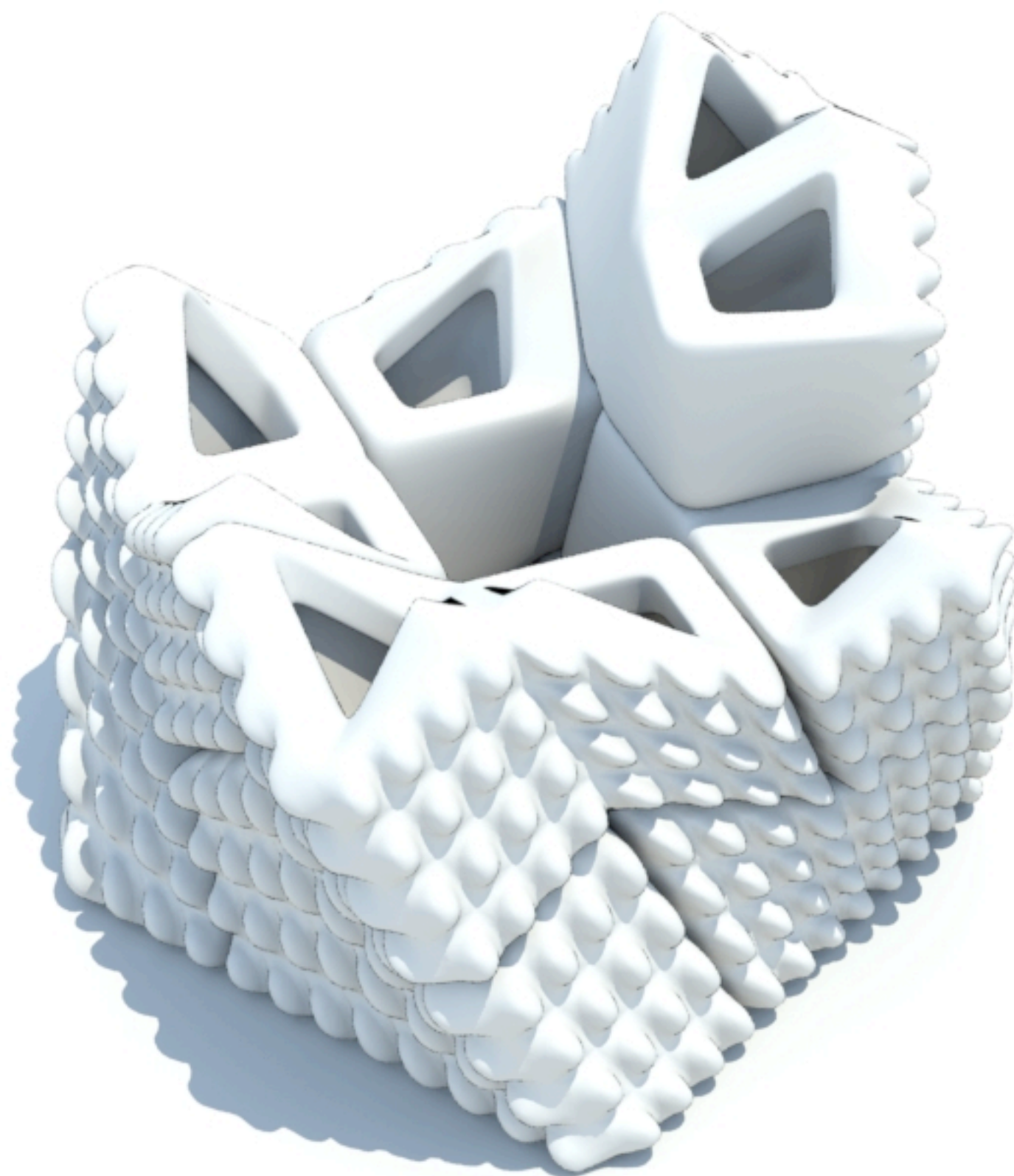


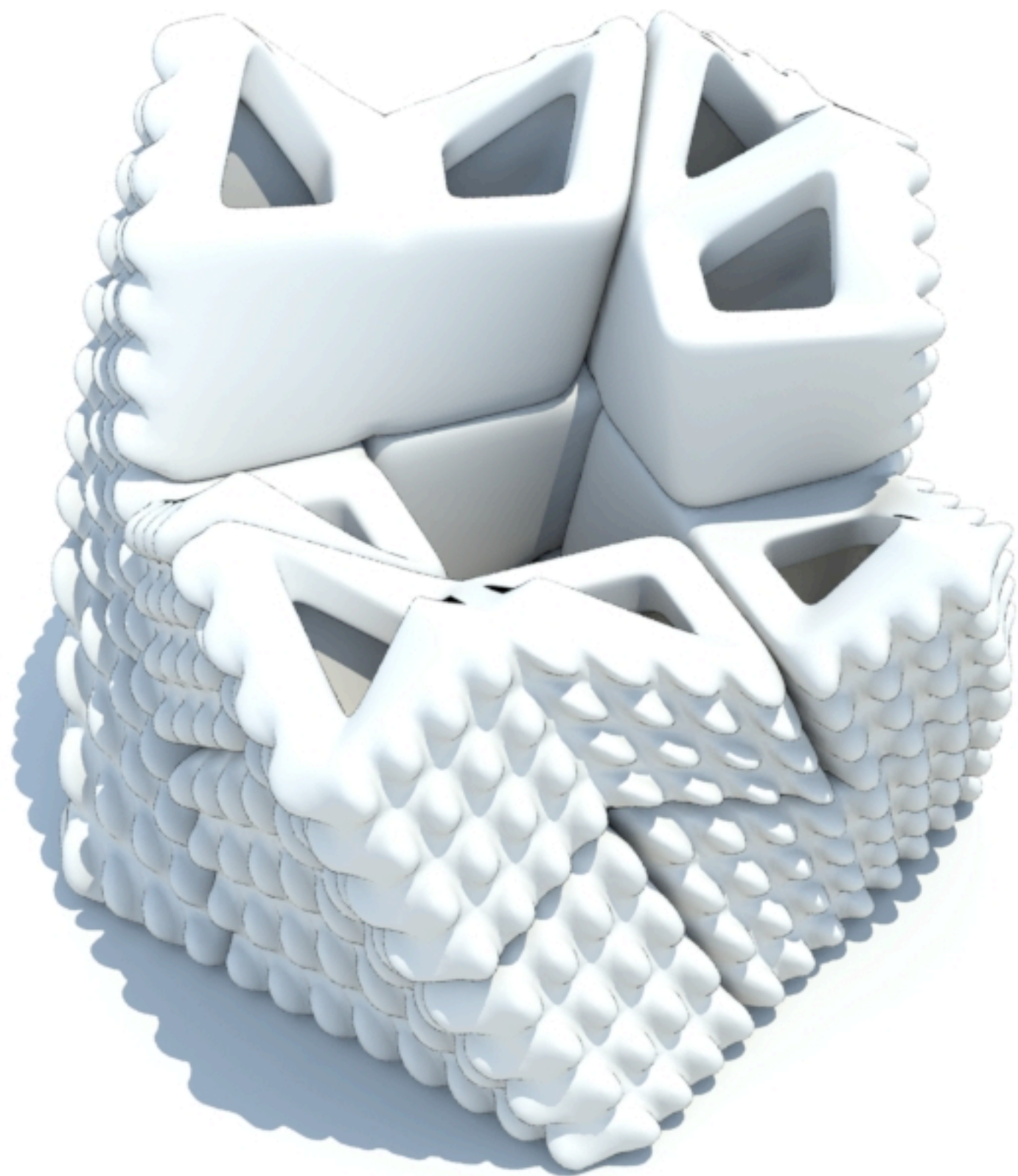


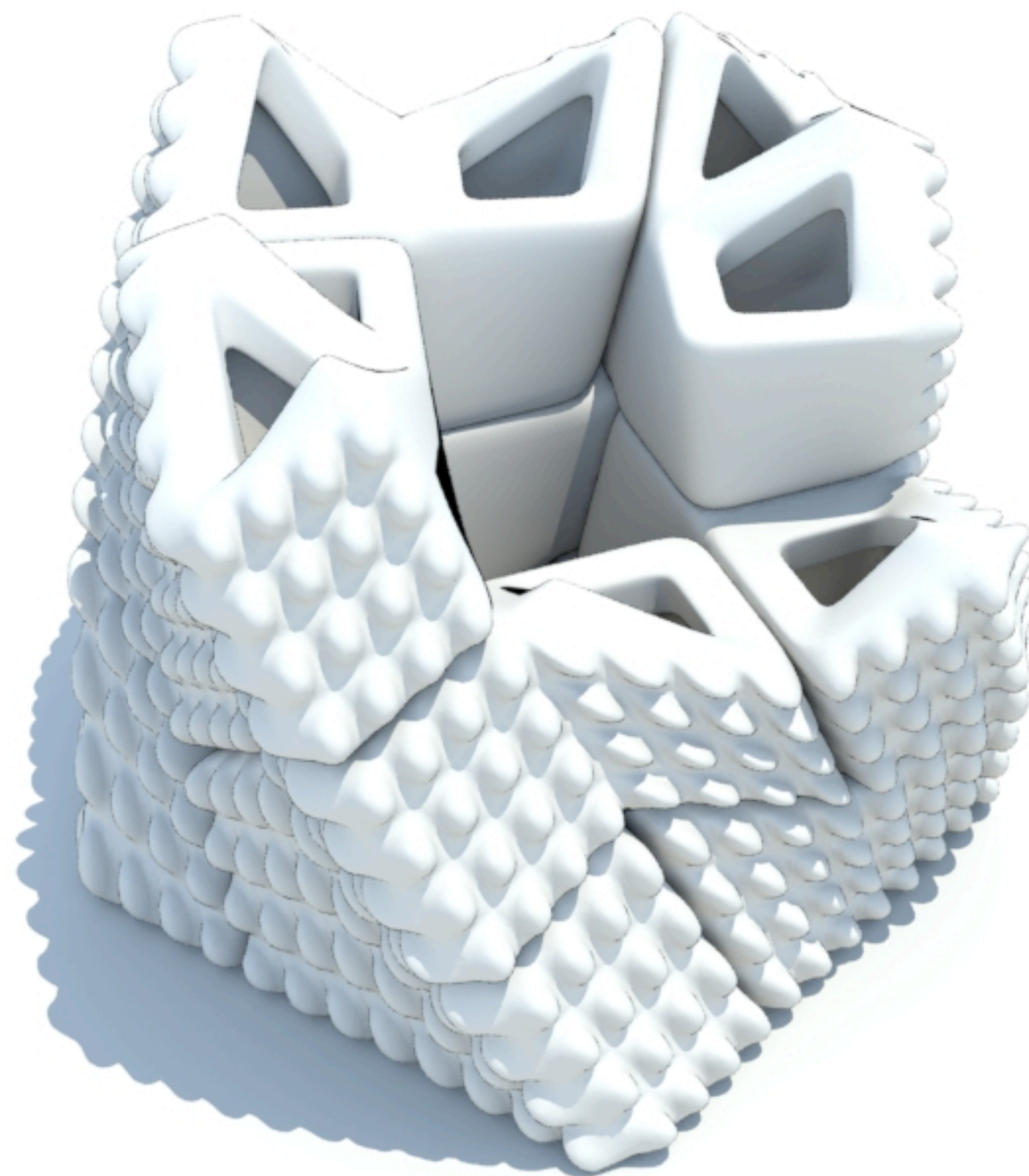


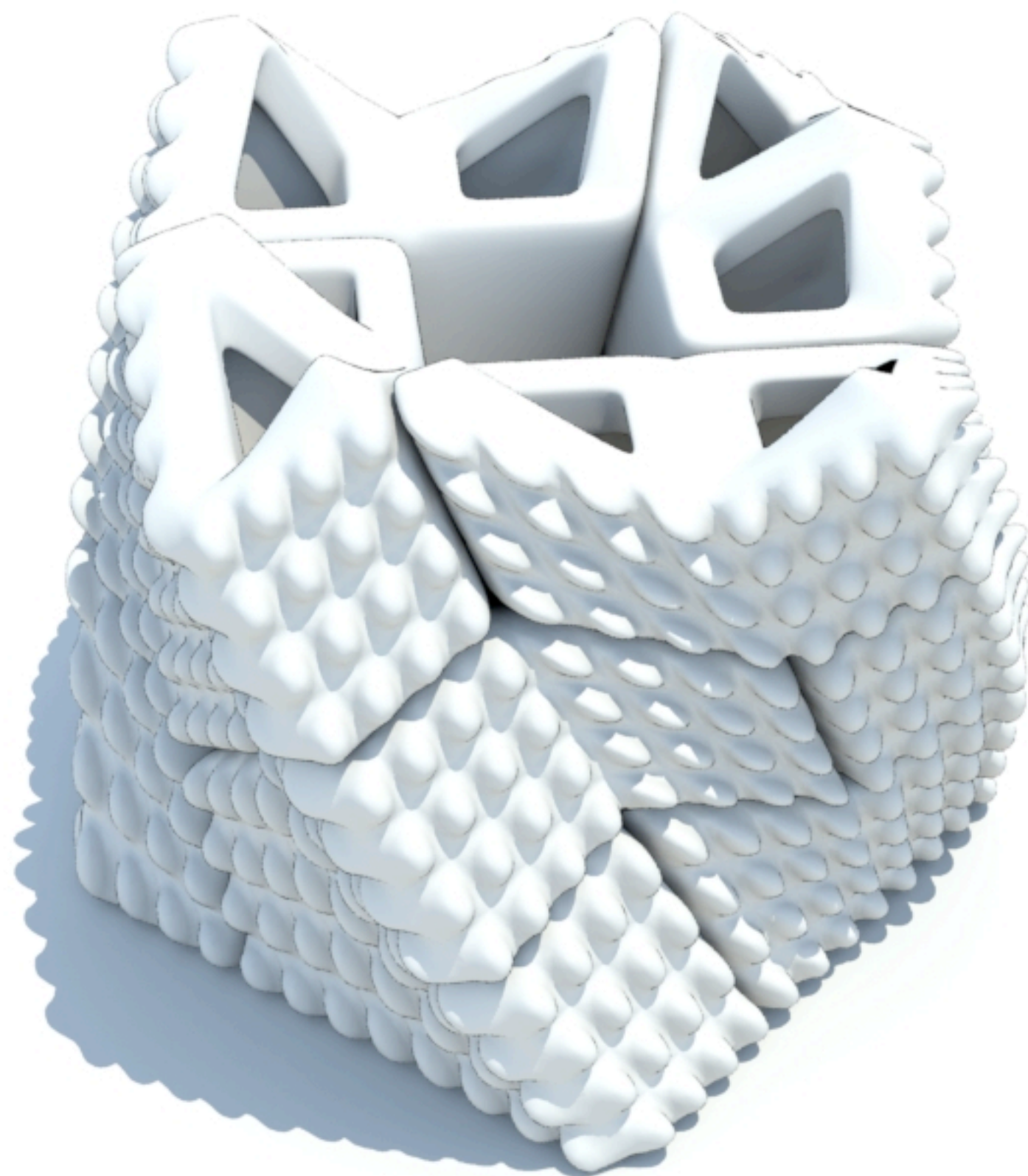












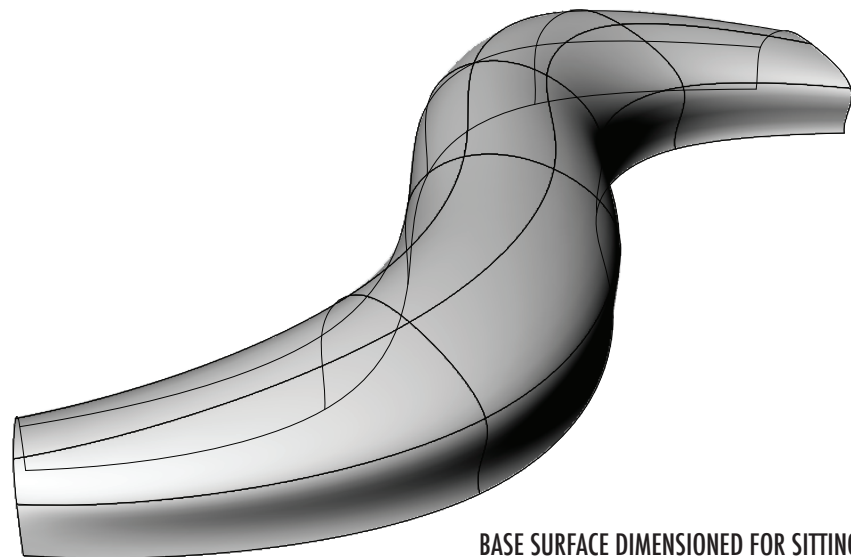




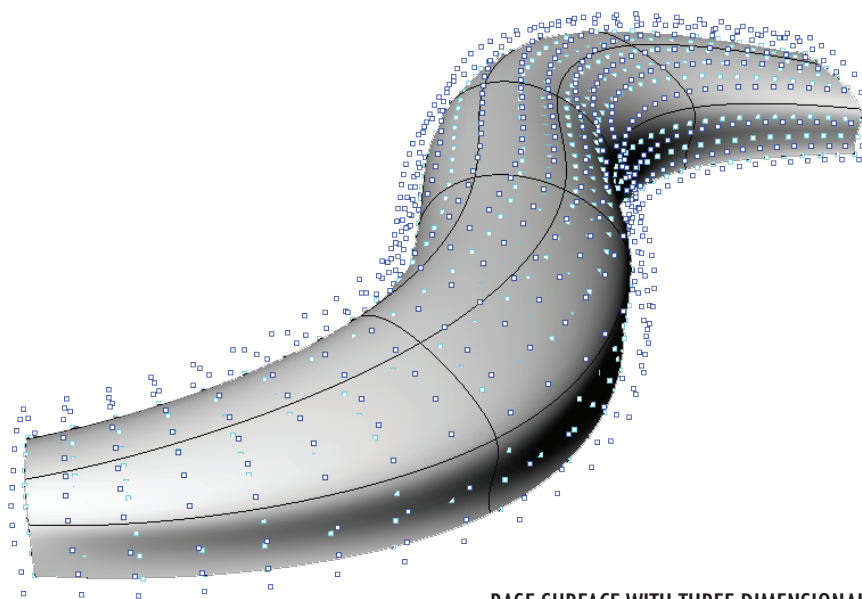


seat slug

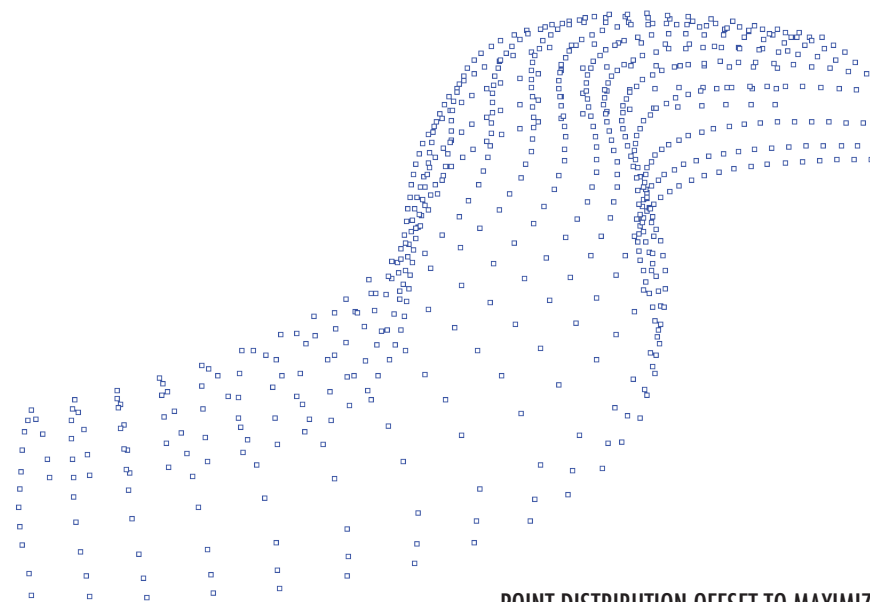




BASE SURFACE DIMENSIONED FOR SITTING



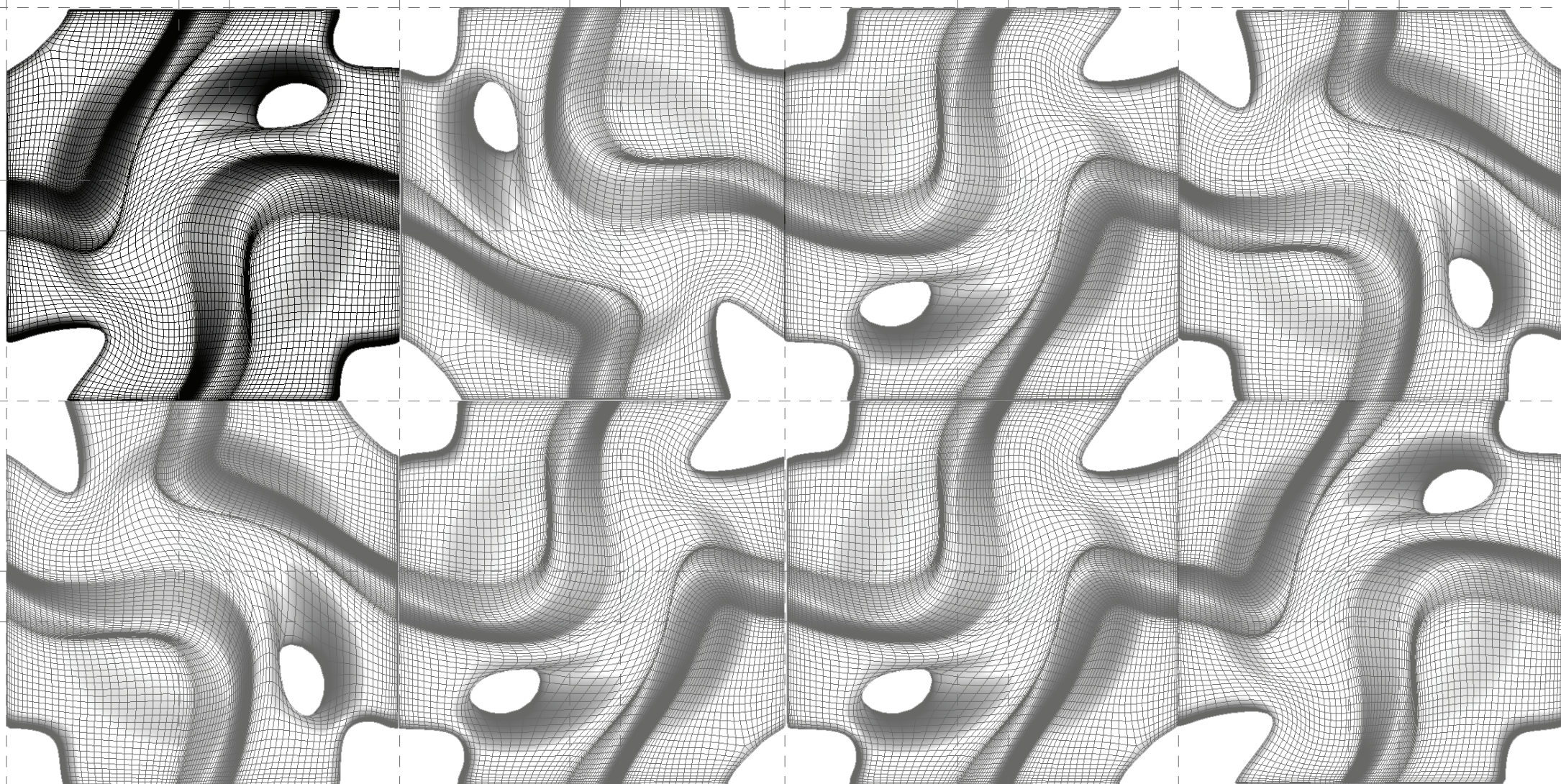
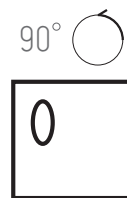
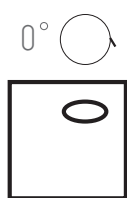
BASE SURFACE WITH THREE DIMENSIONAL POINT DISTRIBUTION



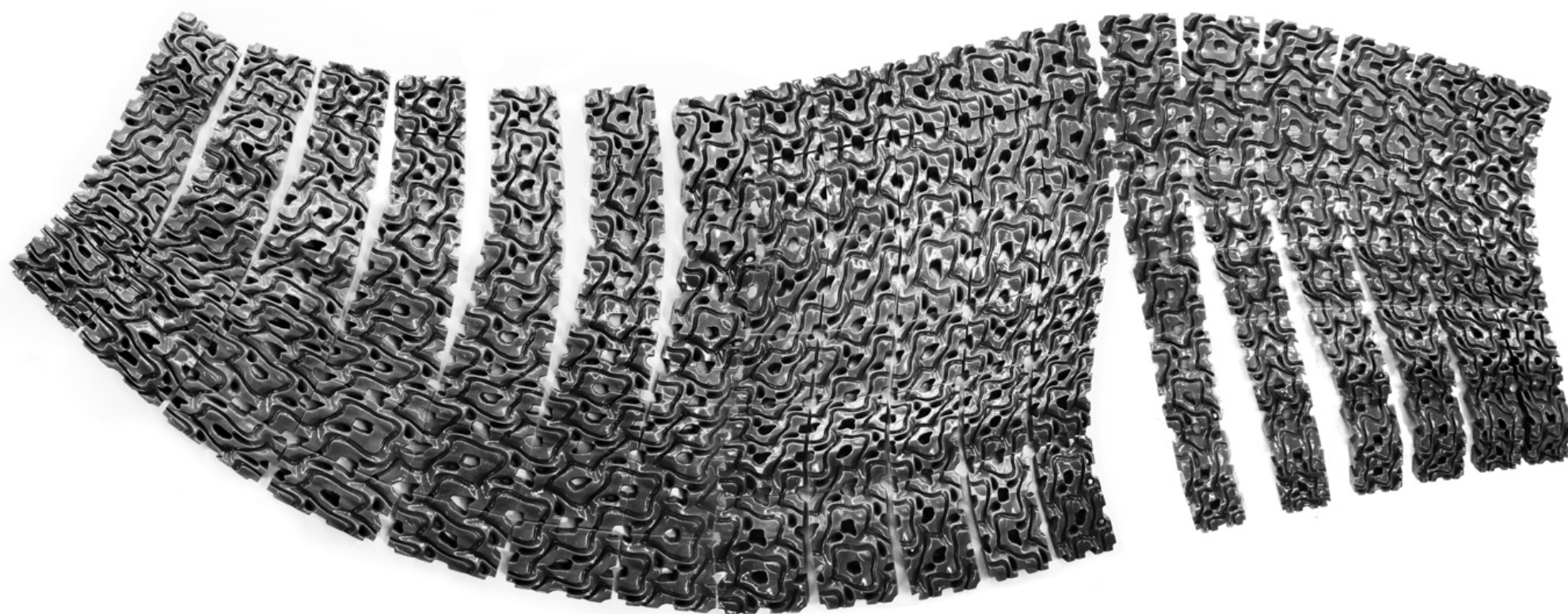
POINT DISTRIBUTION OFFSET TO MAXIMIZE STRUCTURAL DEPTH OF INDIVIDUAL BRICKS



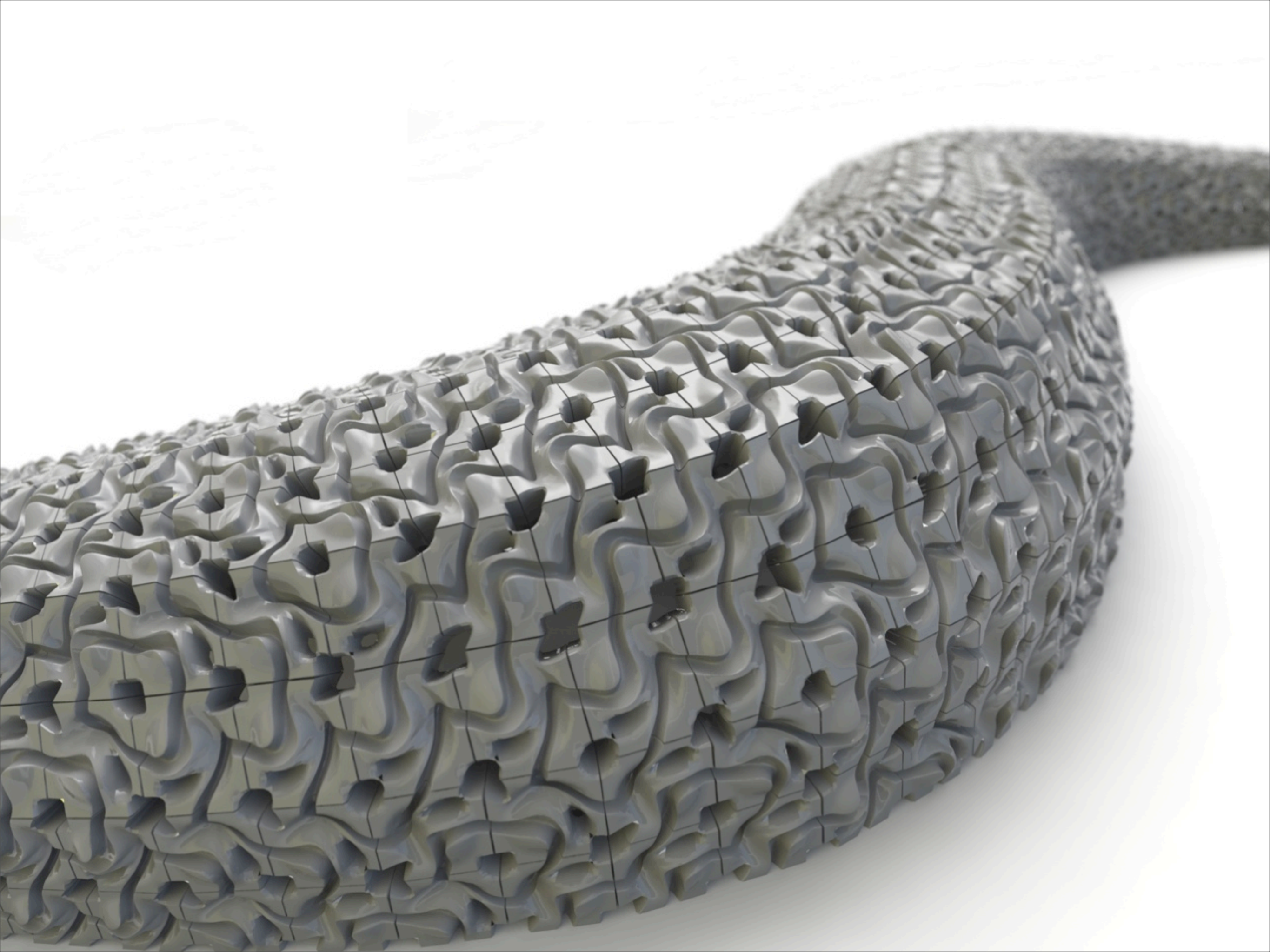
POINT DISTRIBUTION DIMENSIONED TO MAXIMIZE PRINT BED AND CURVATURE













saltygloo





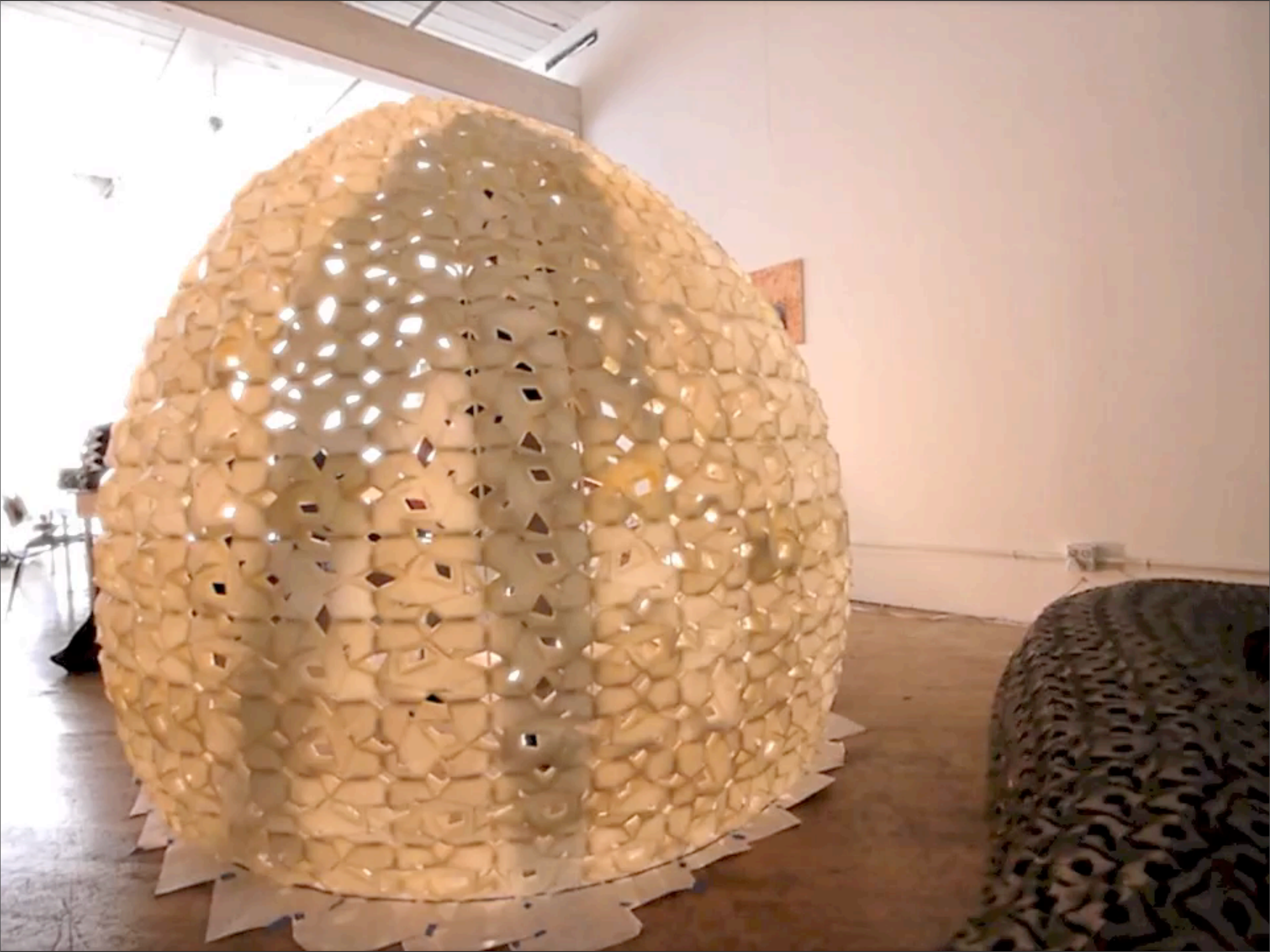


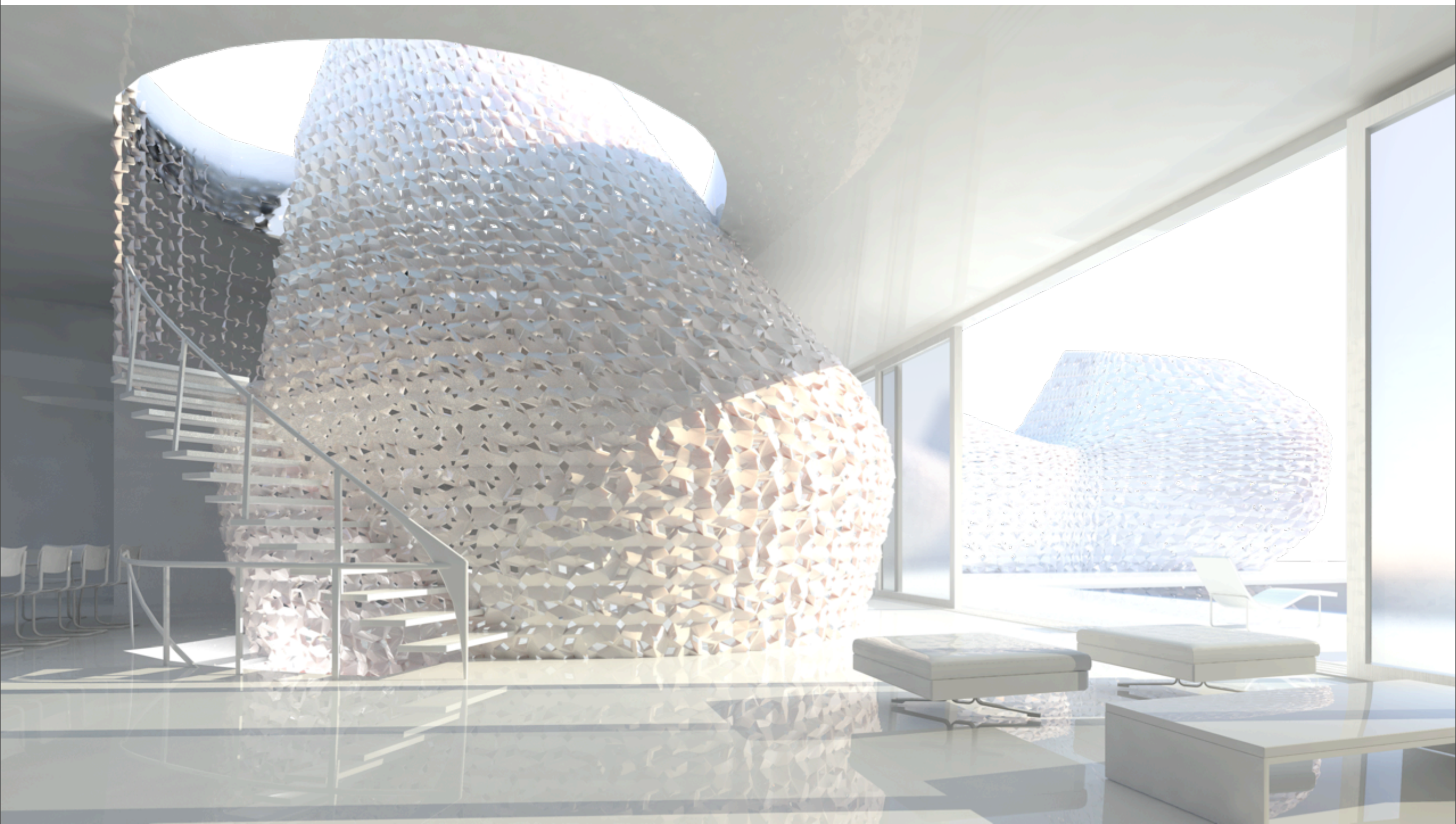


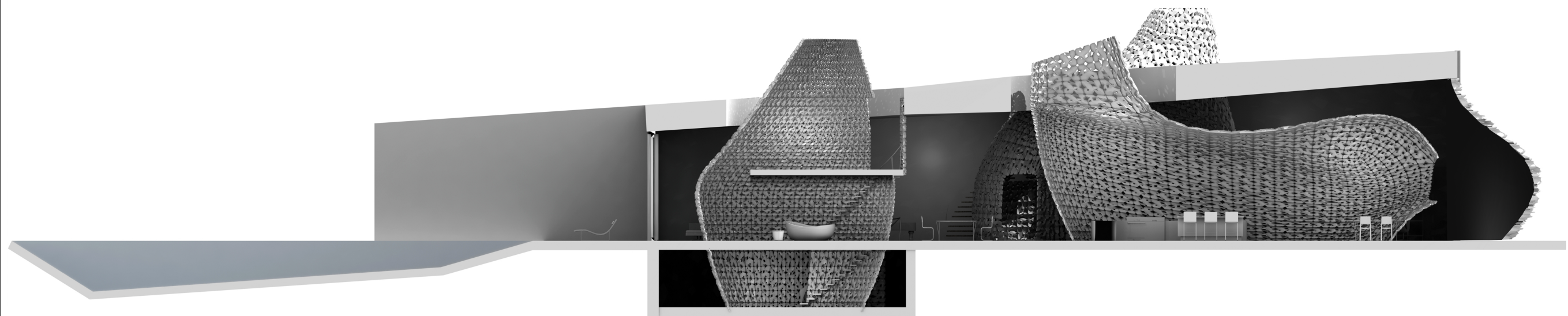


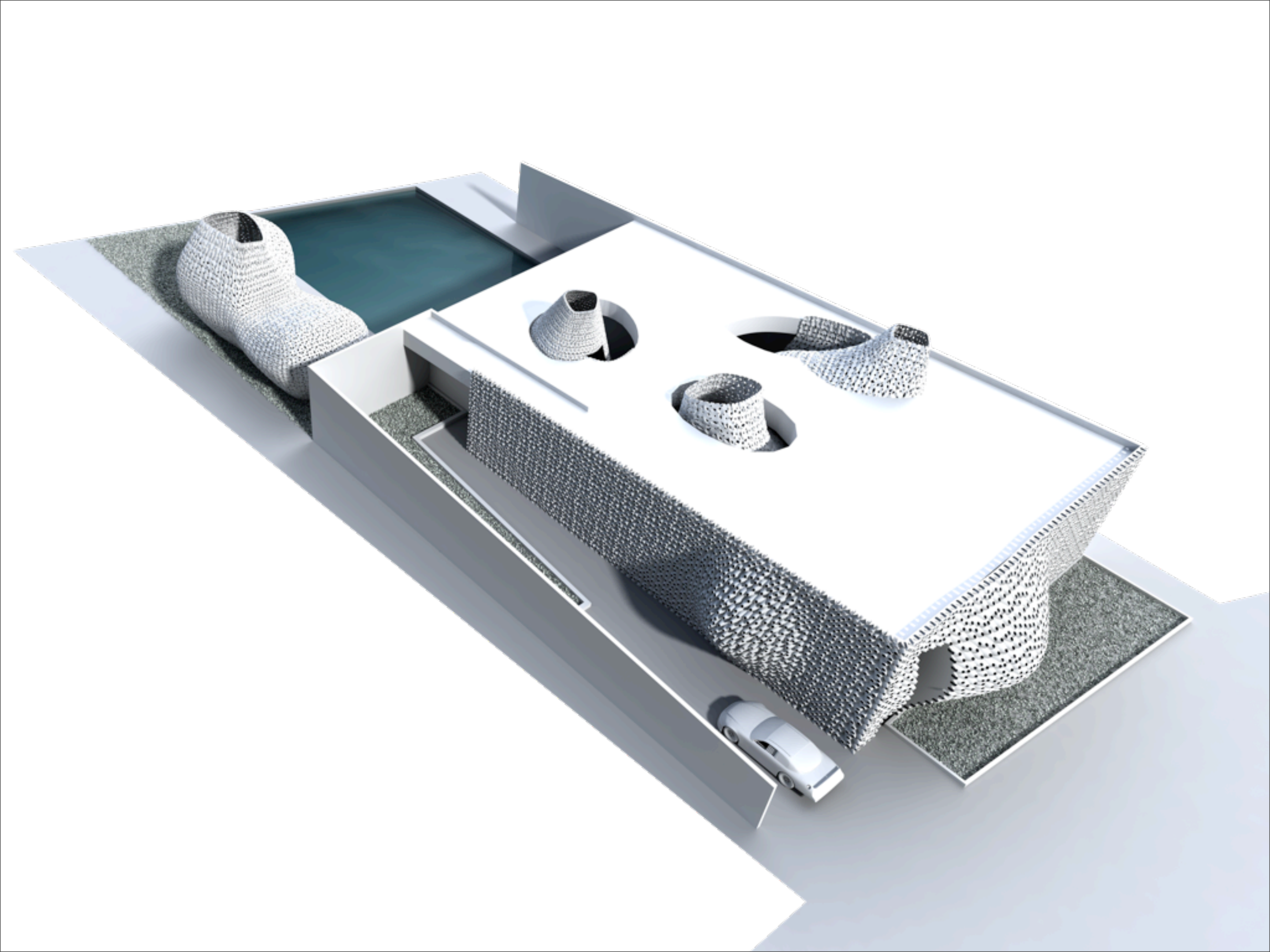


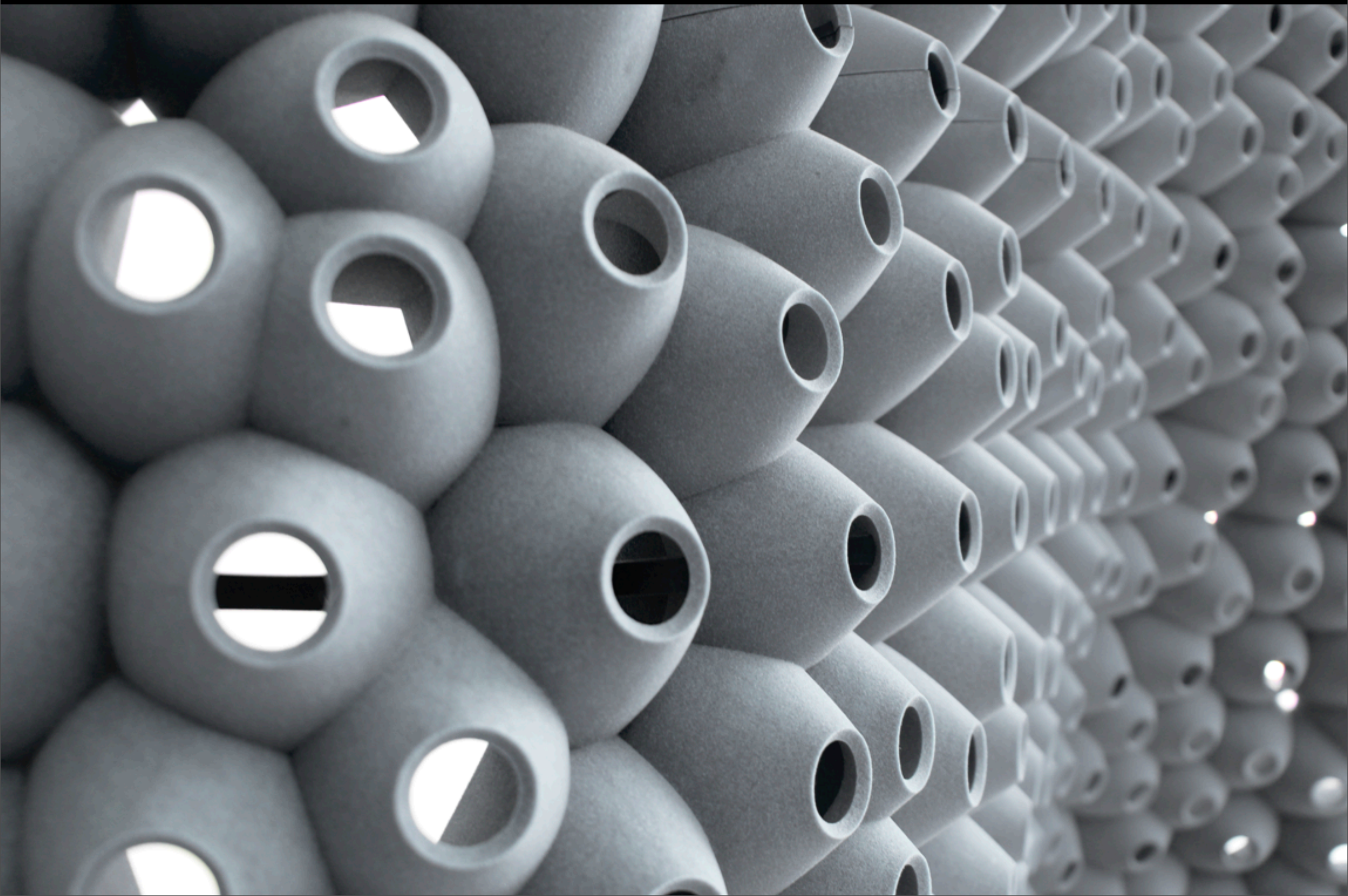


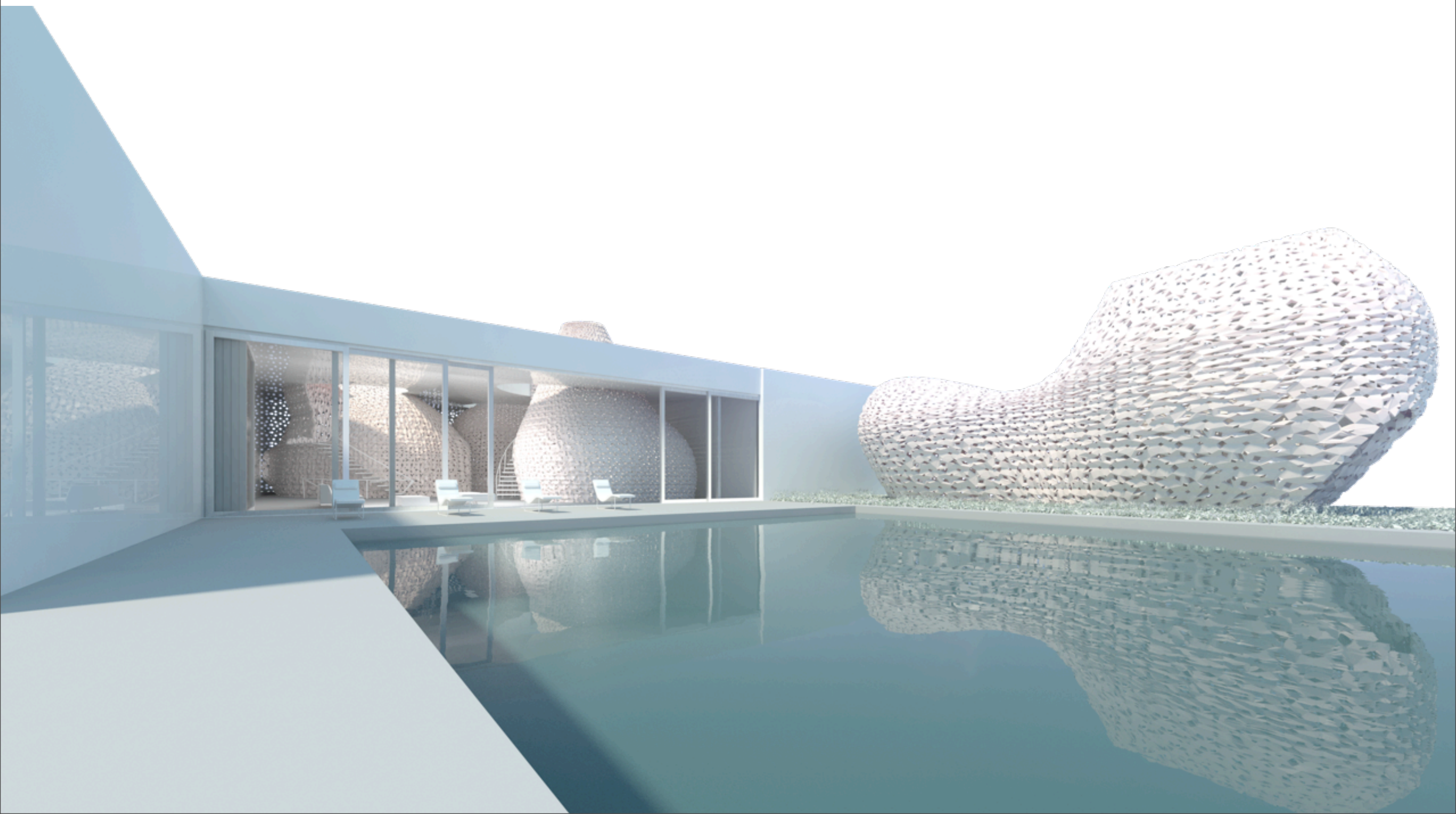














SCG / Berkeley

PROJECT GOALS

dynamic demonstration of 3D Printing

interlocking structural blocks

architectural assembly

ability to be tested in long-term environmental conditions

integration of SCG products

CASE STUDIES

Bump House

3DTP

3DTP 2

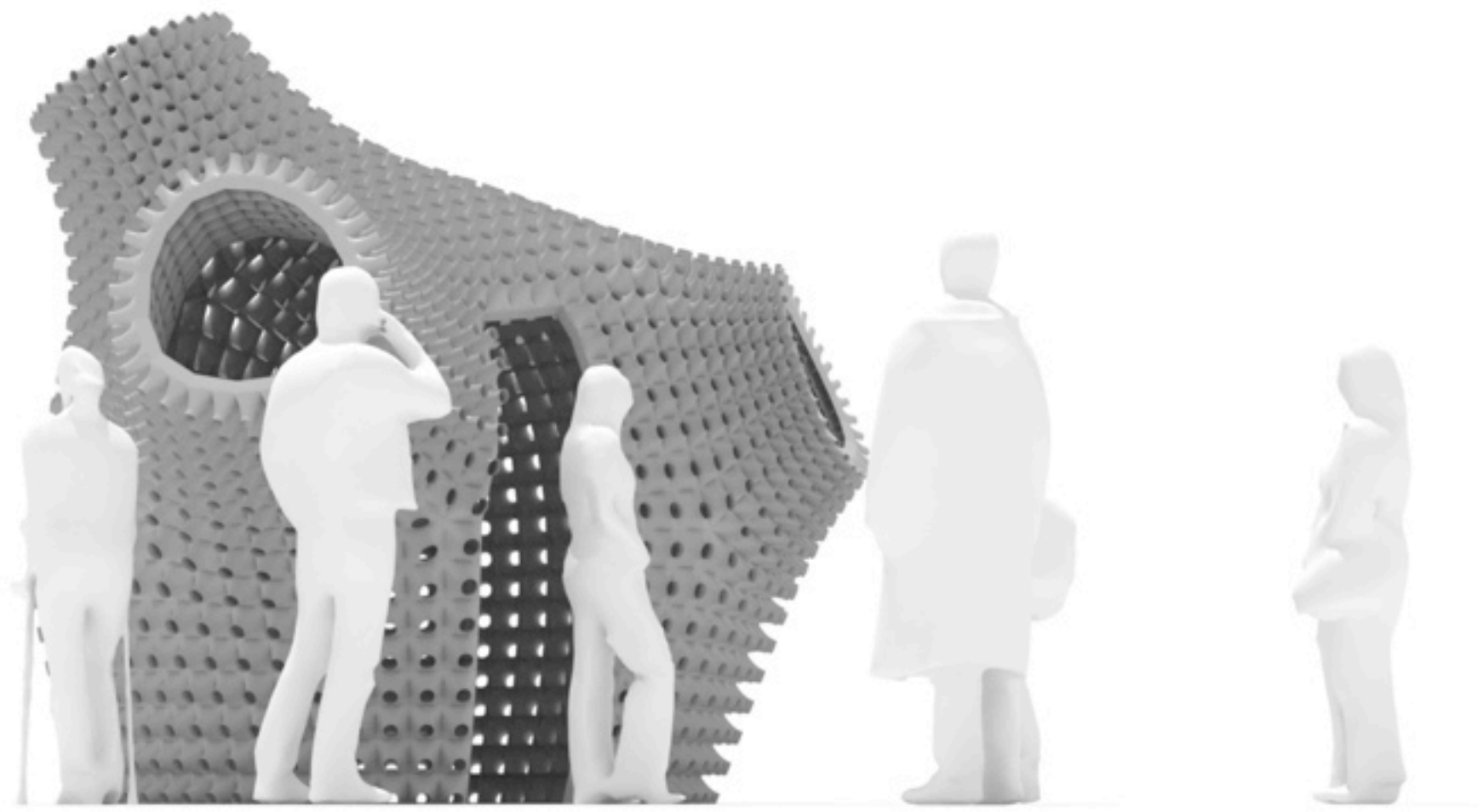
Damask Dome

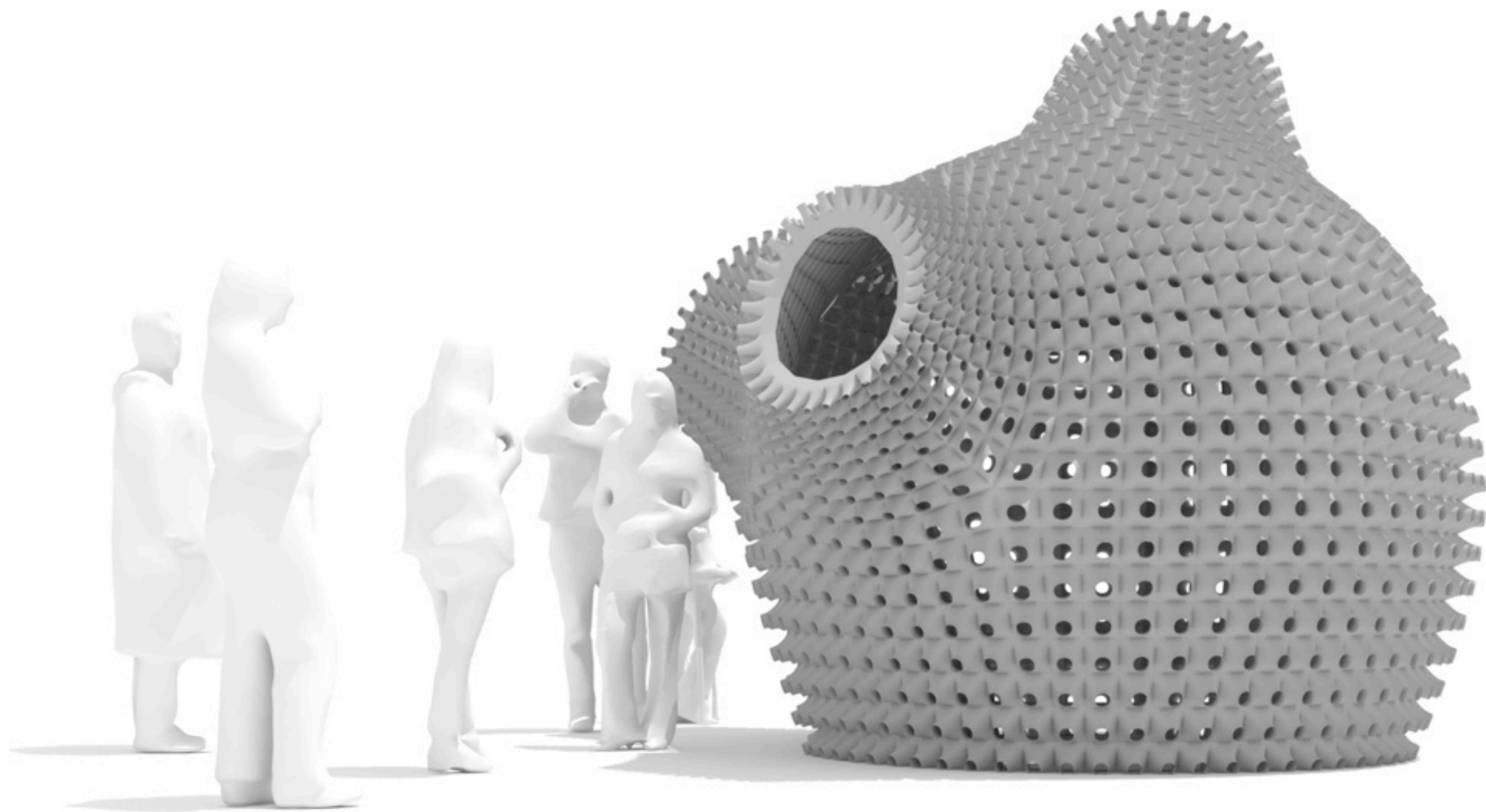
Damask Wall

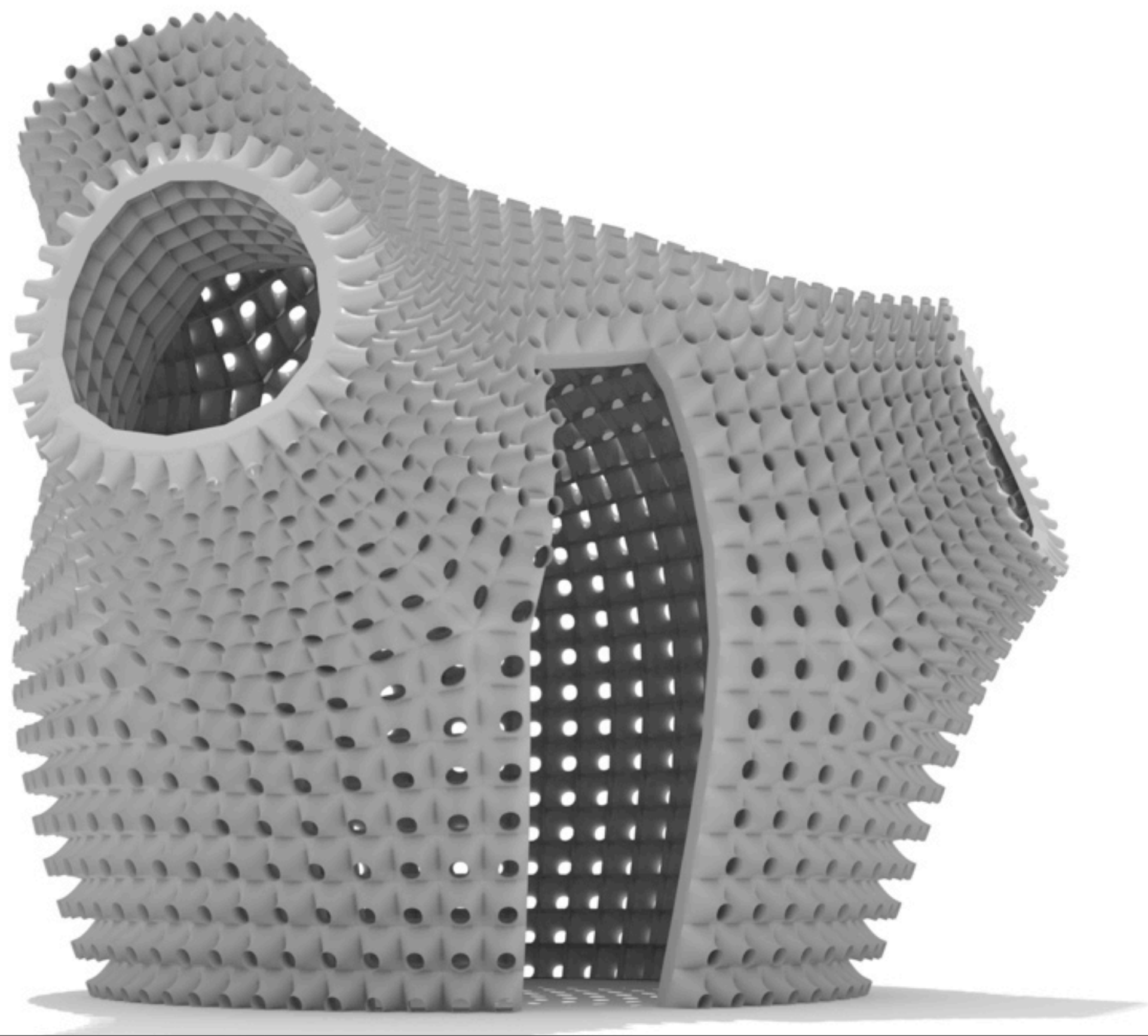
CASE STUDIES

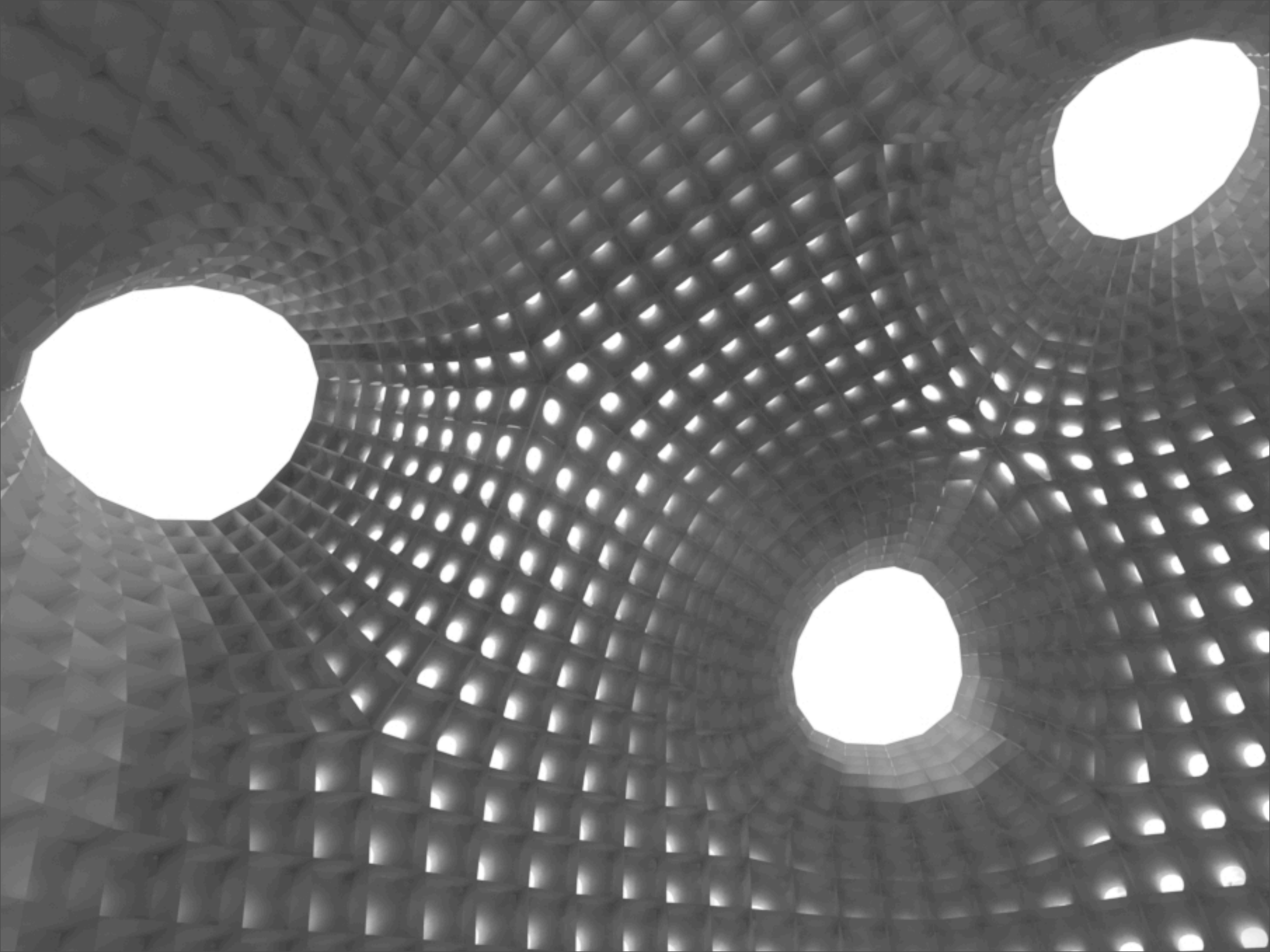
Bump House

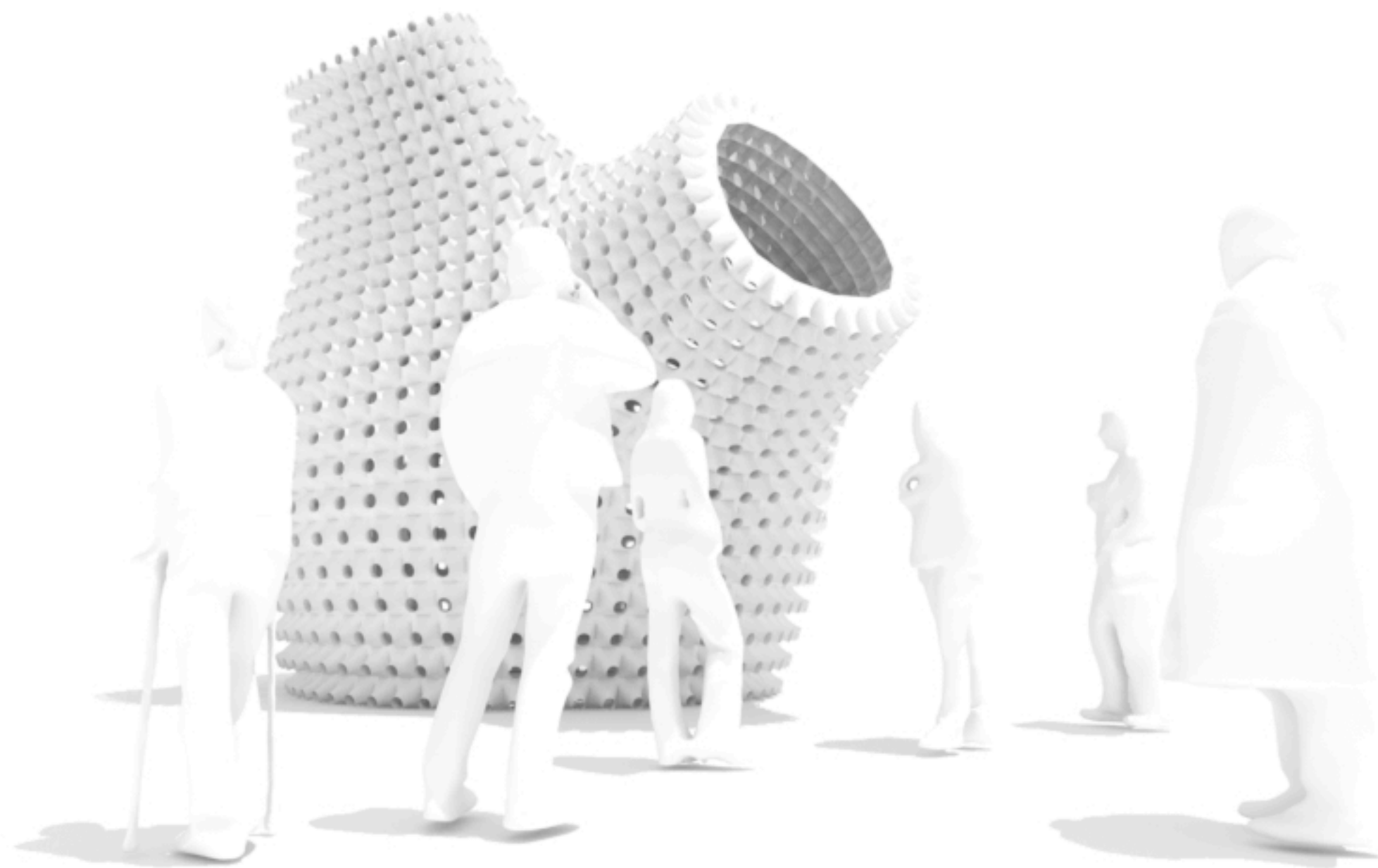
Bump House

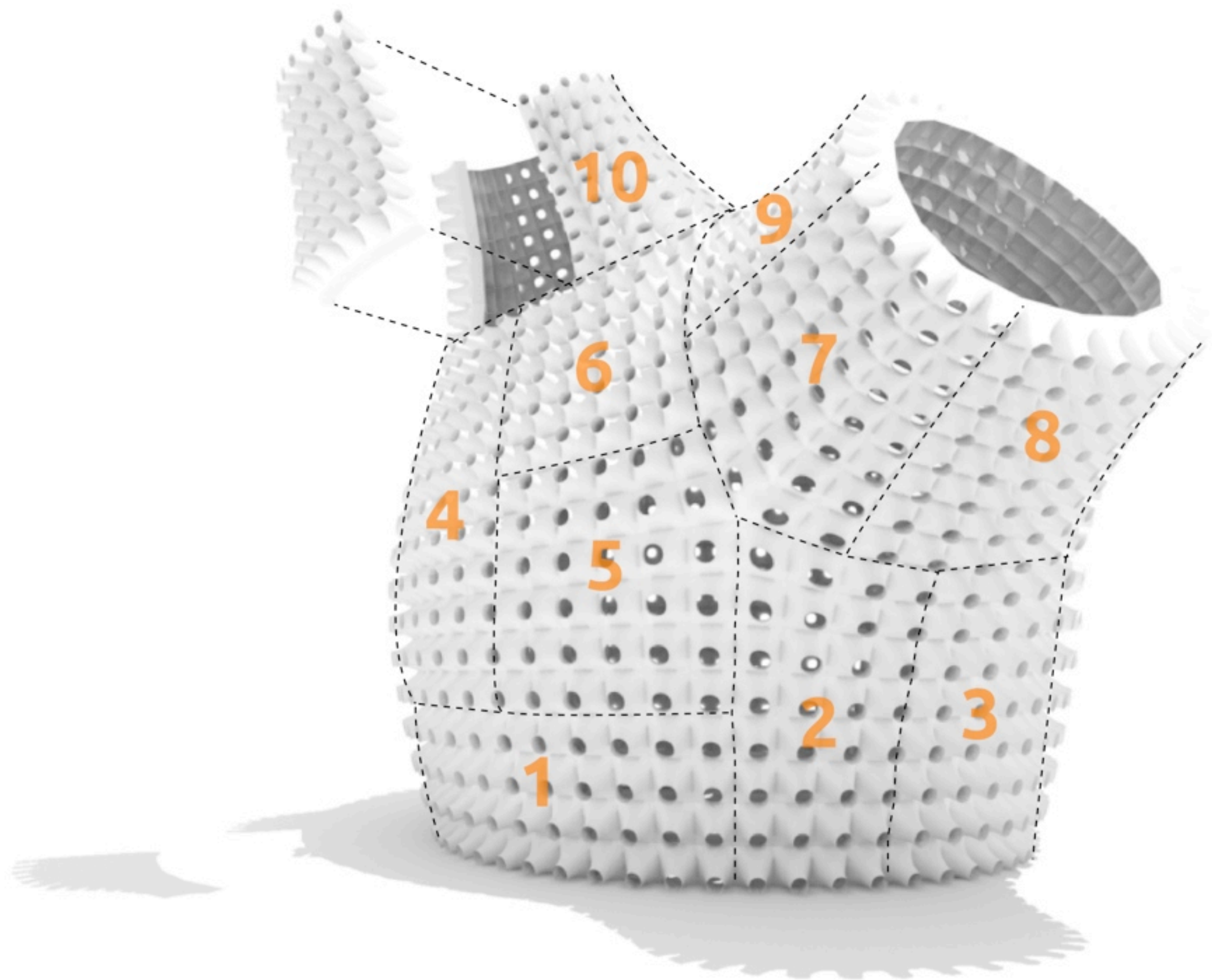




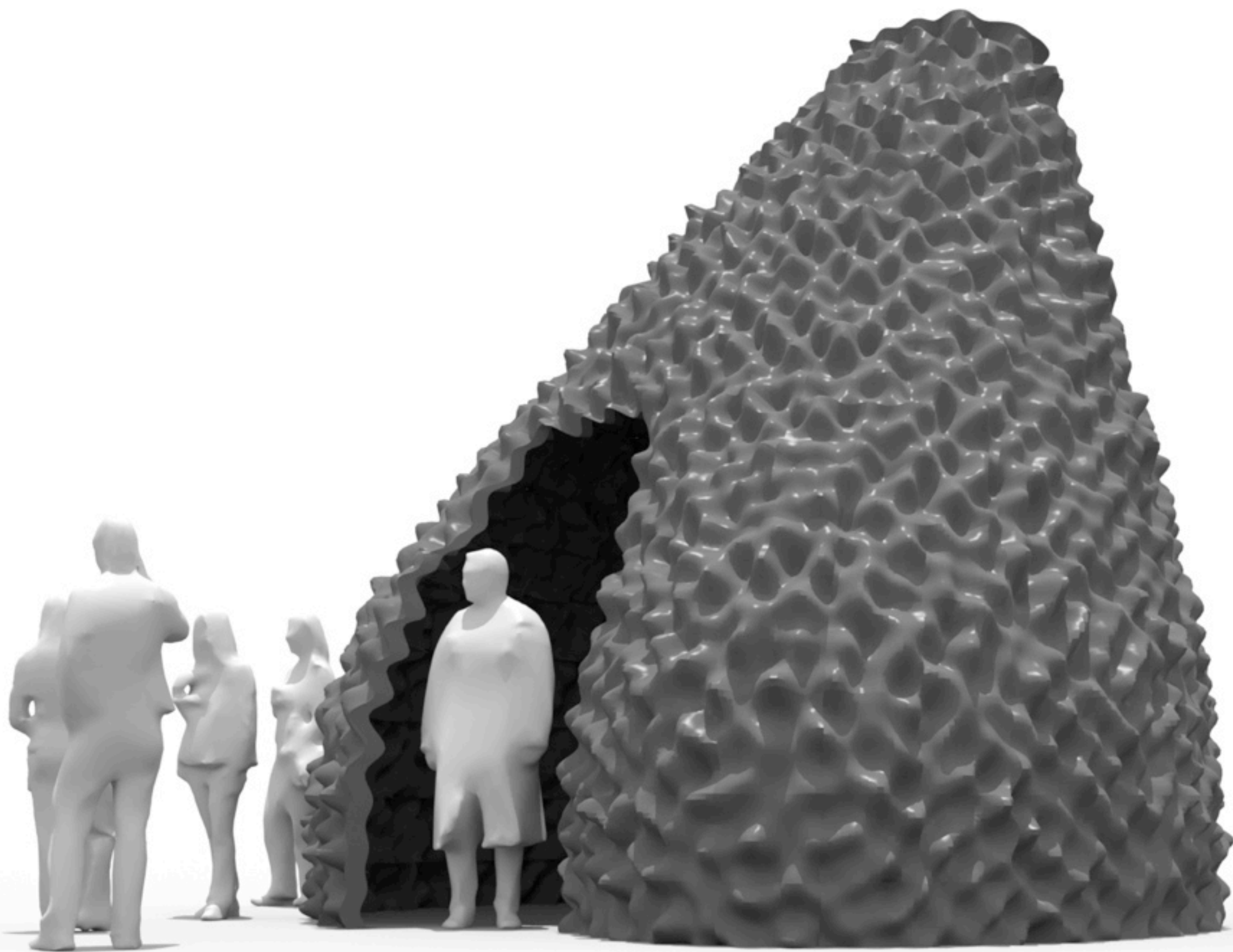


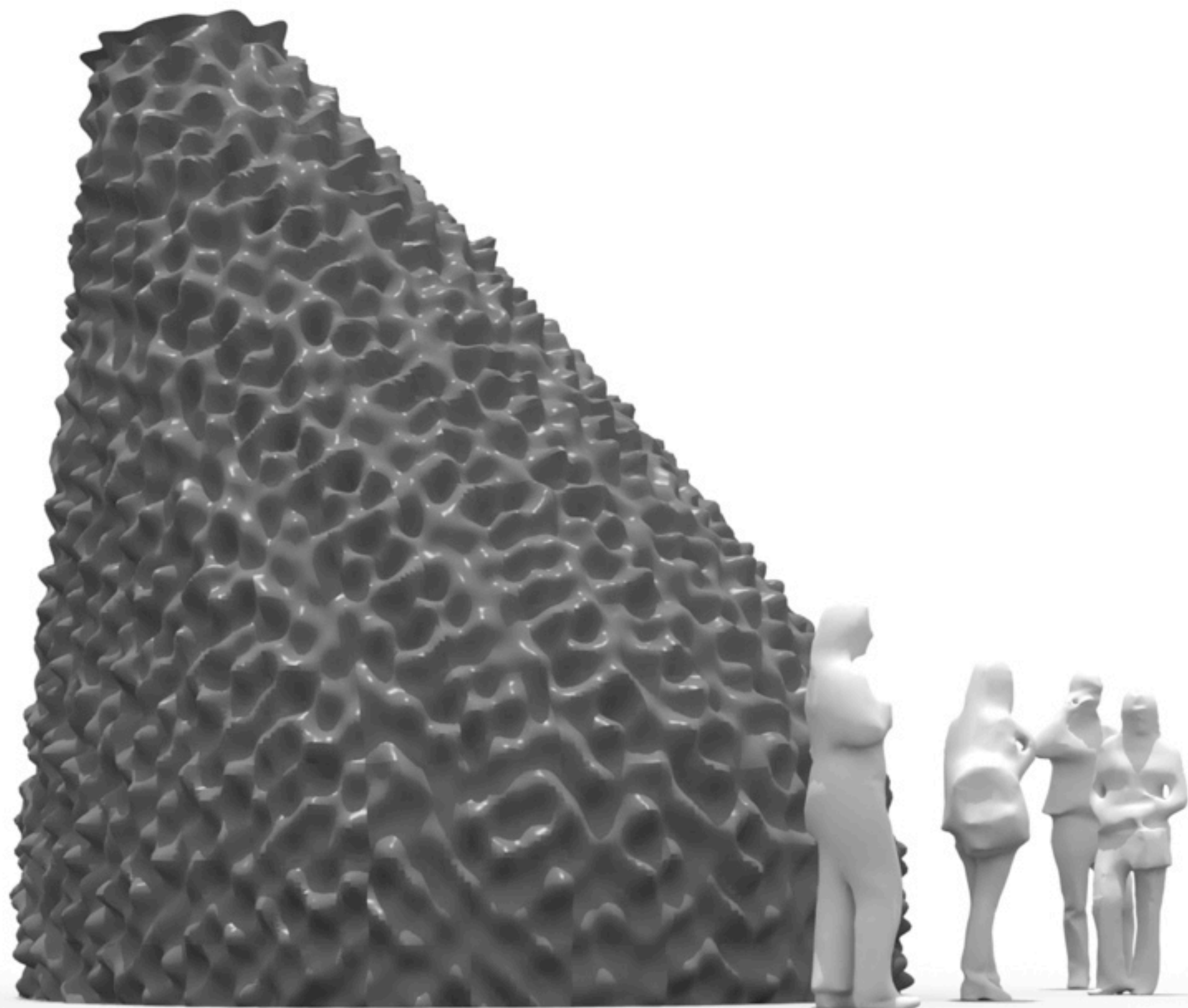




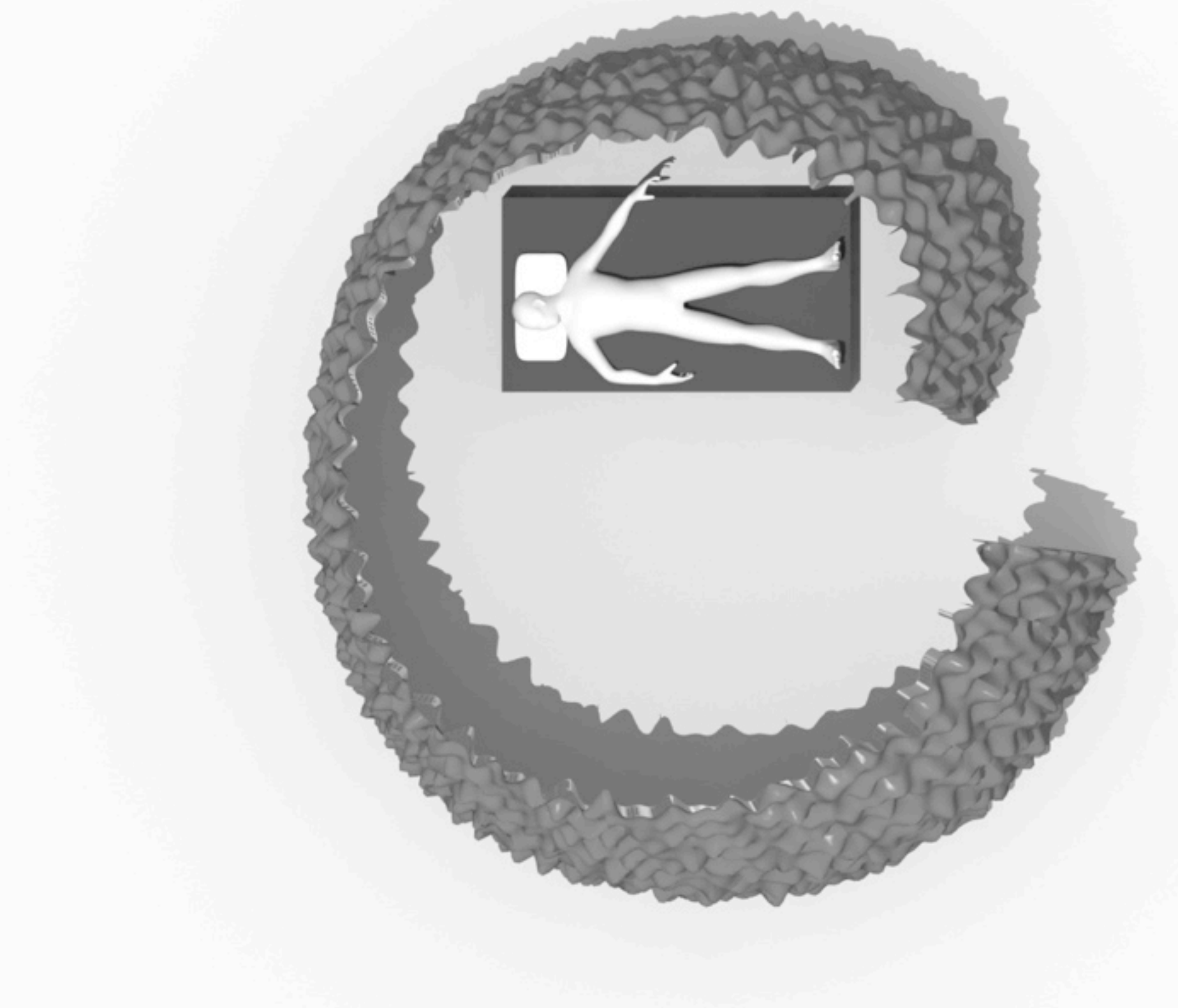


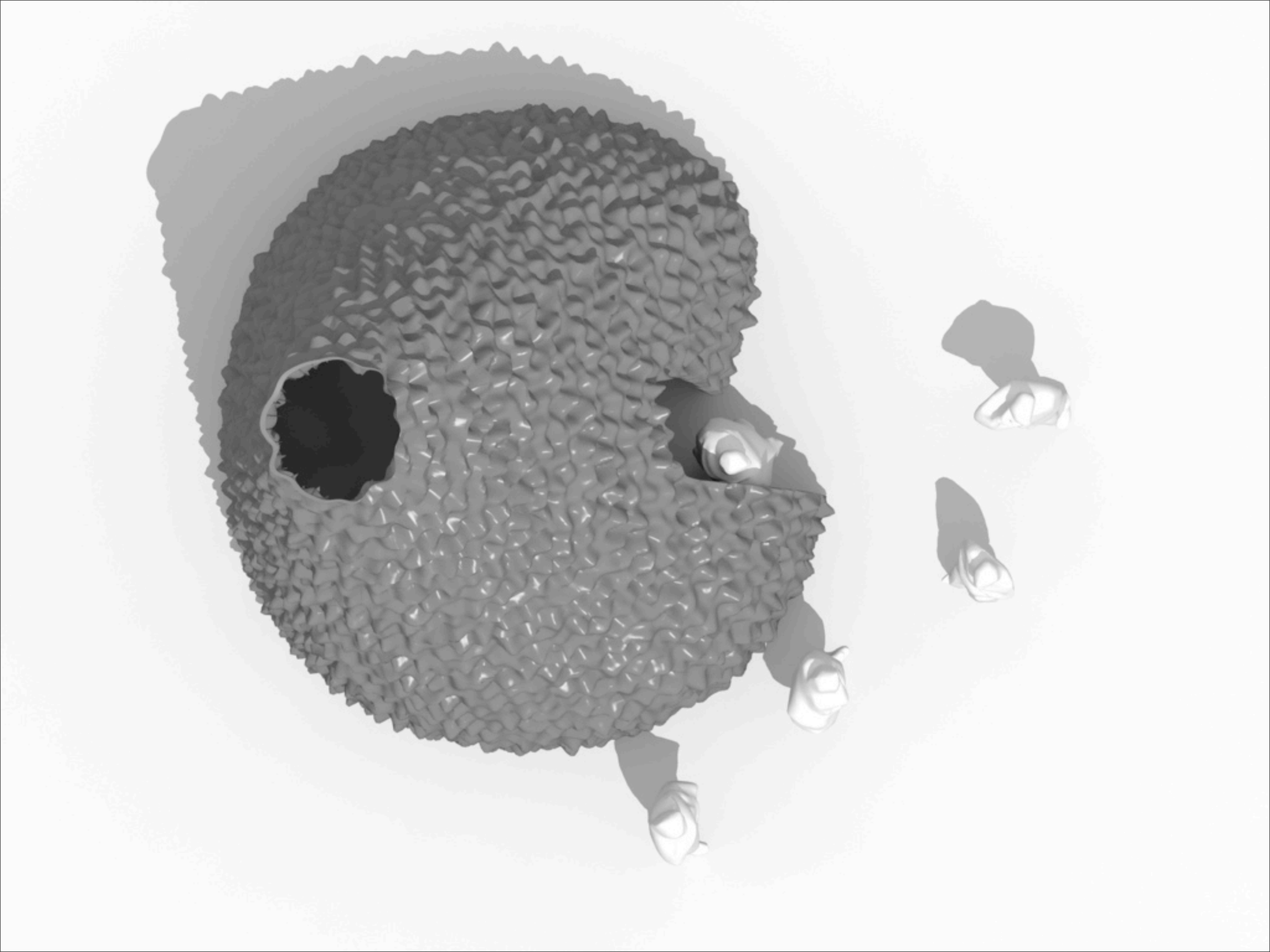
3DTP

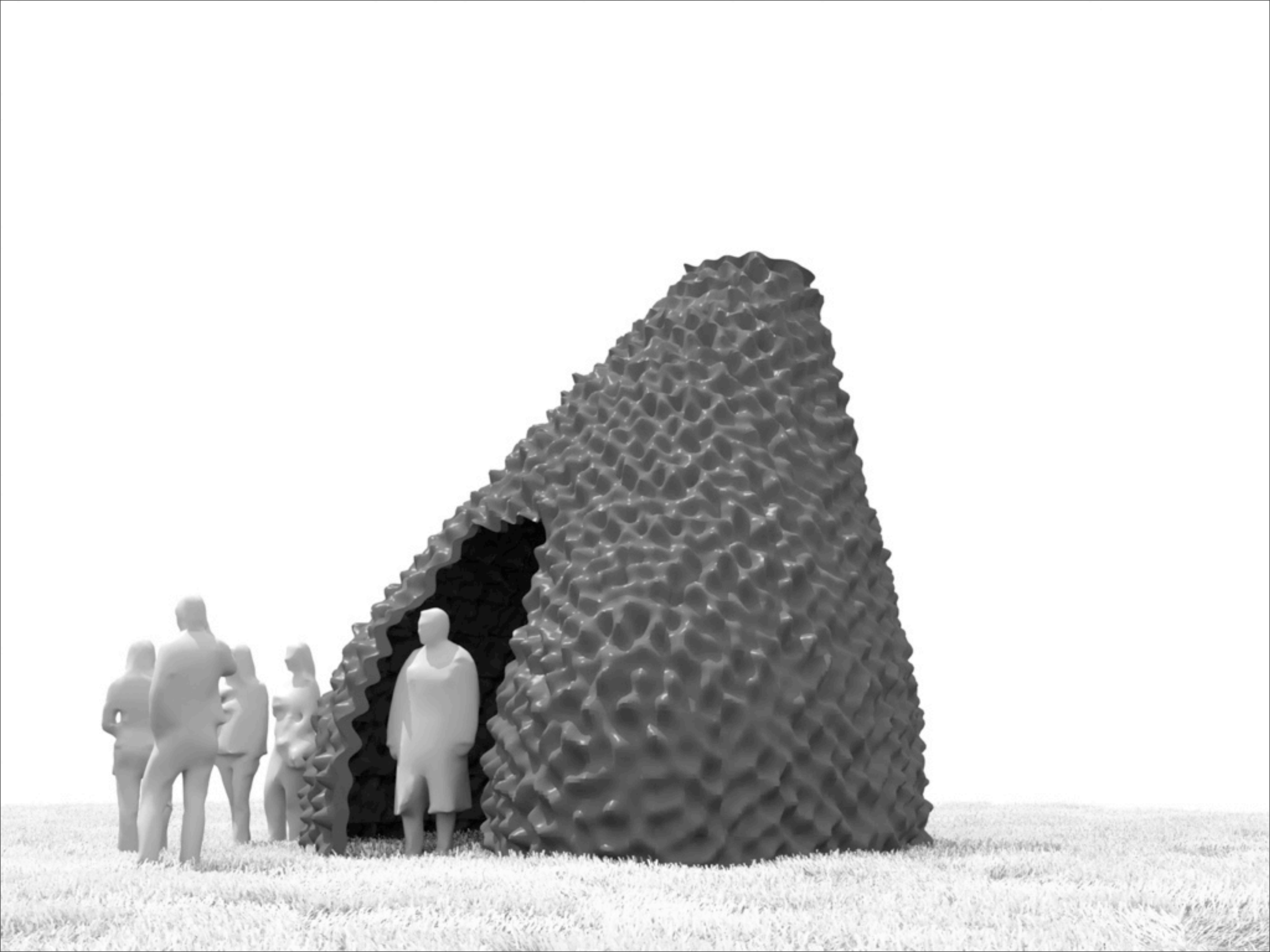


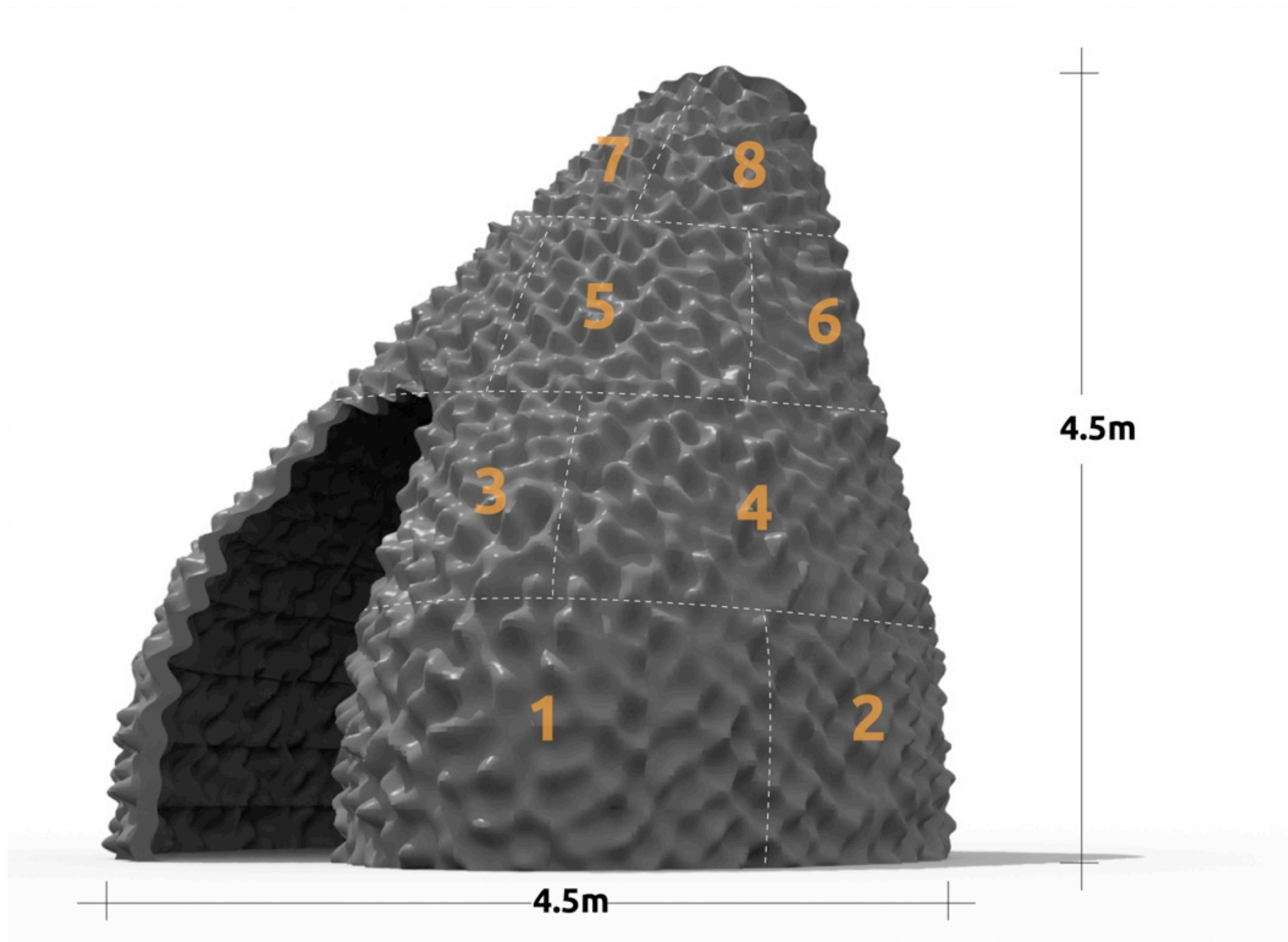


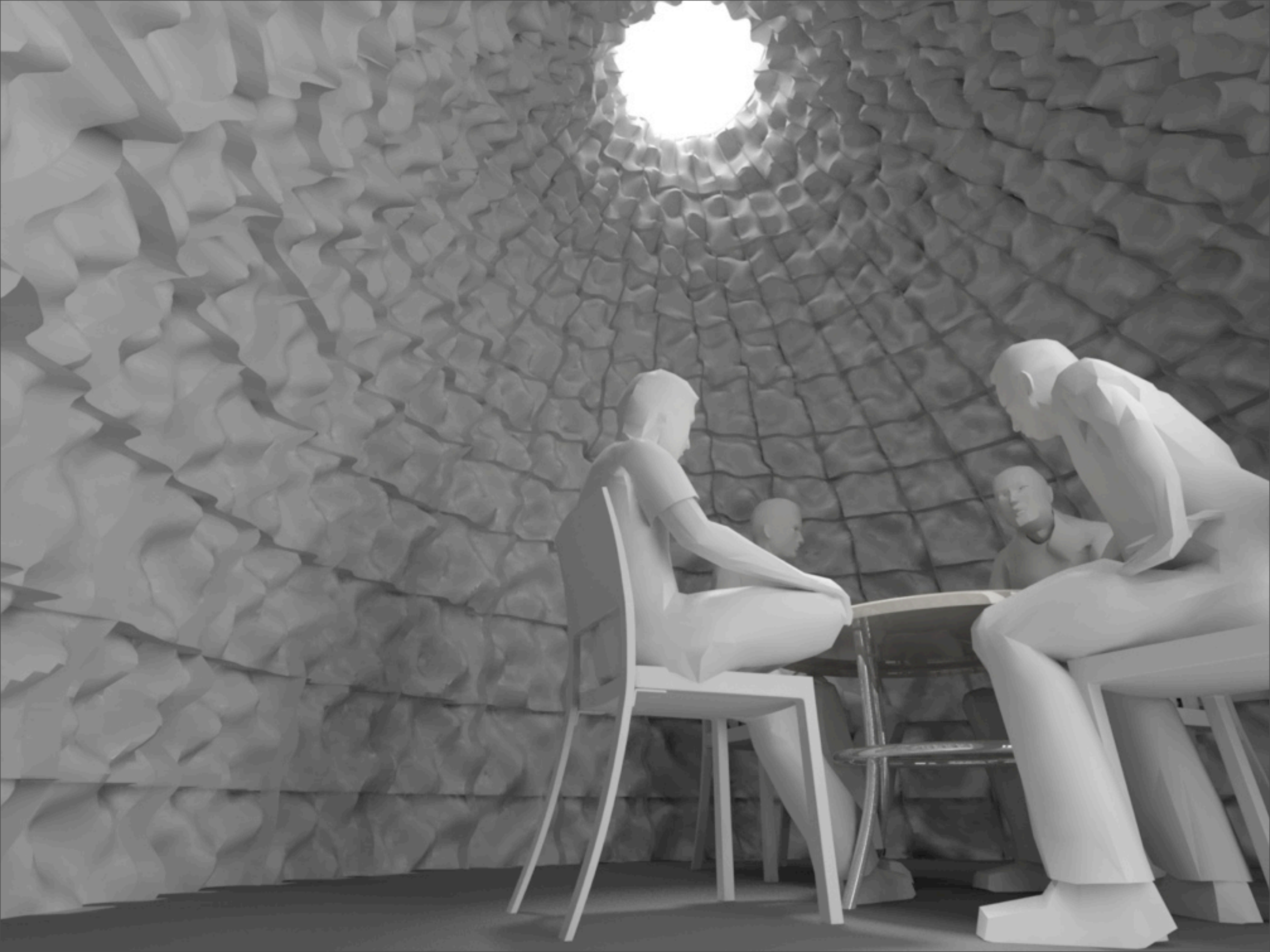


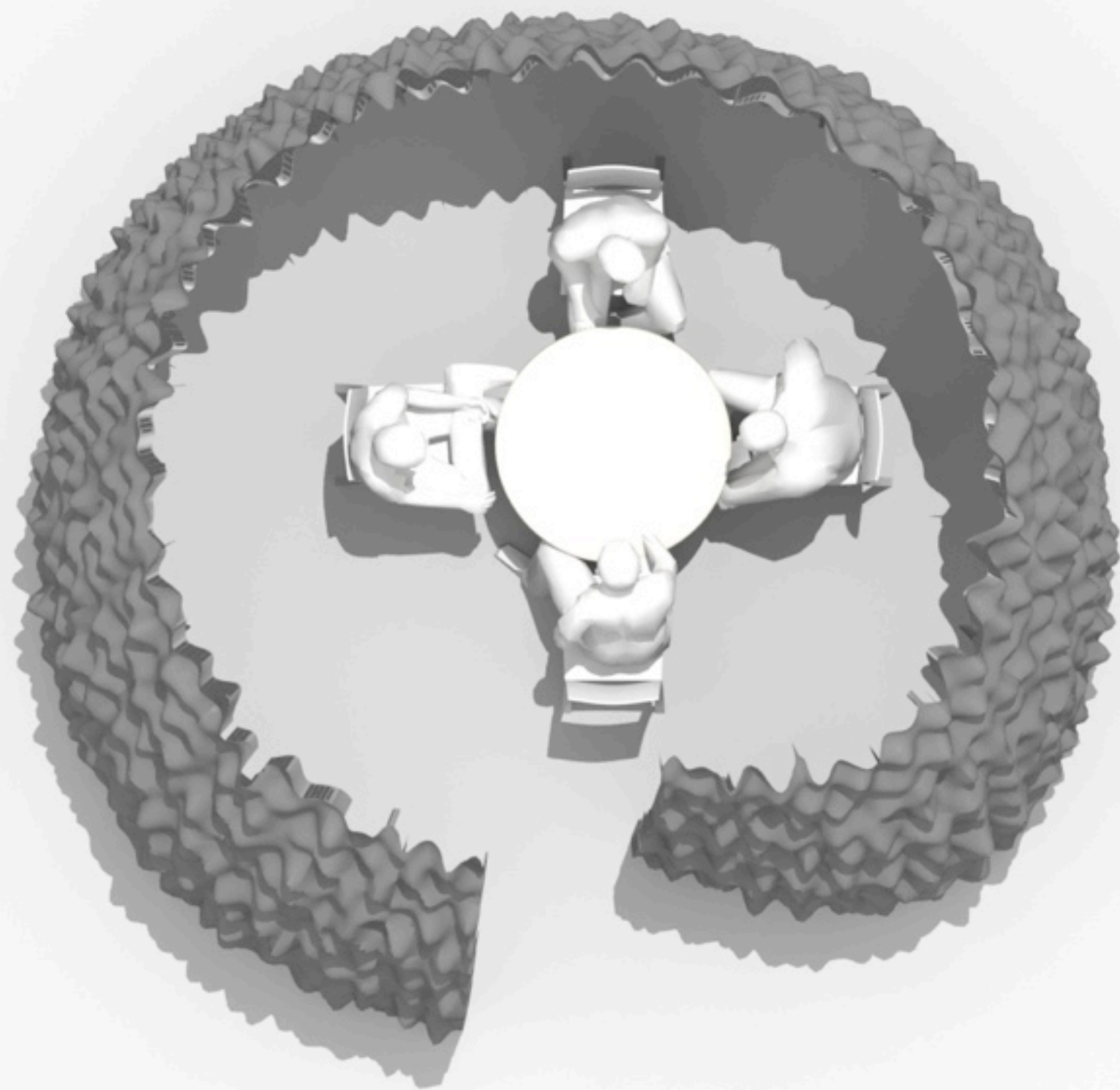


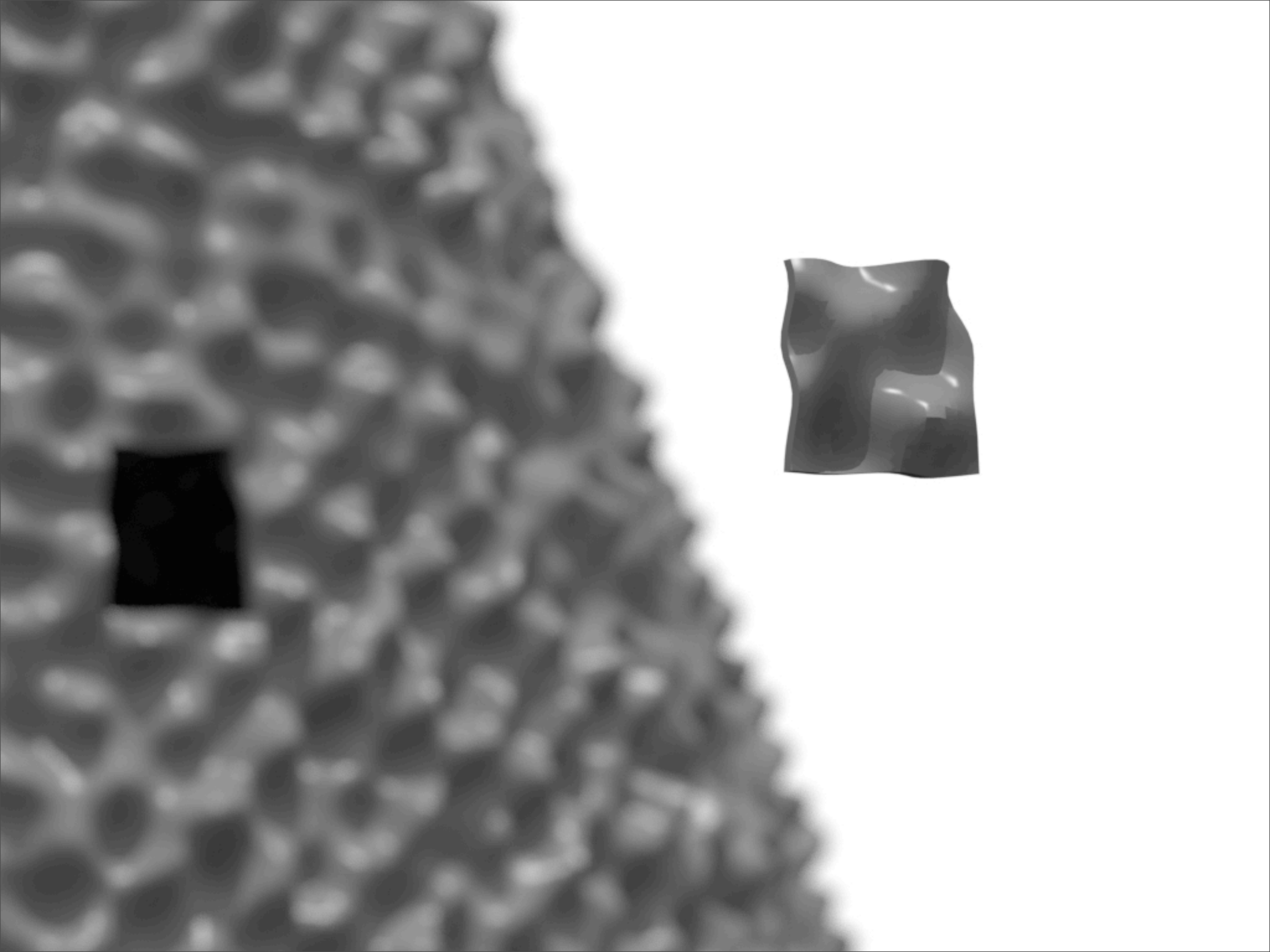




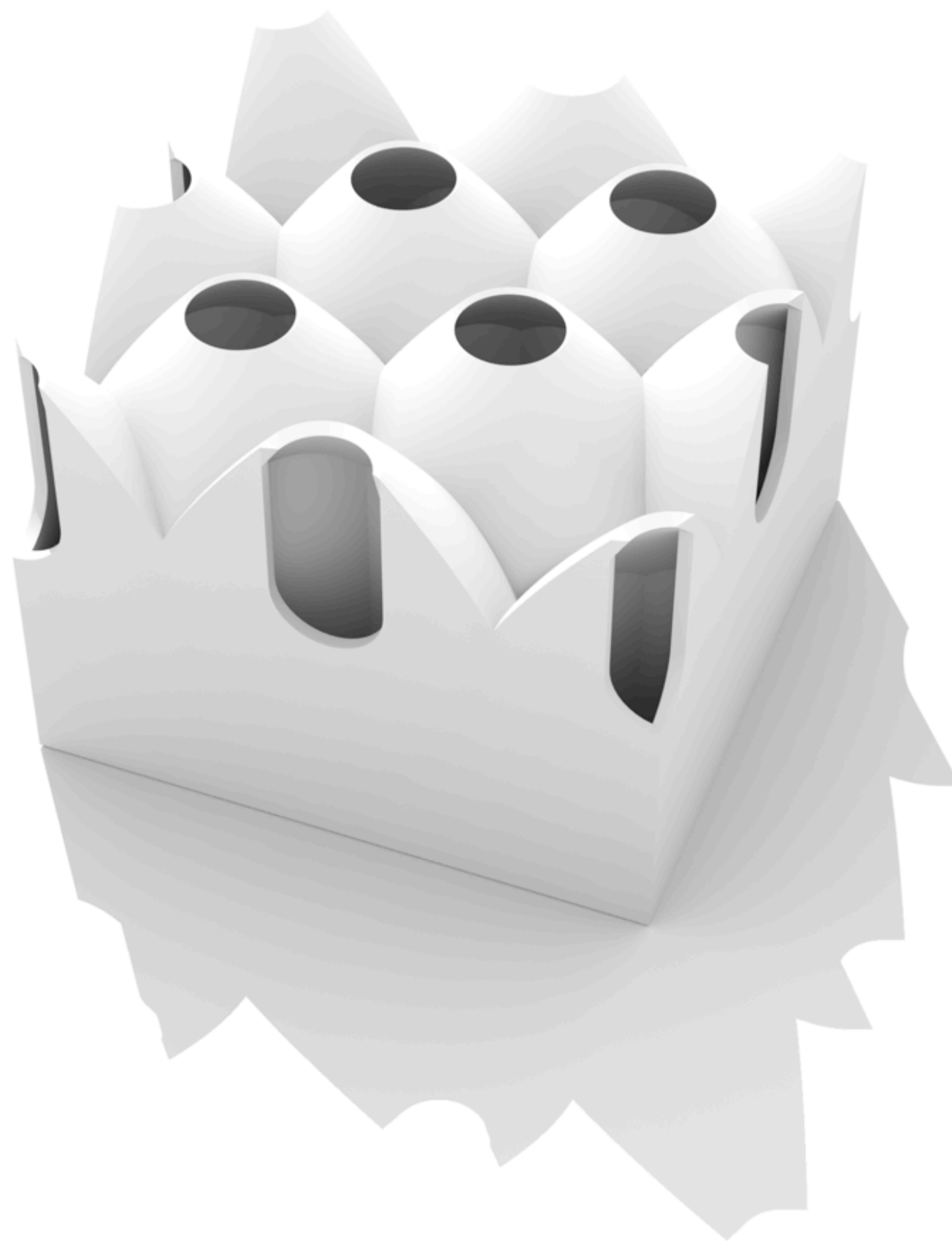


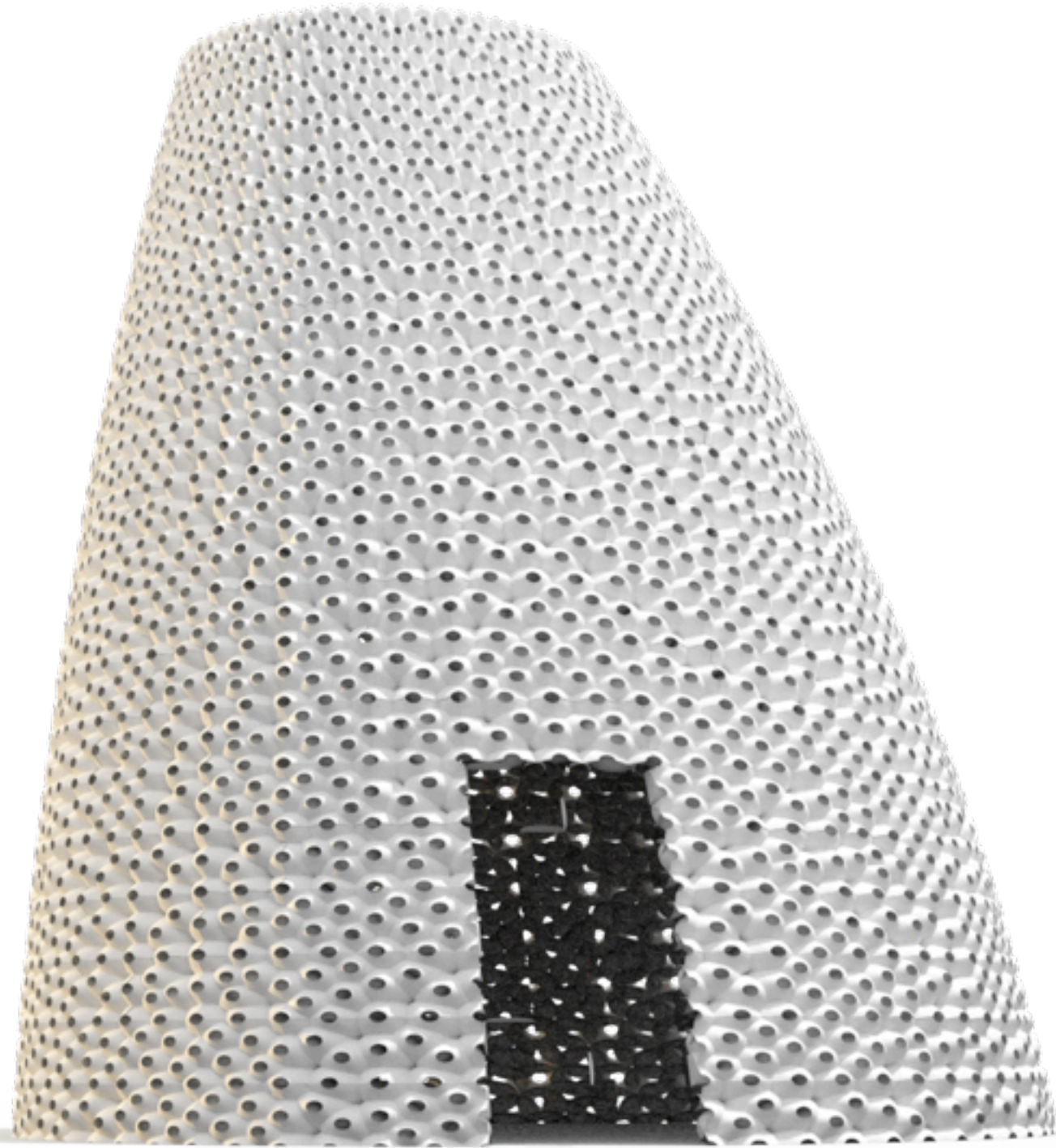


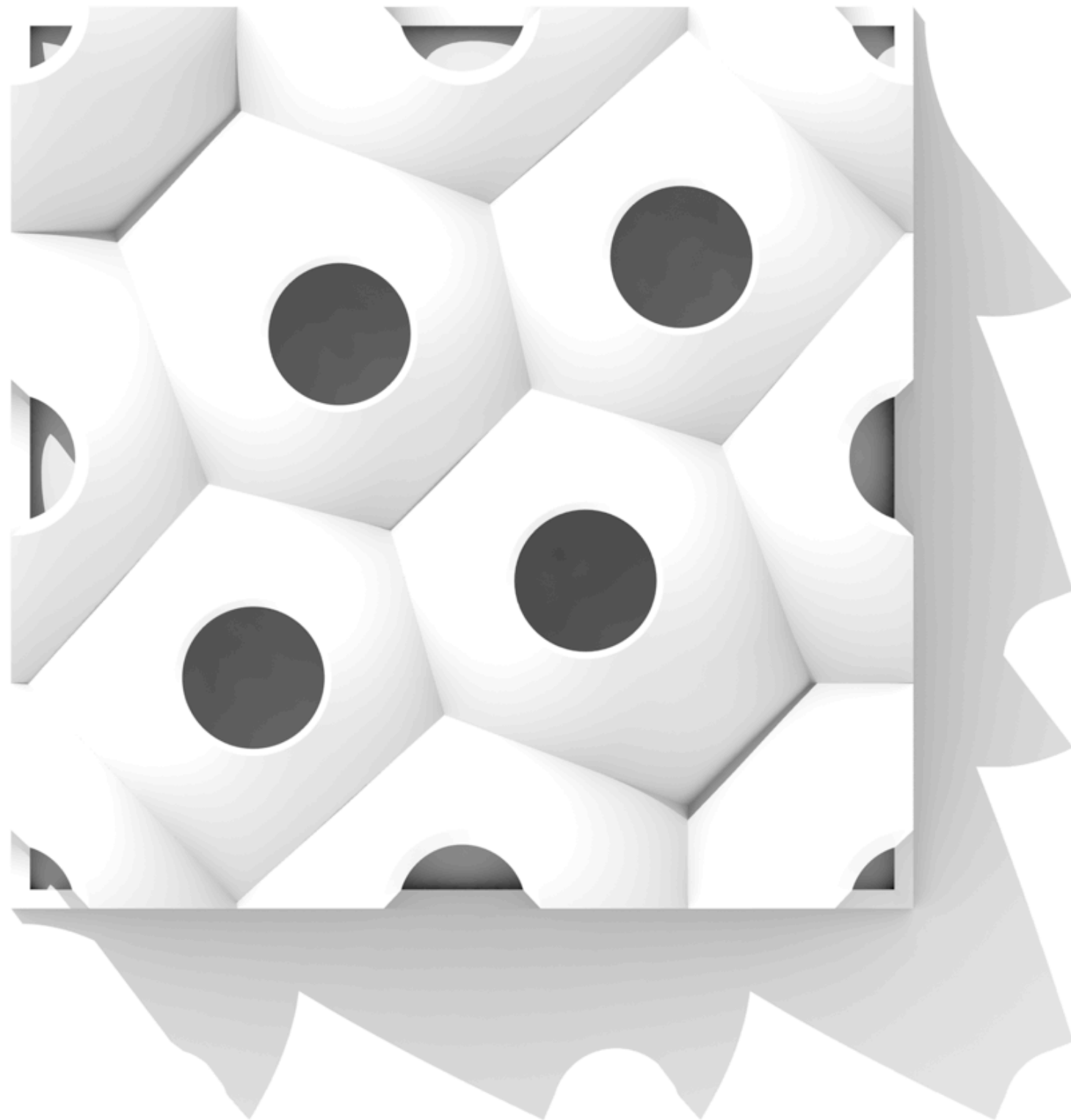


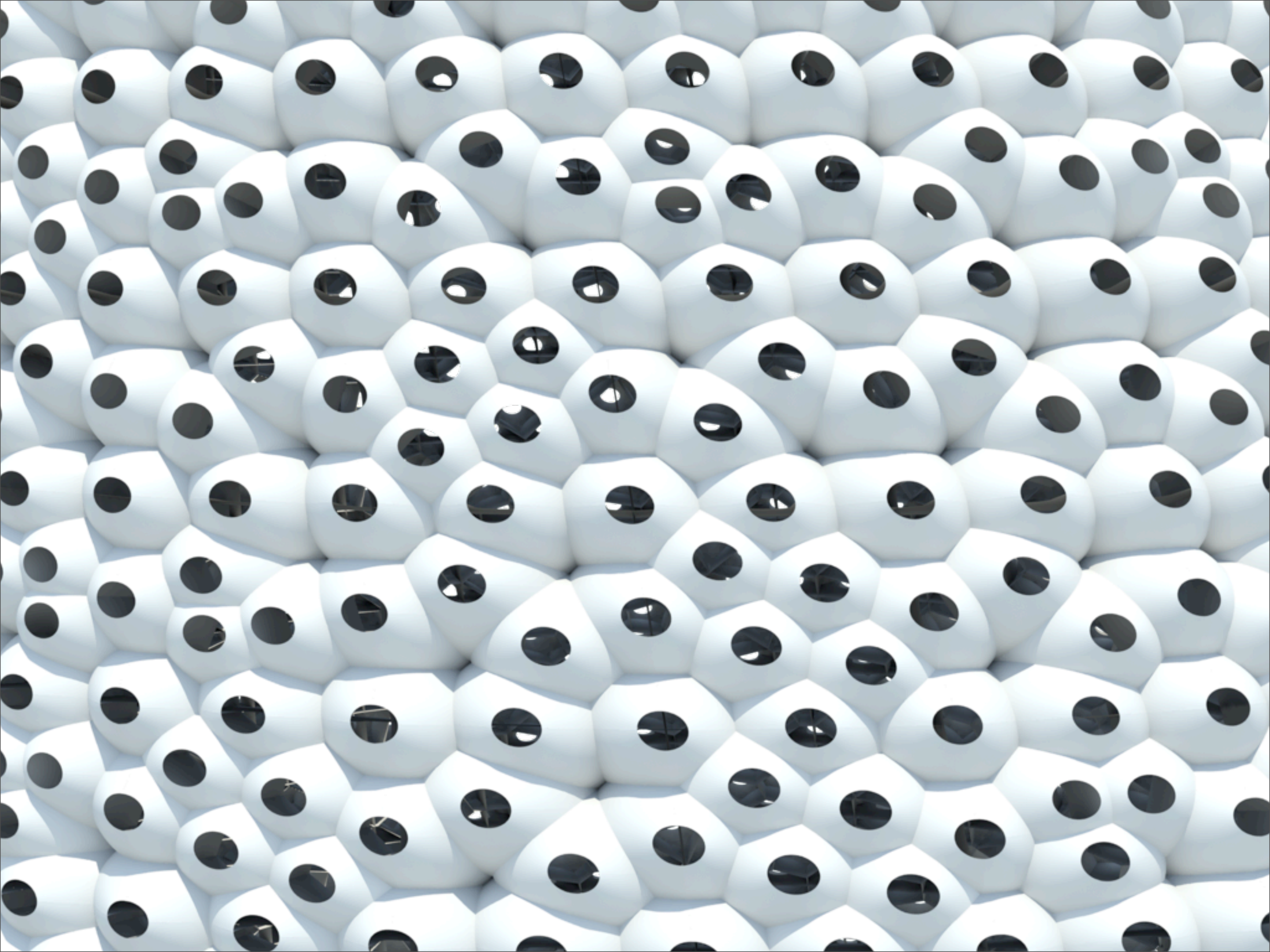


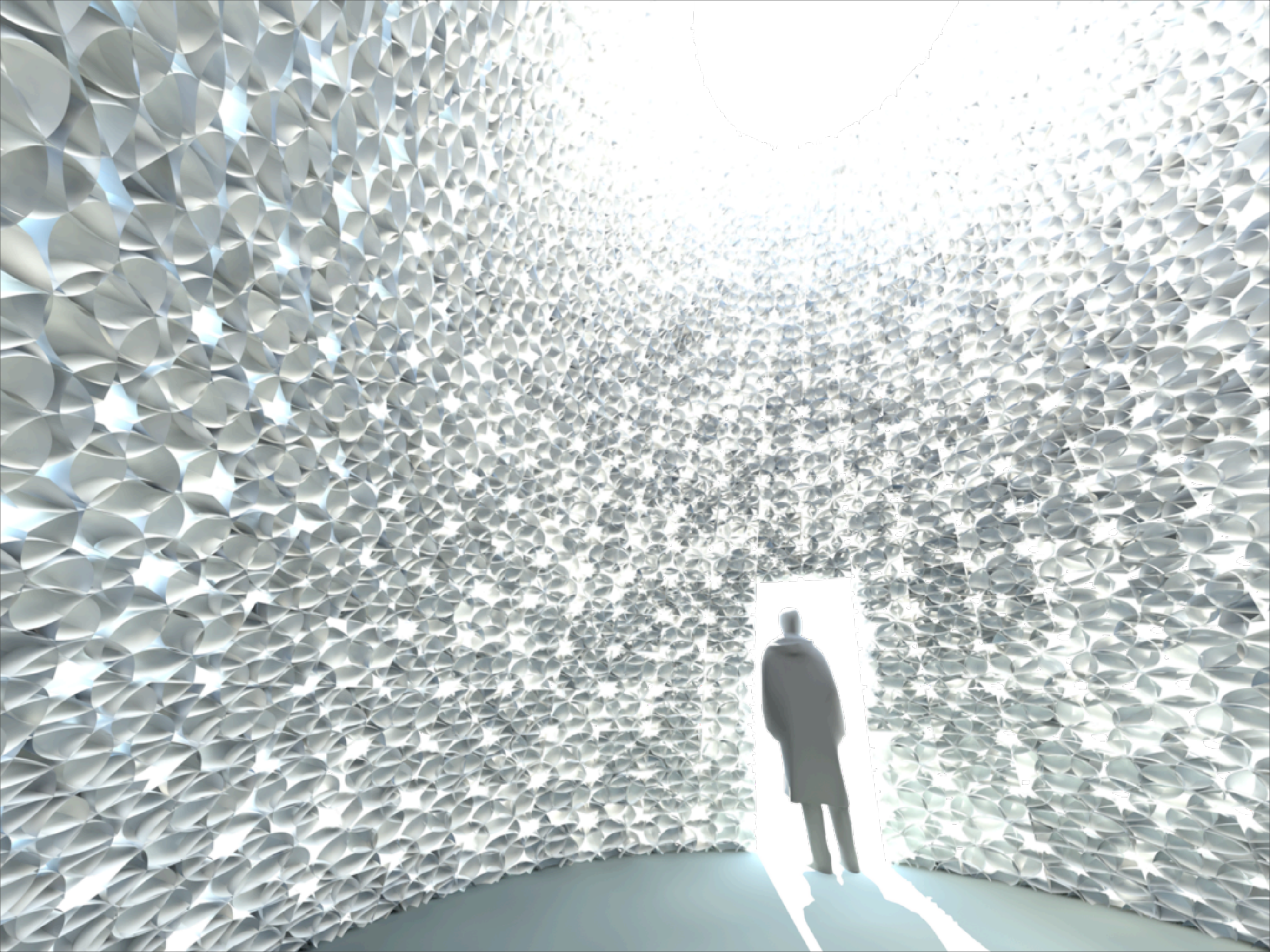
3DTP2

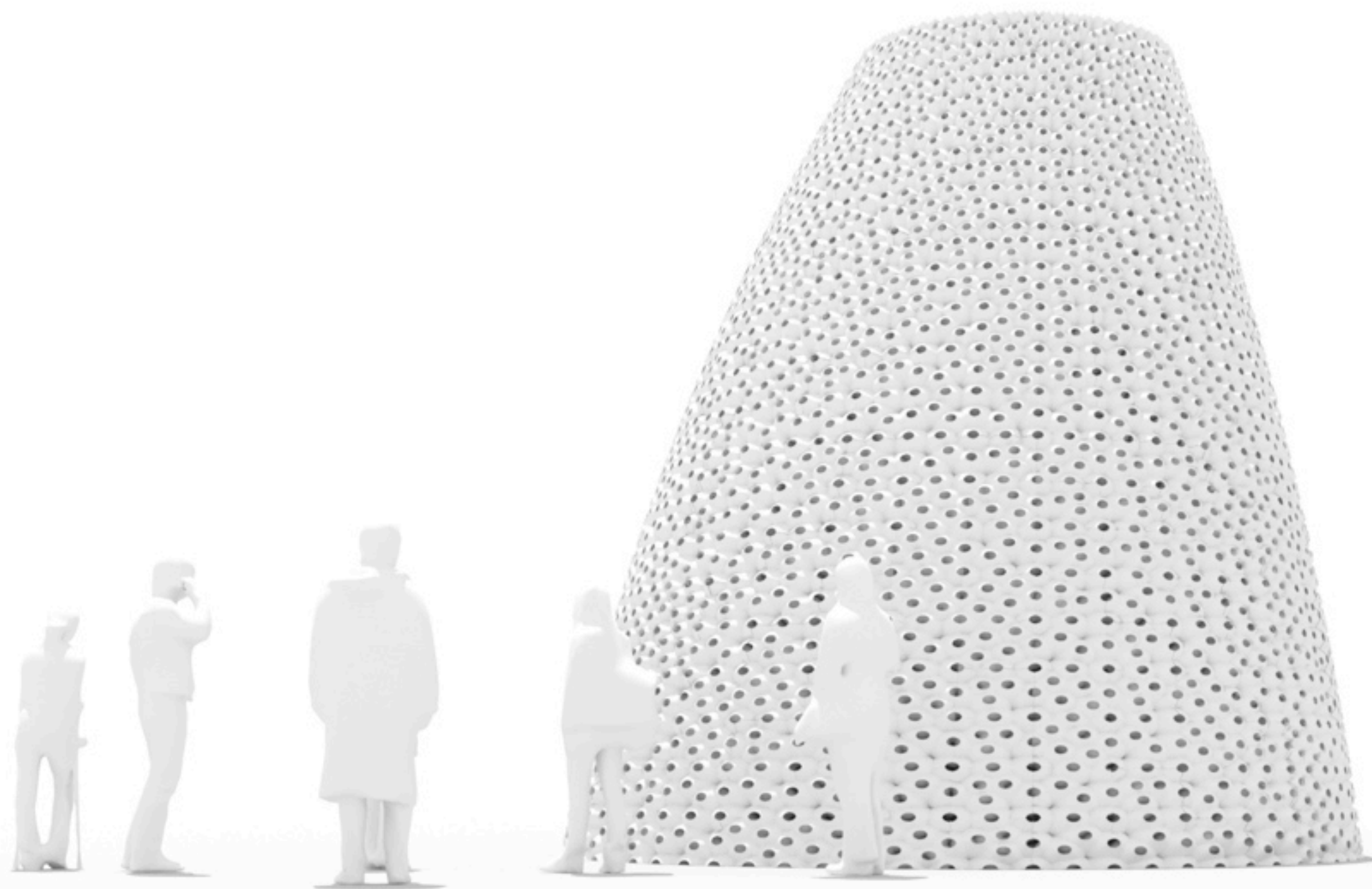






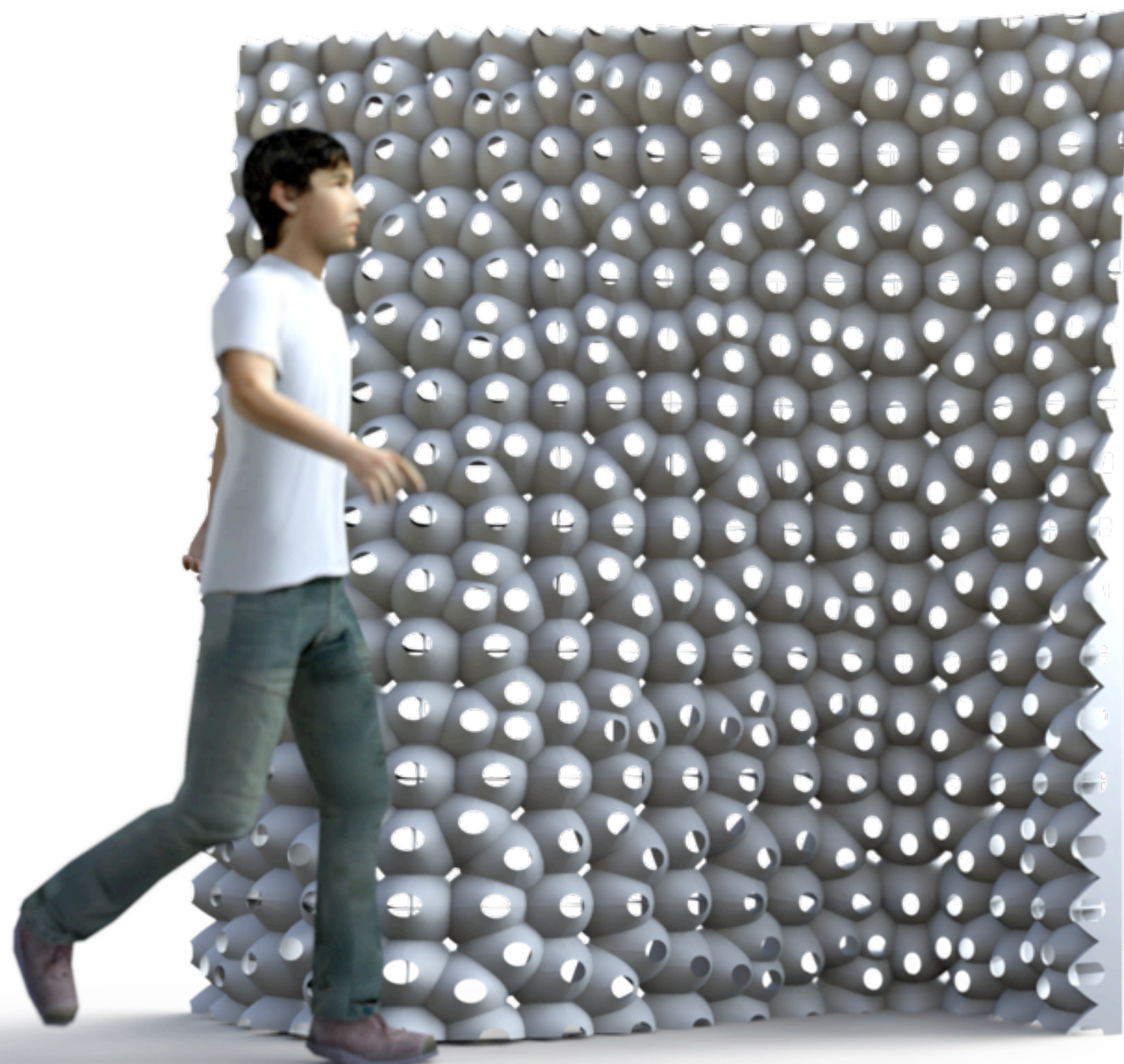




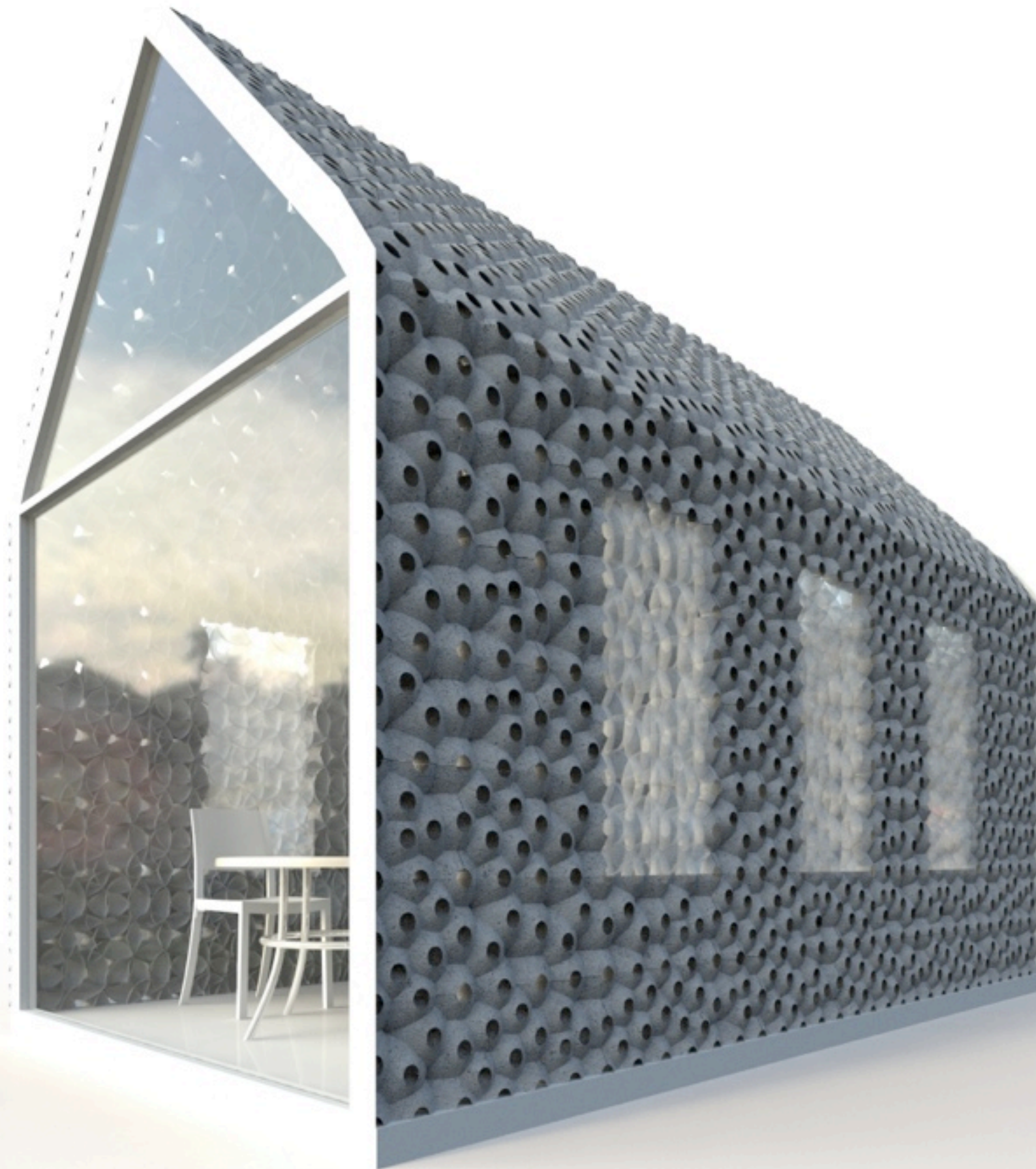


PICOROCO WALL





SHED WITH PICOROCO

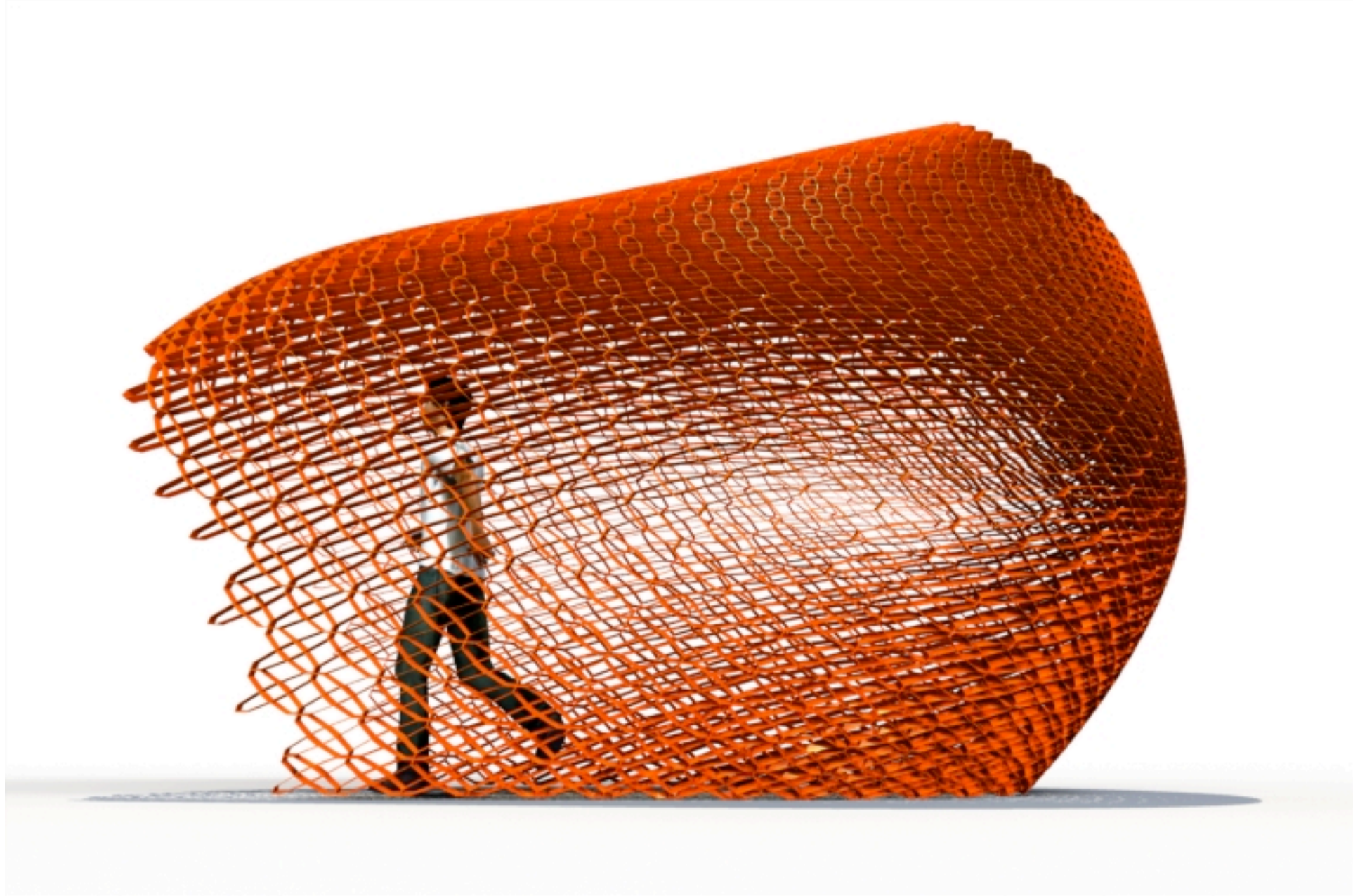


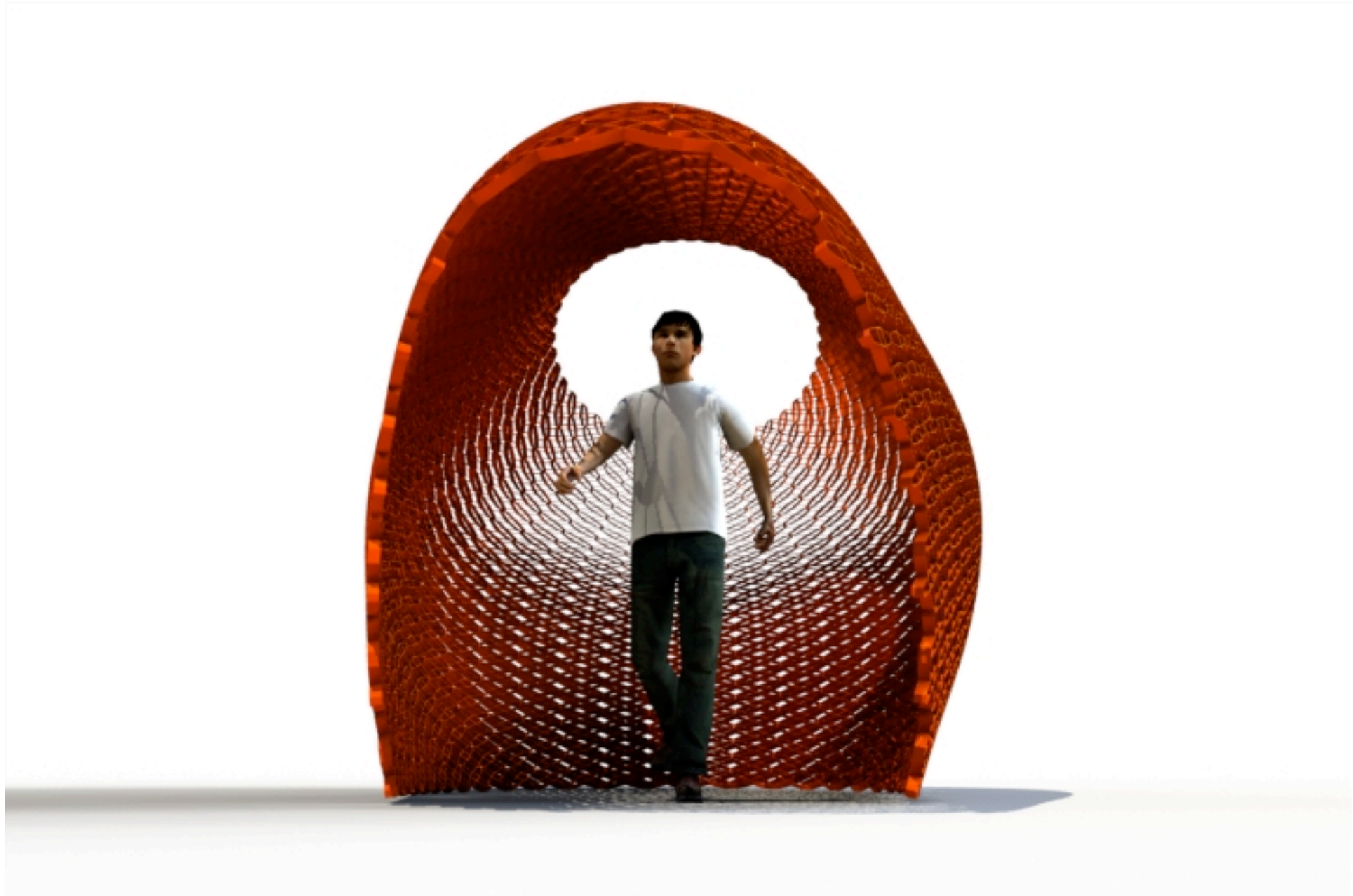


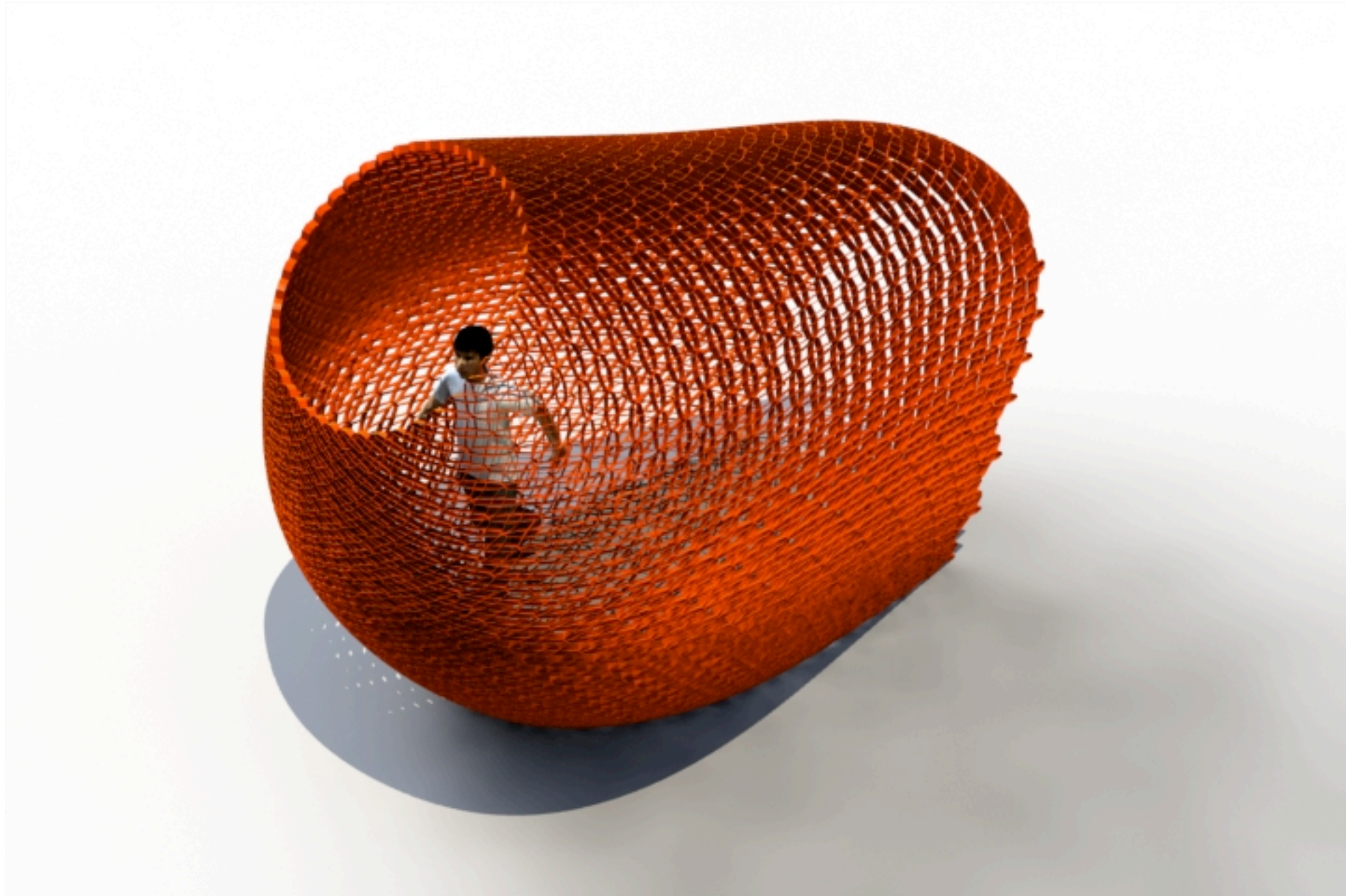


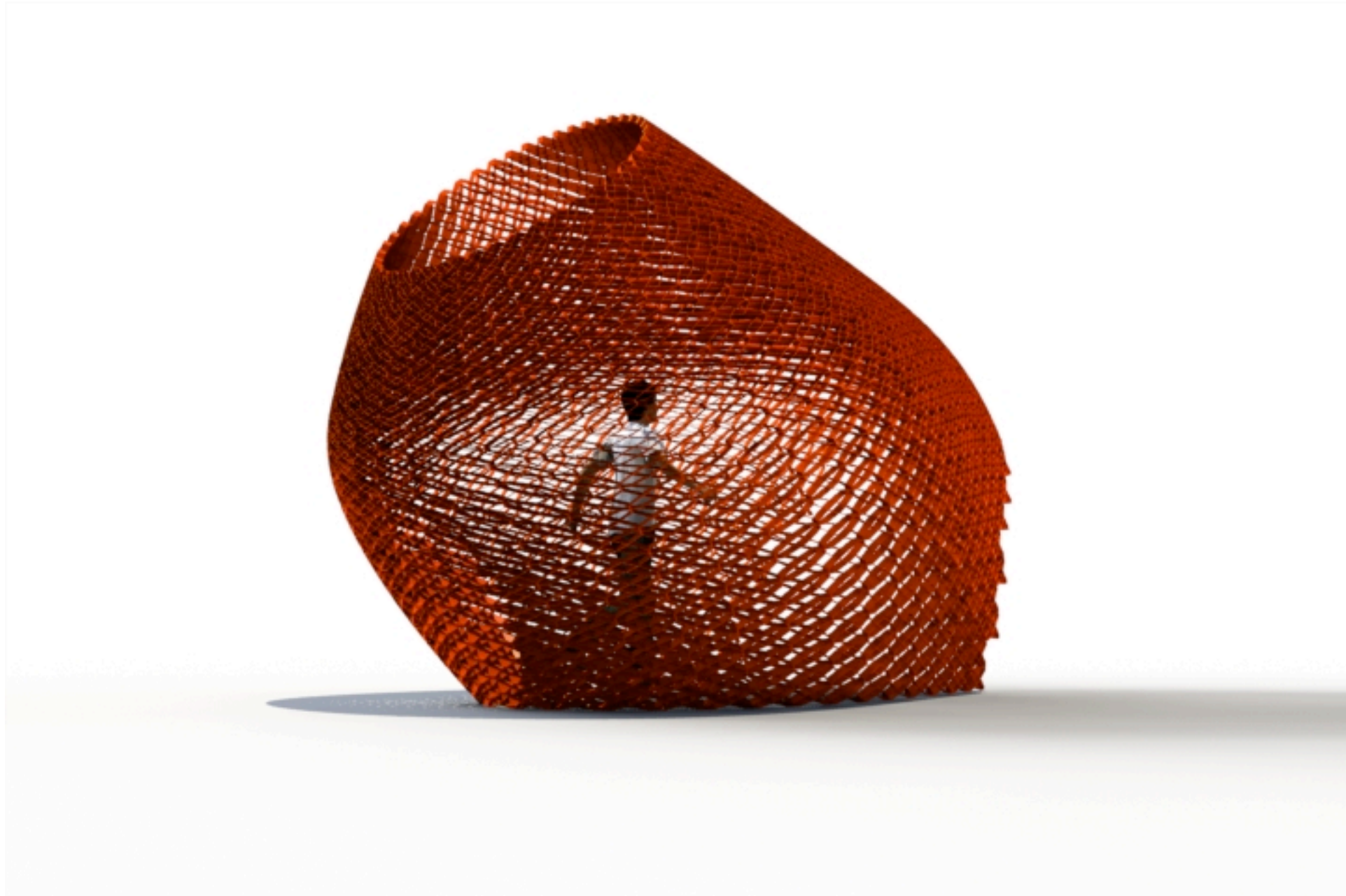


WOMB

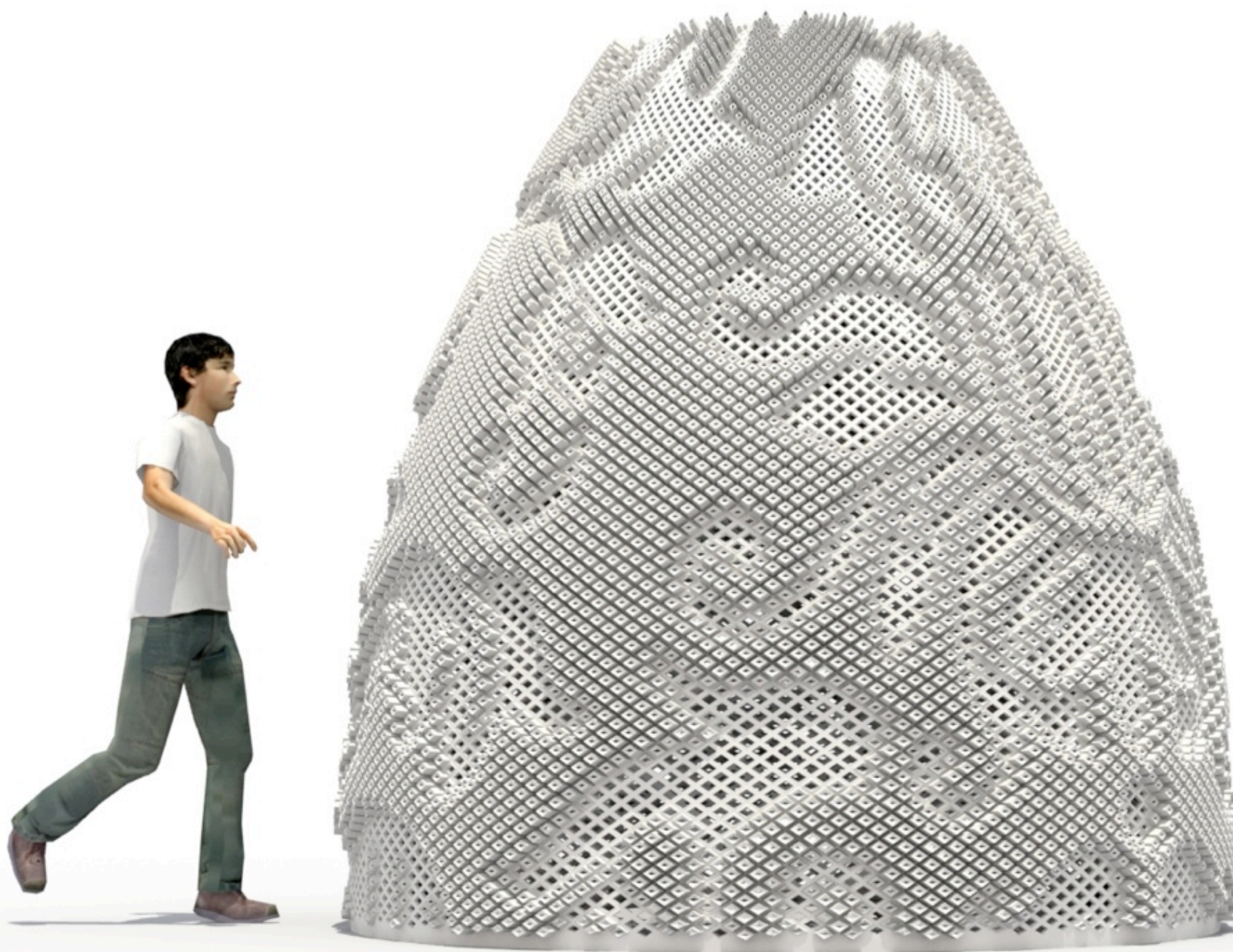


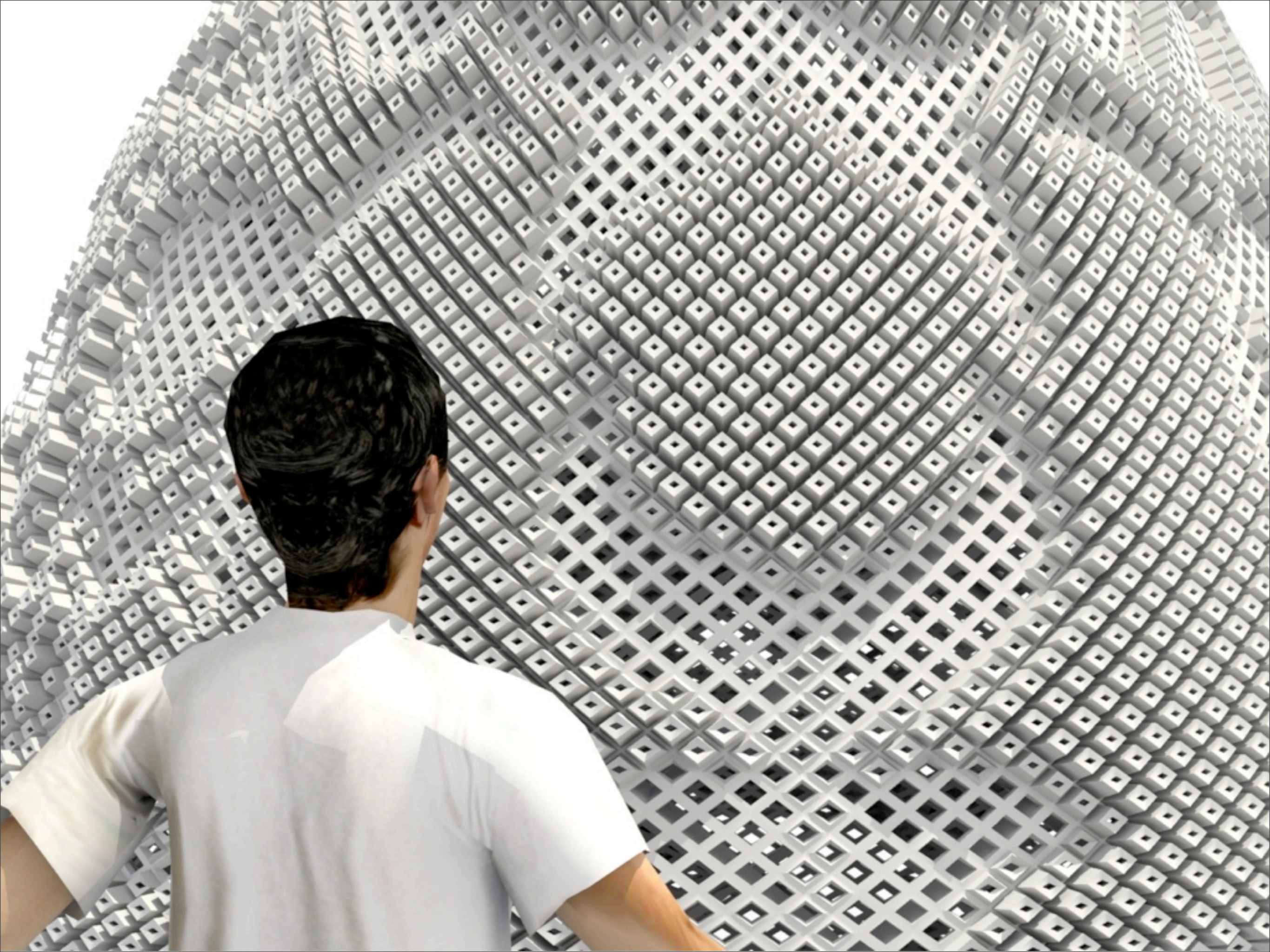


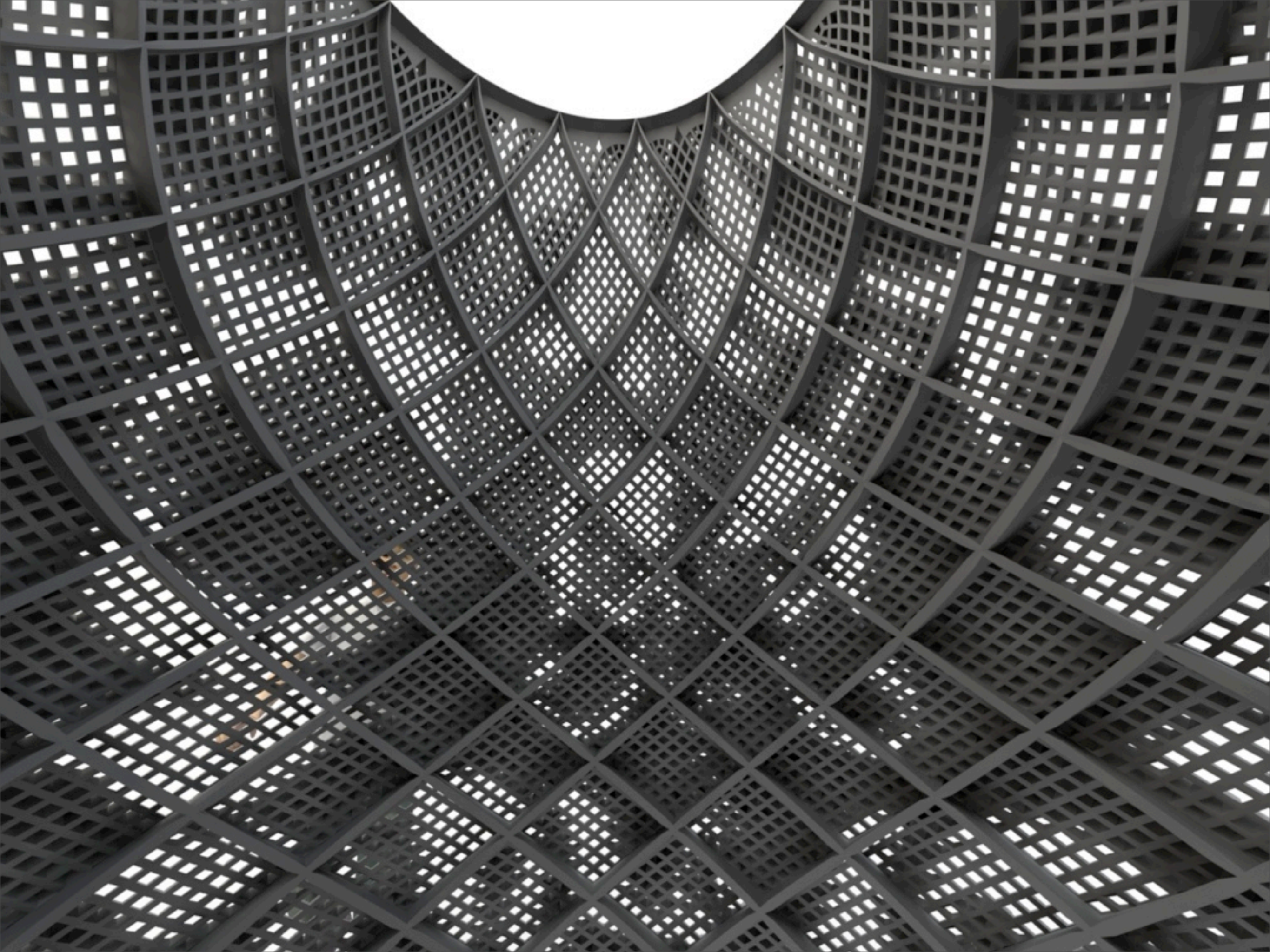


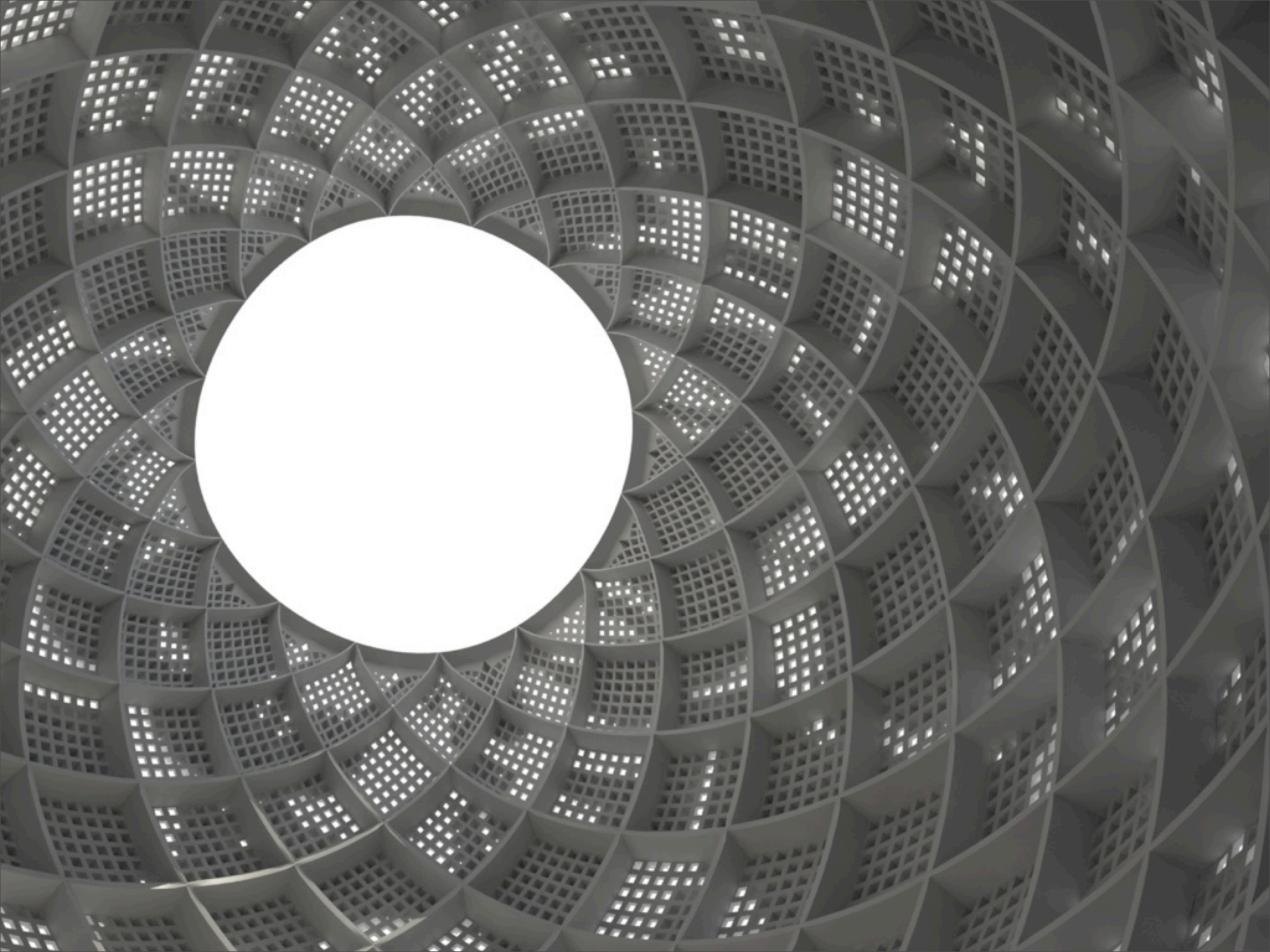


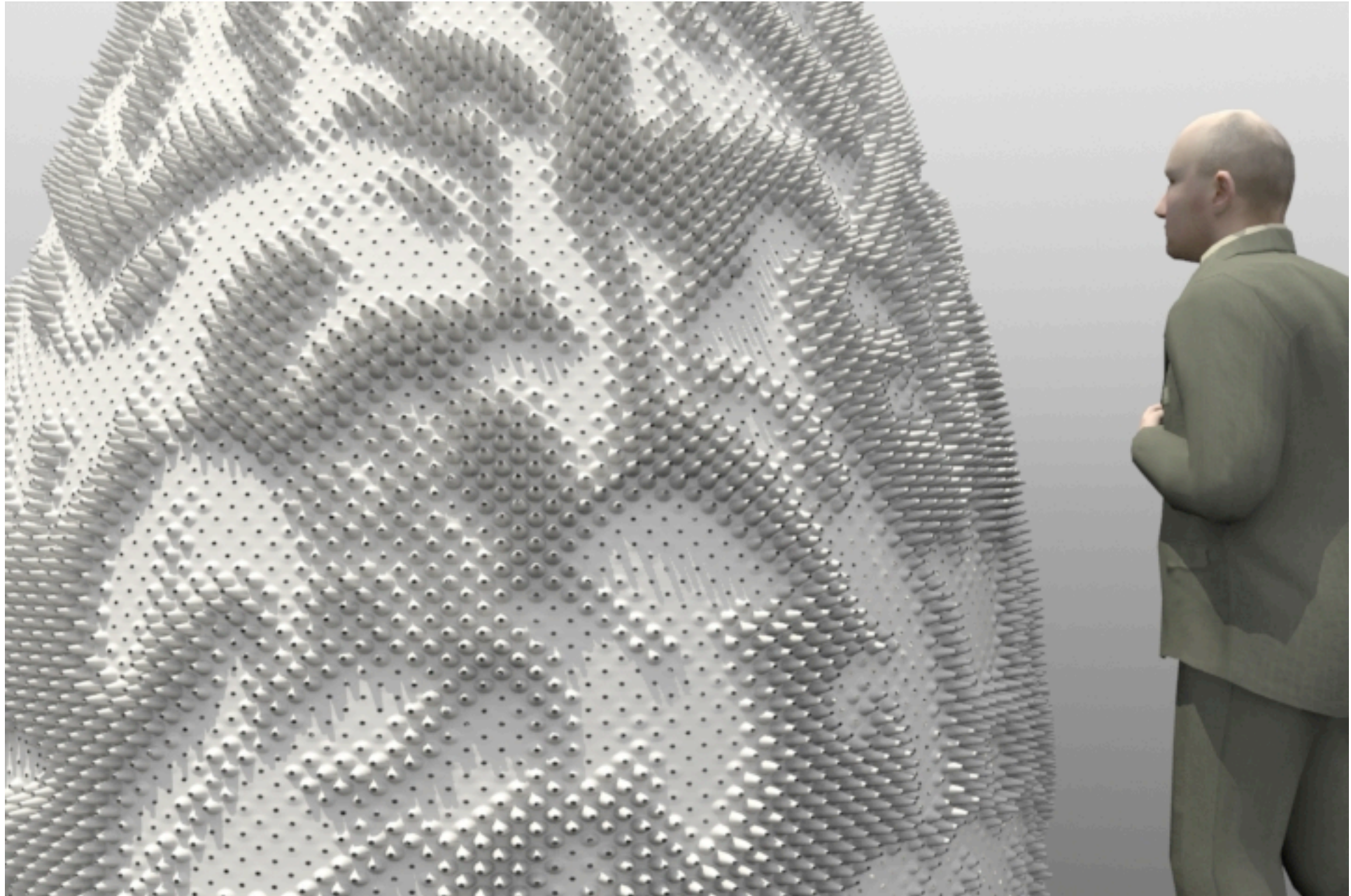
Damask Dome

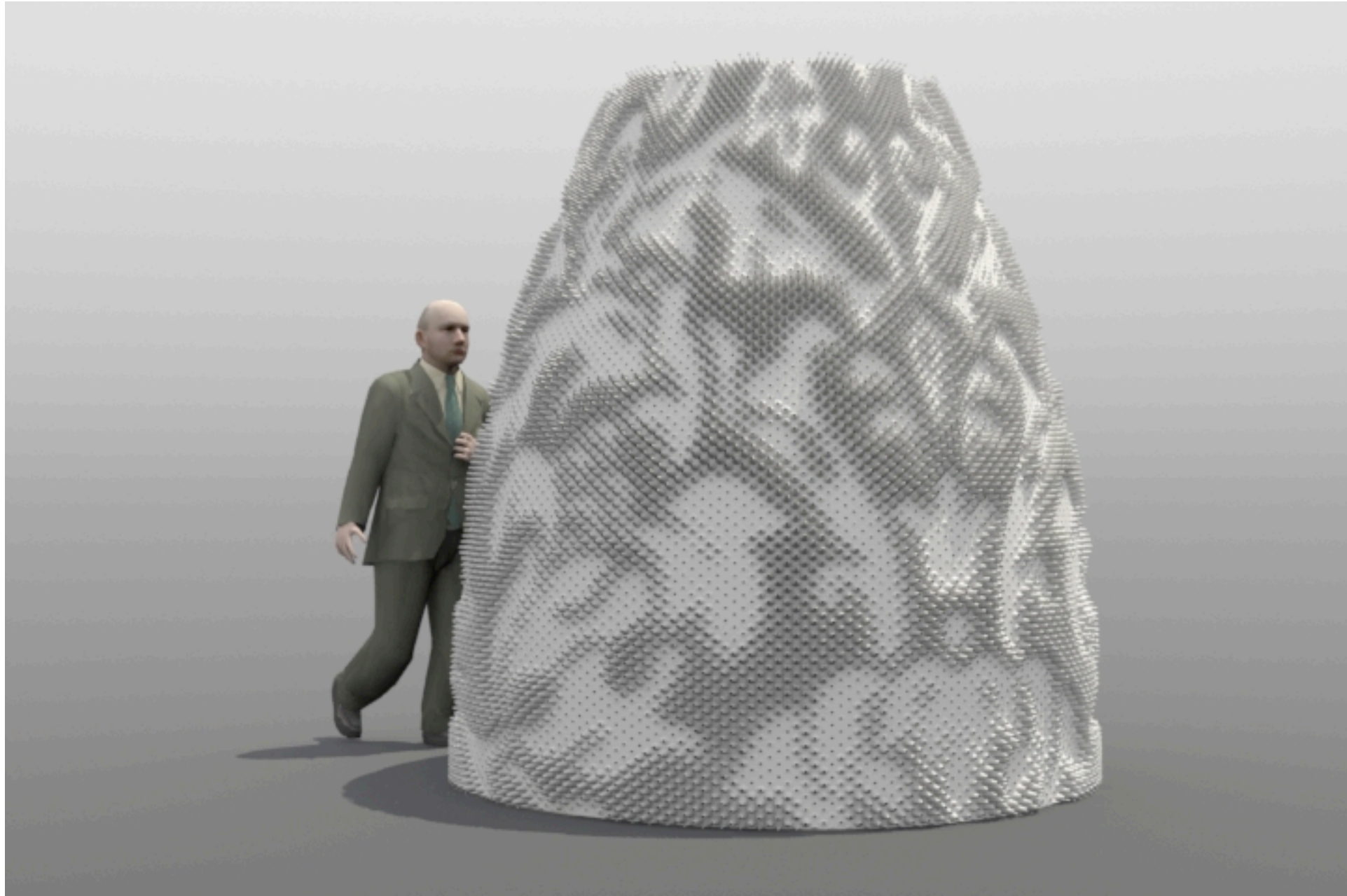




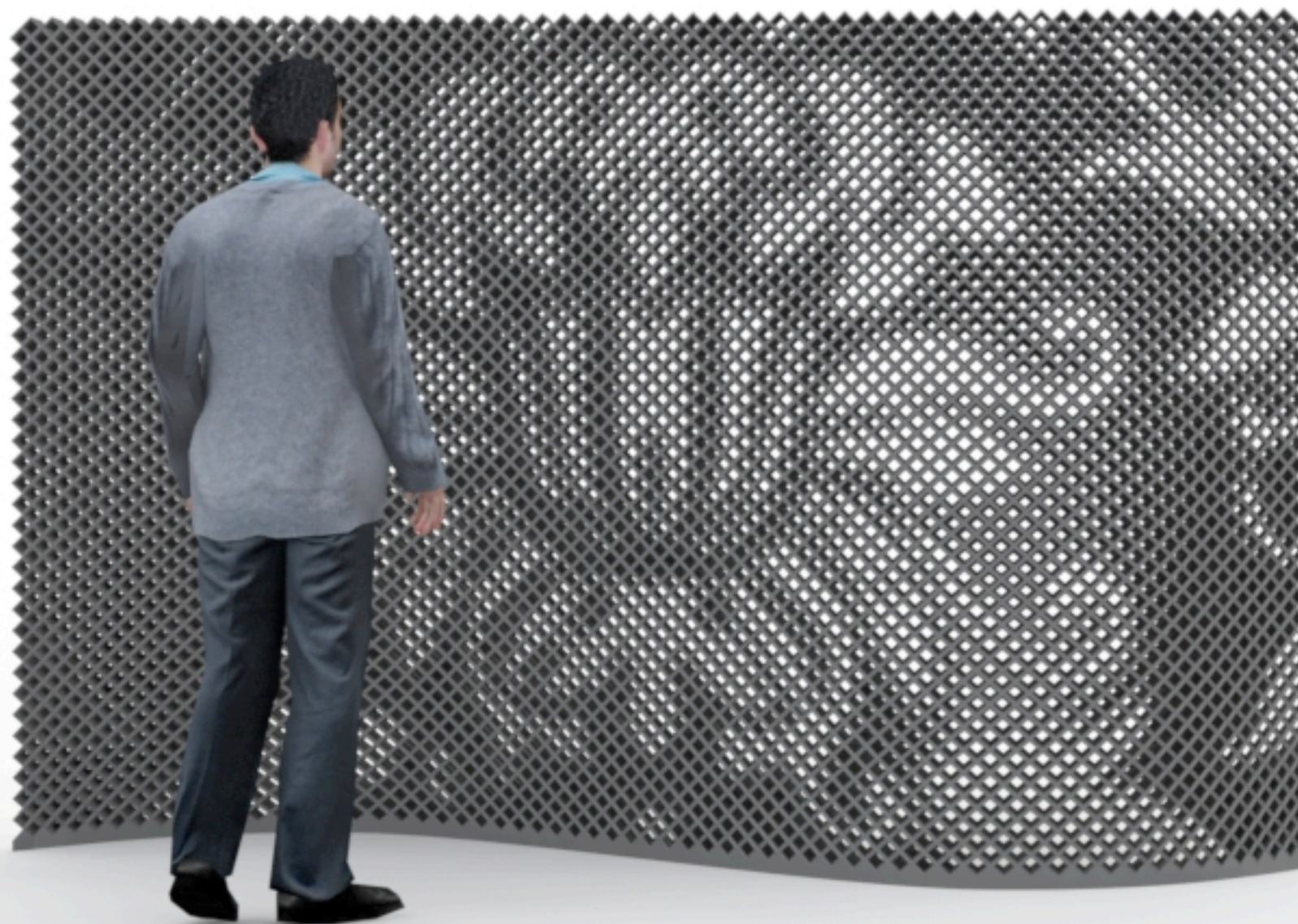


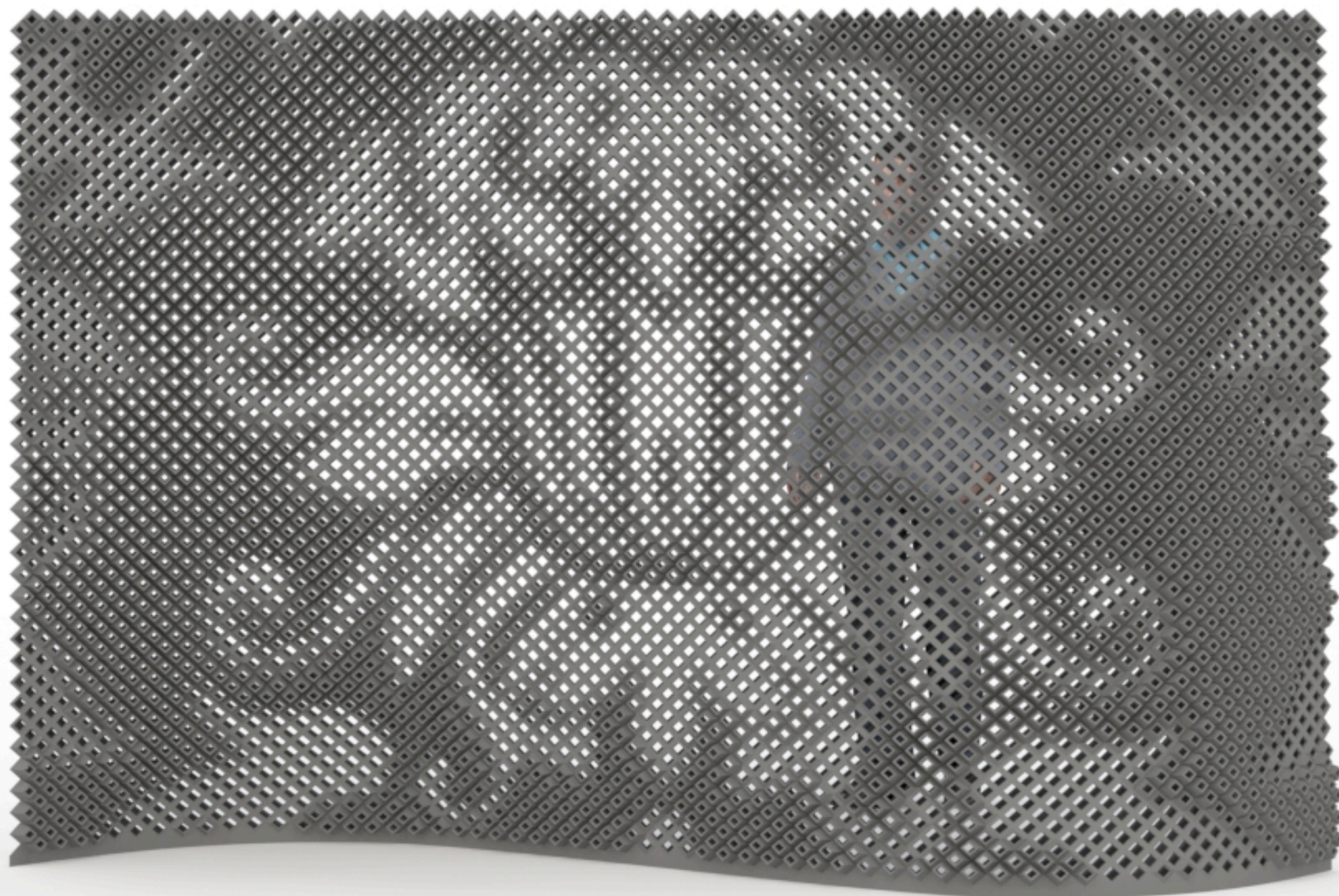


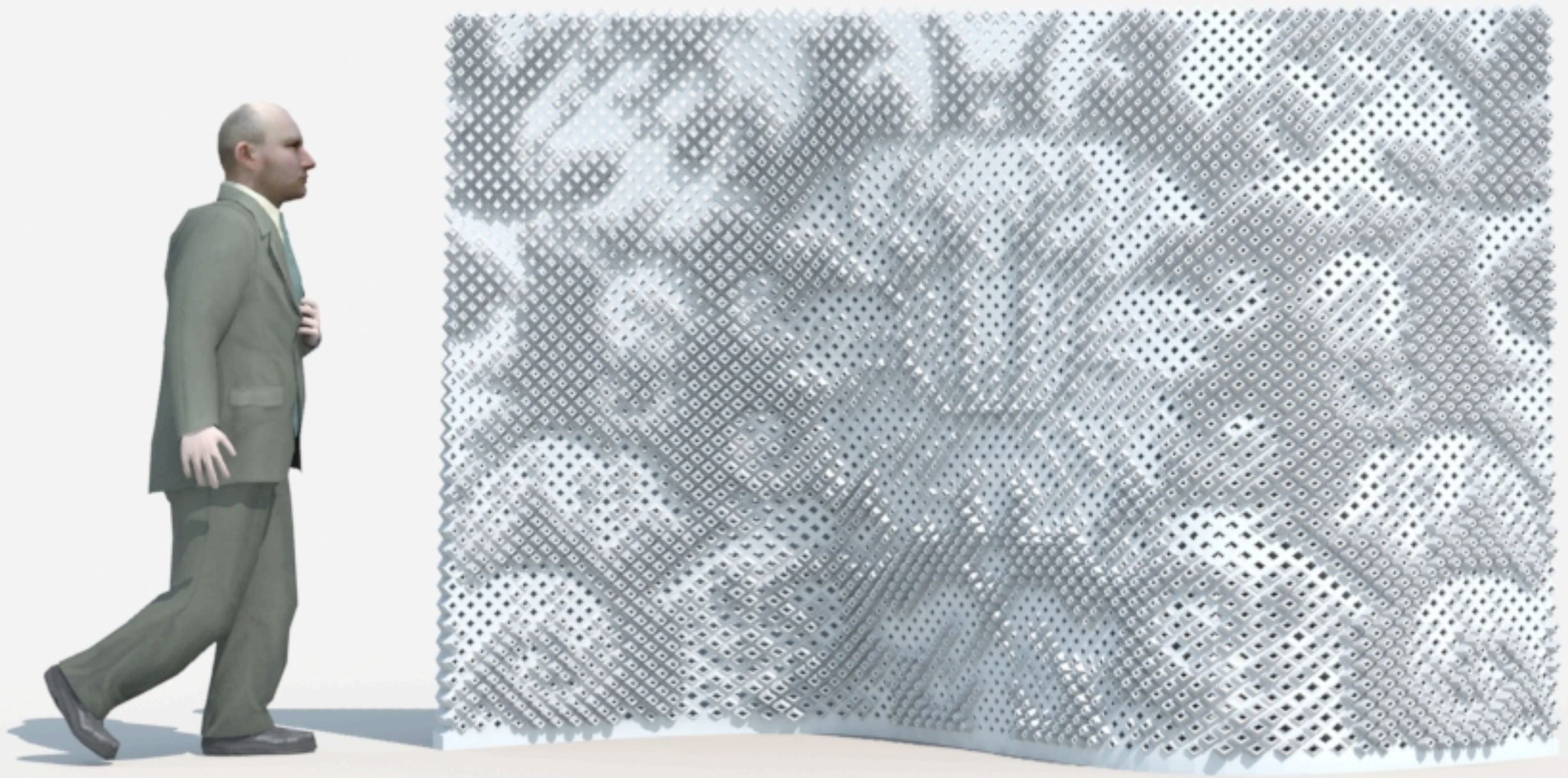


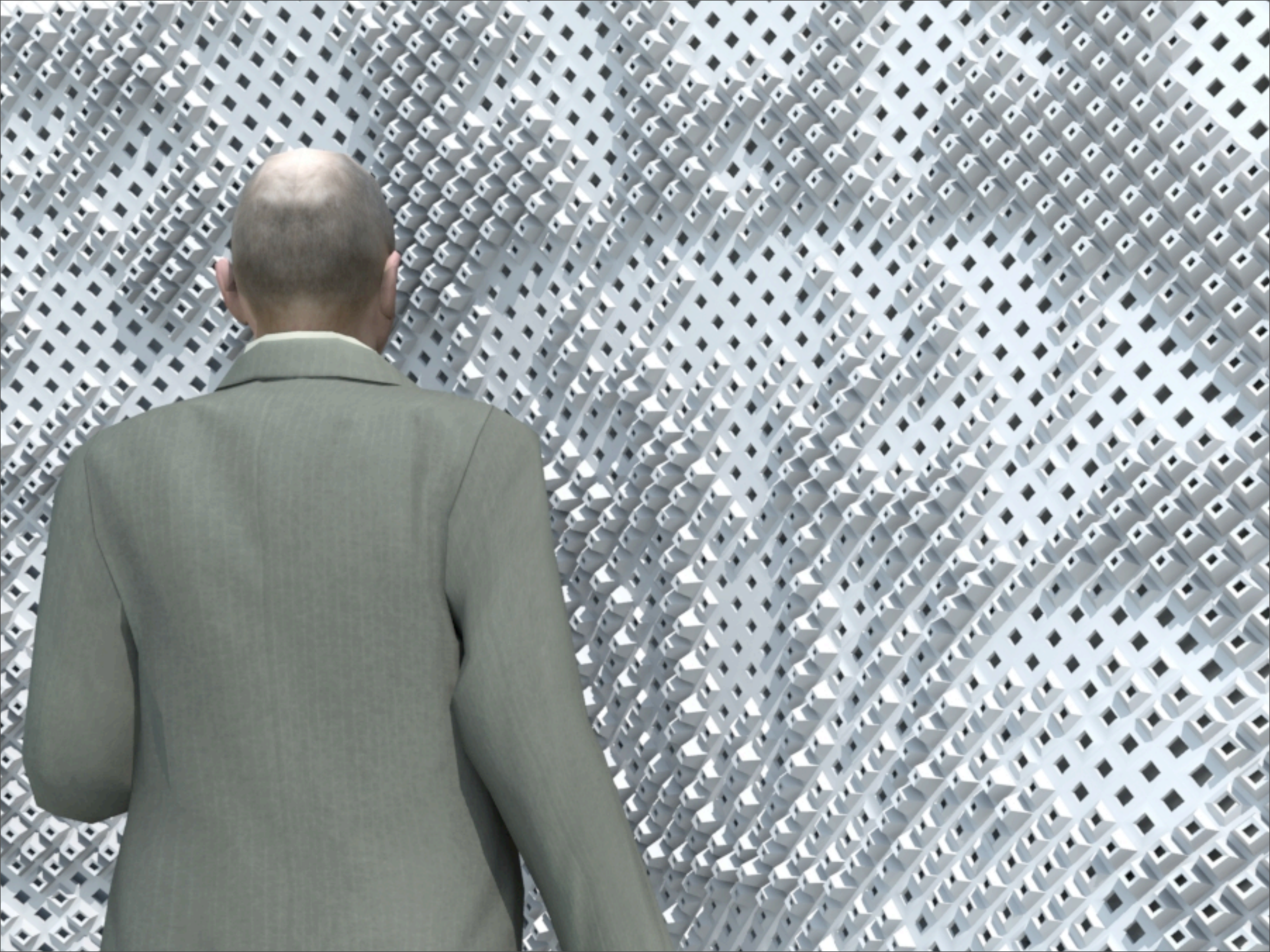


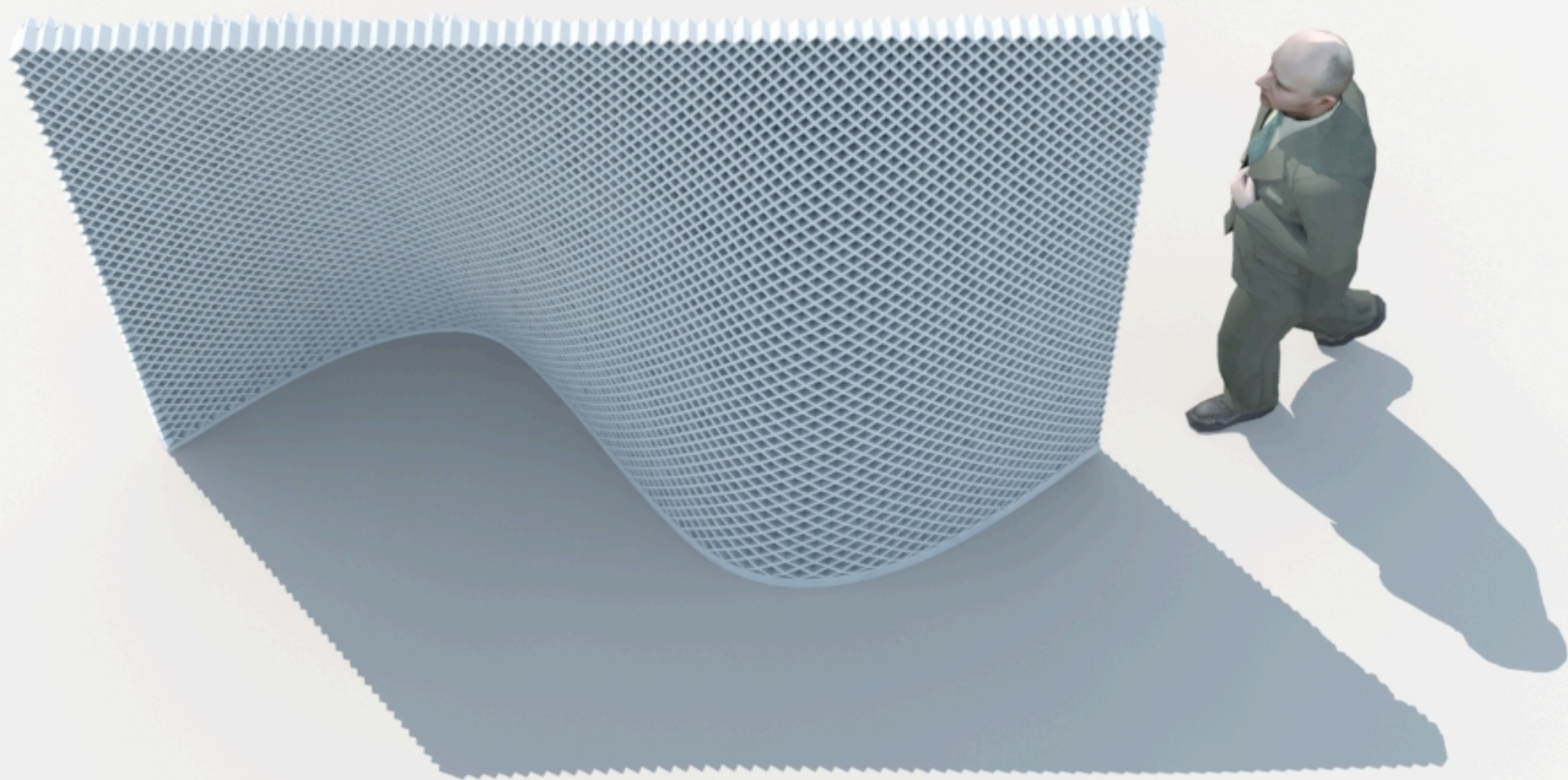
Damask Wall

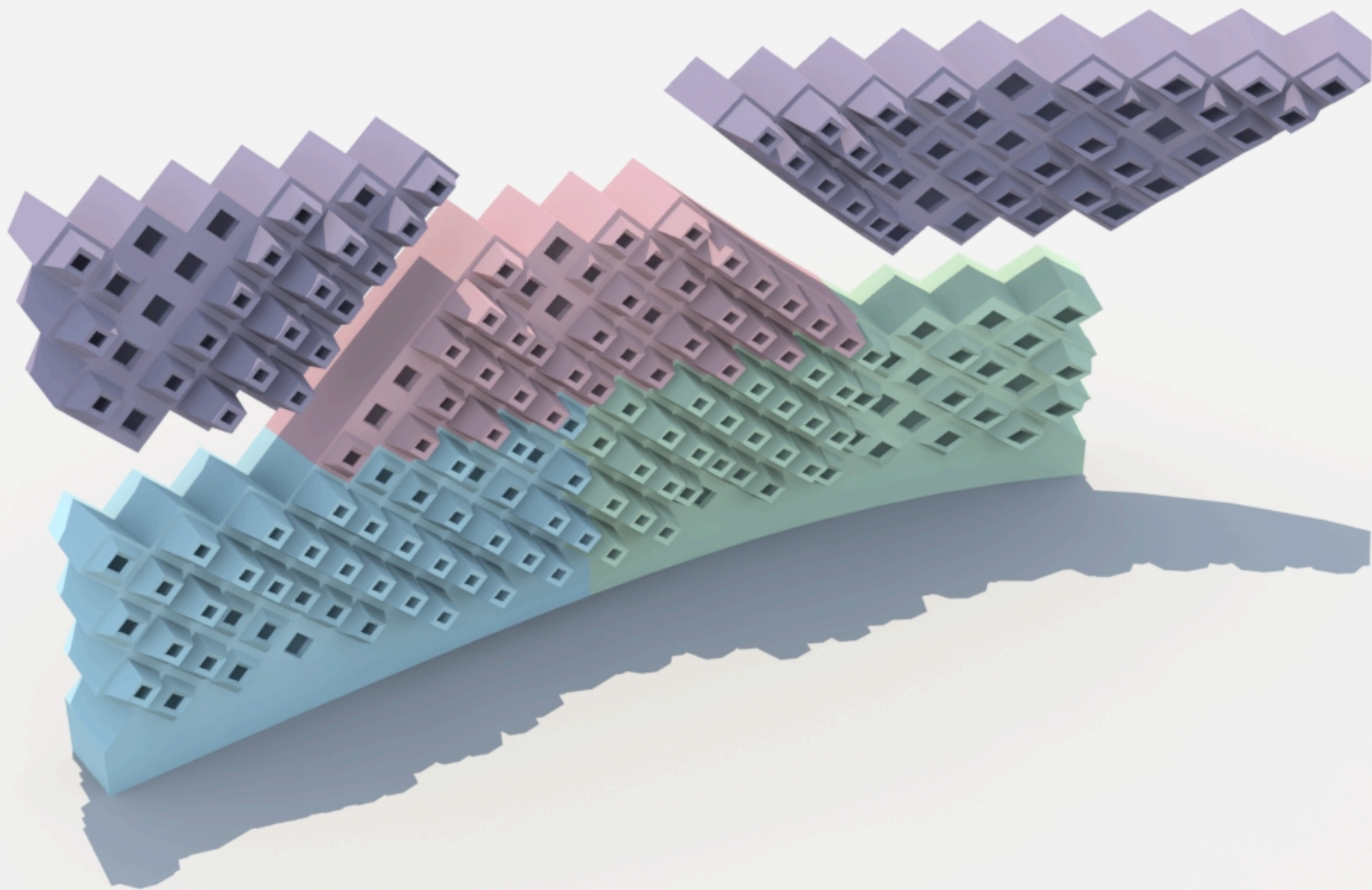


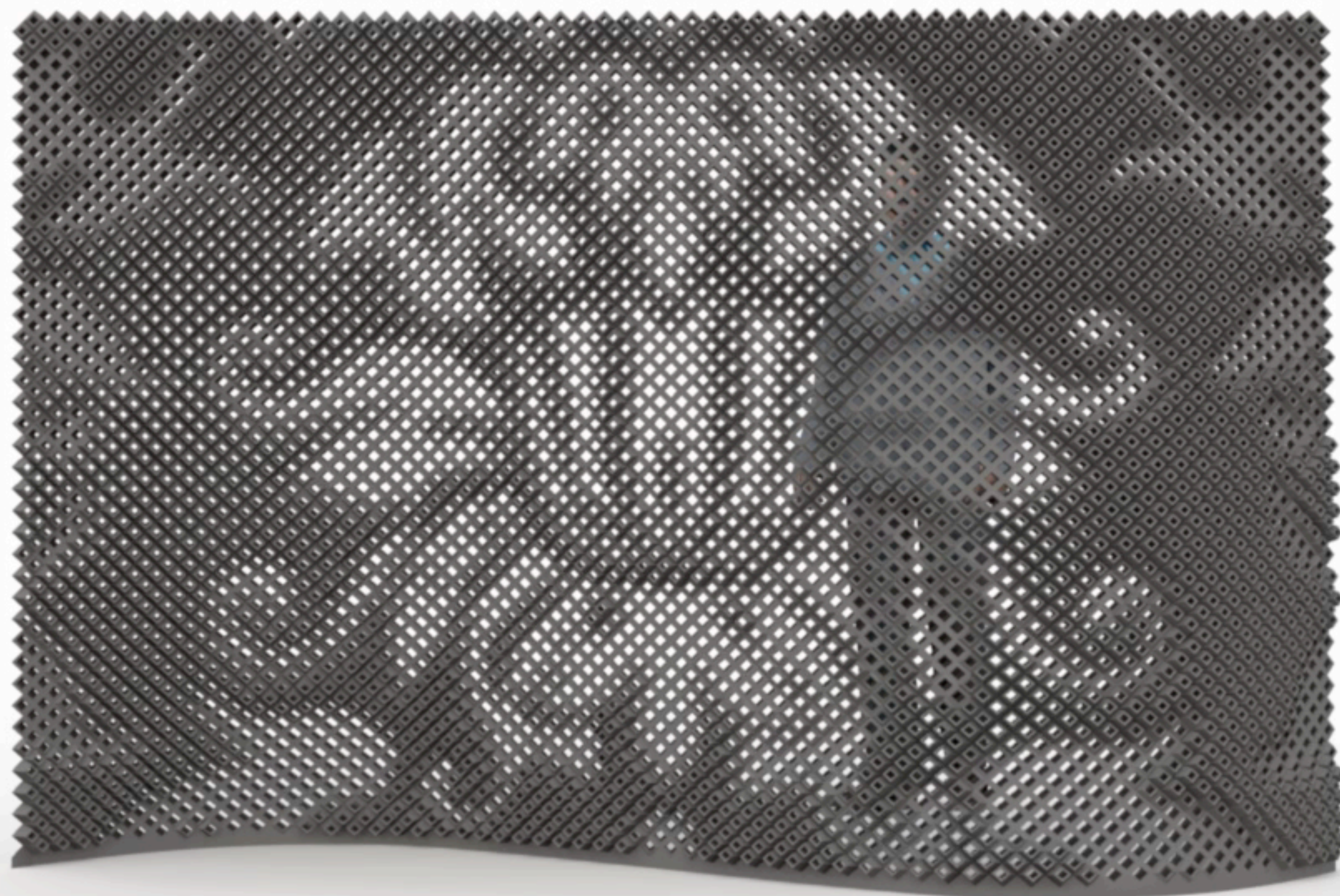






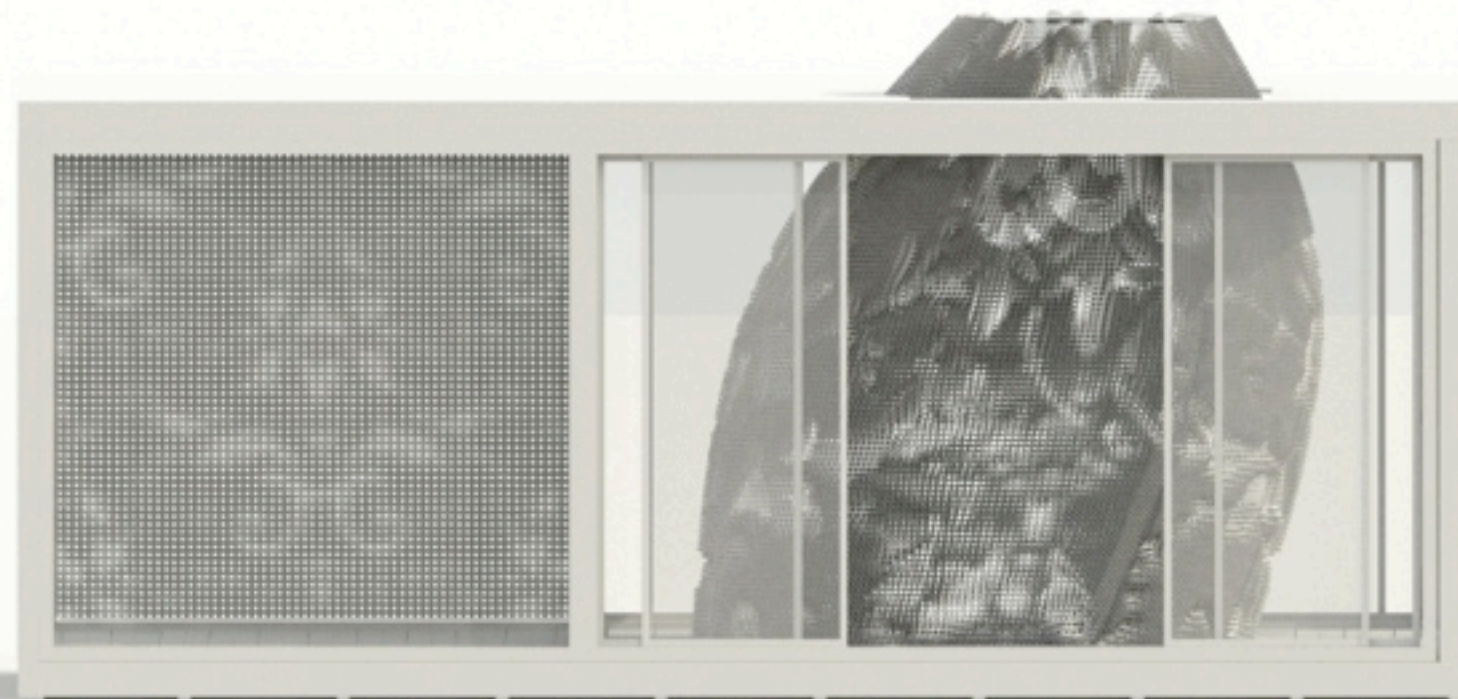






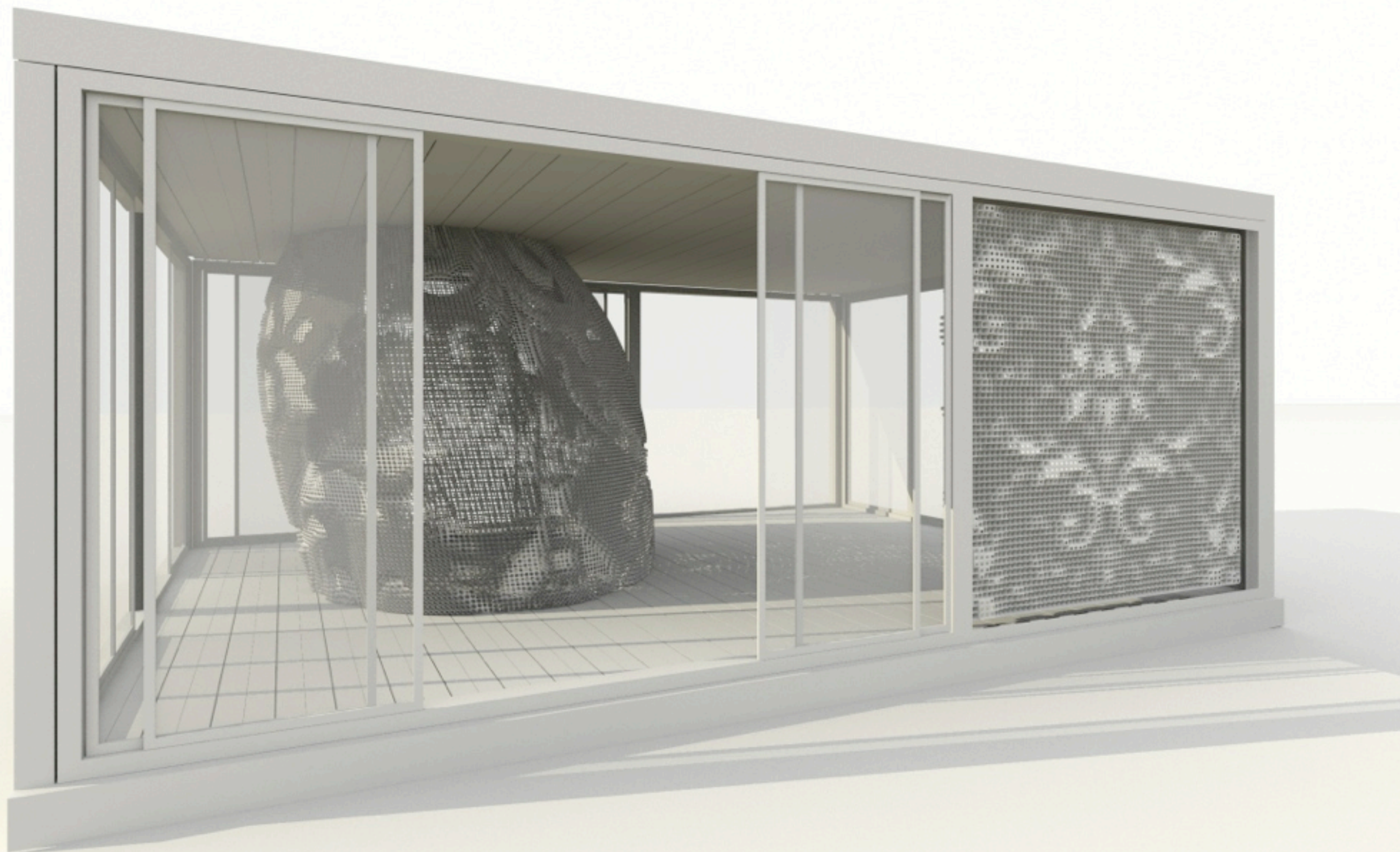


http://rael-sanfratello.com/media/emerging_objects/wall.mov

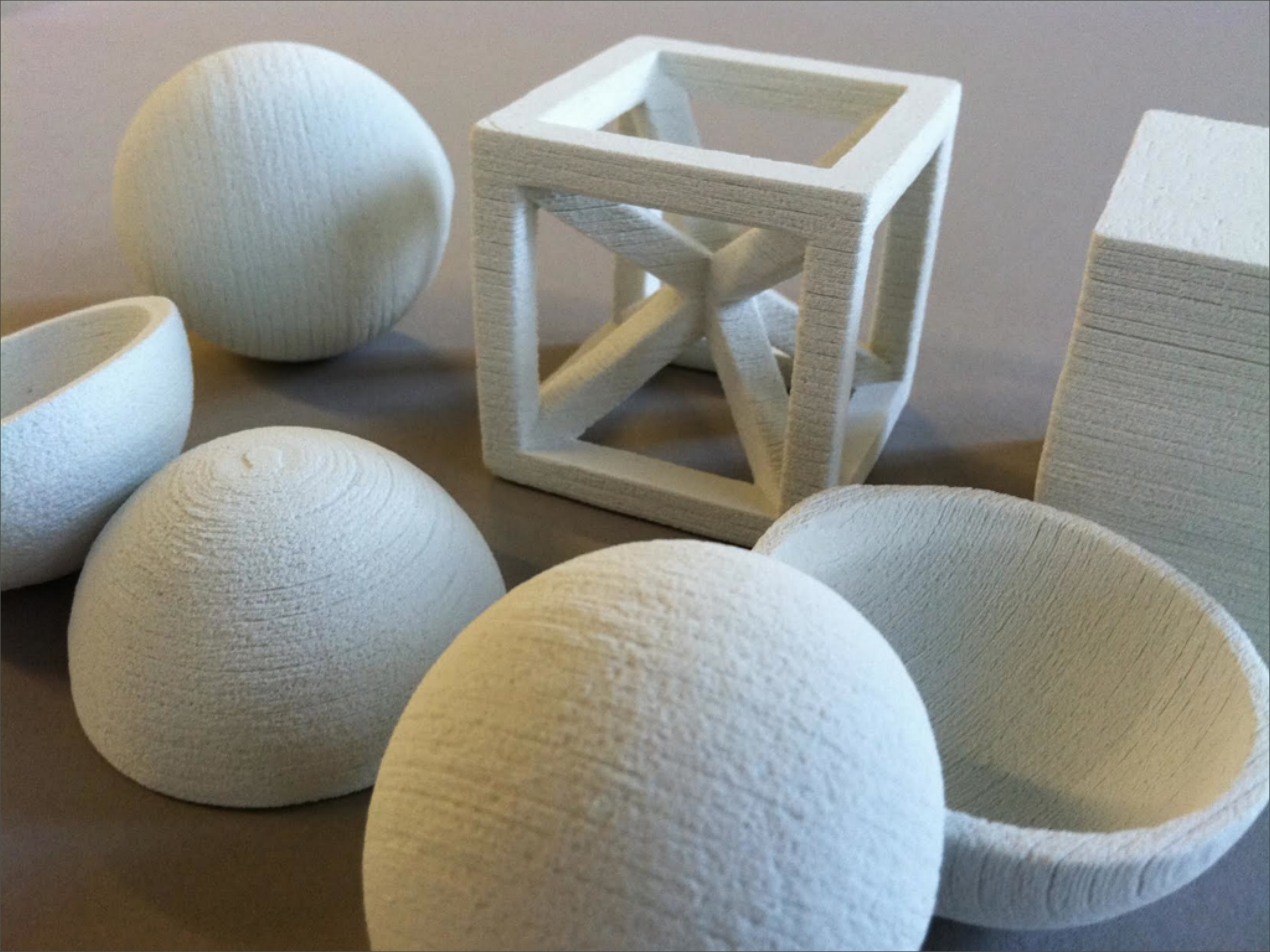


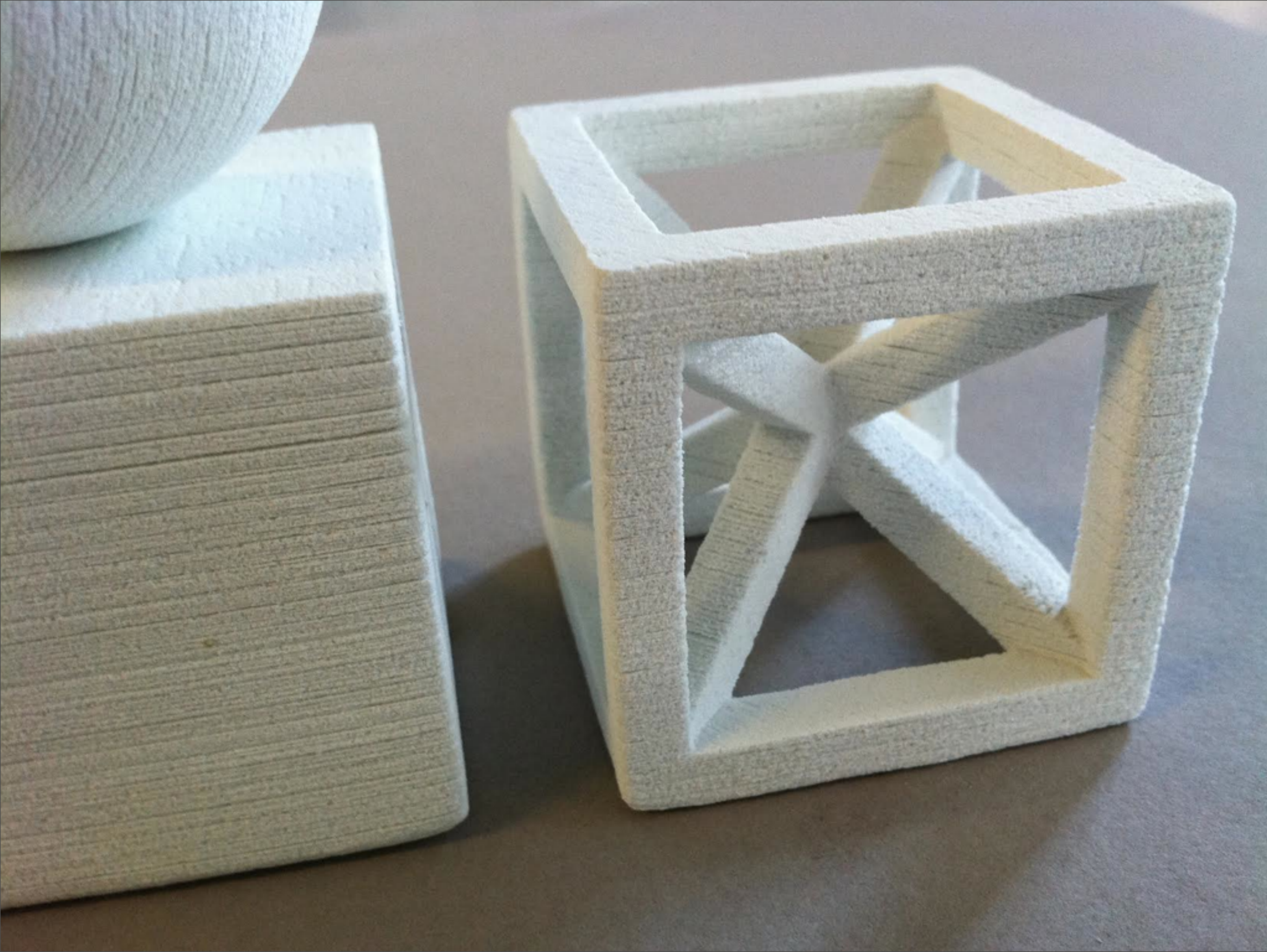


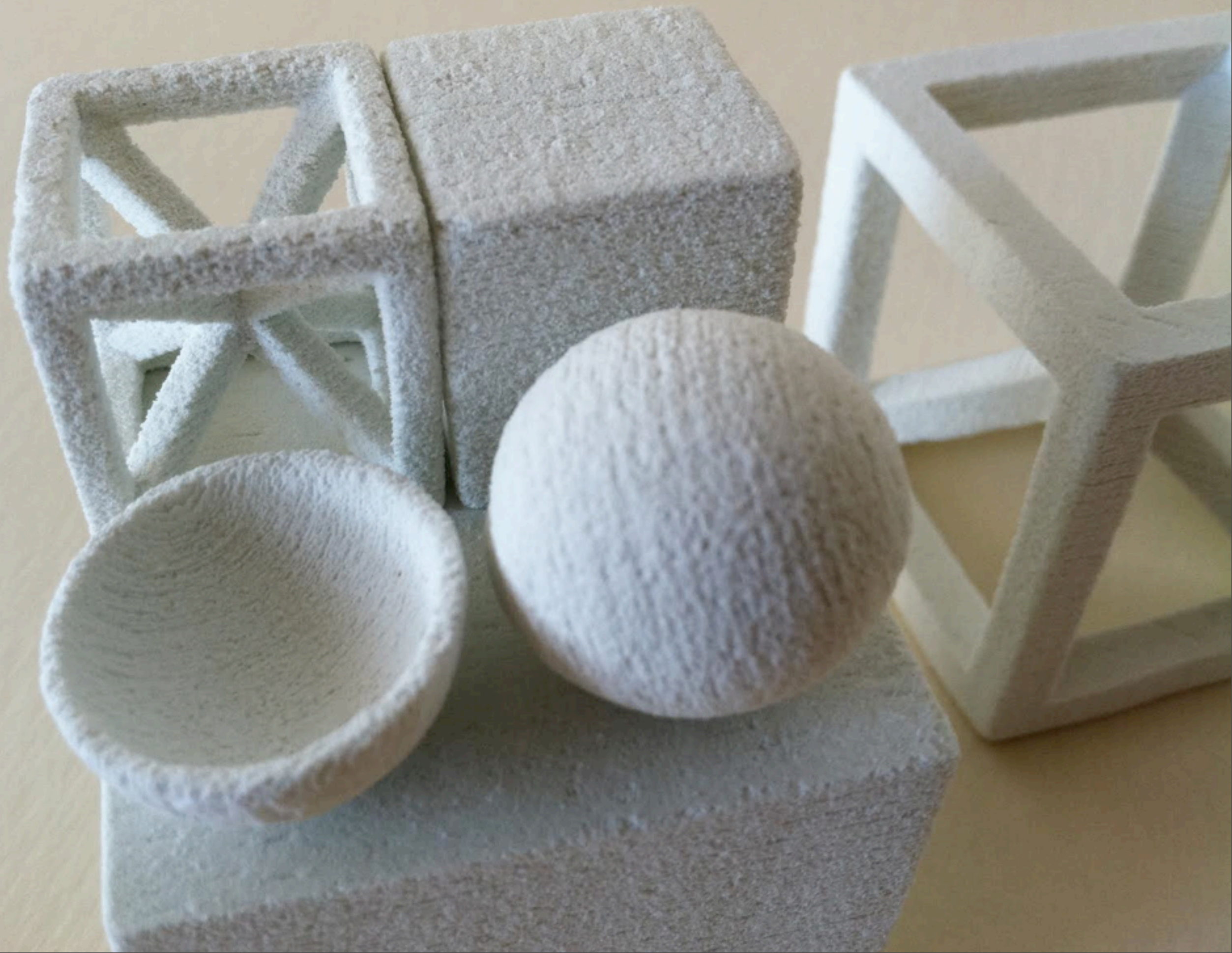


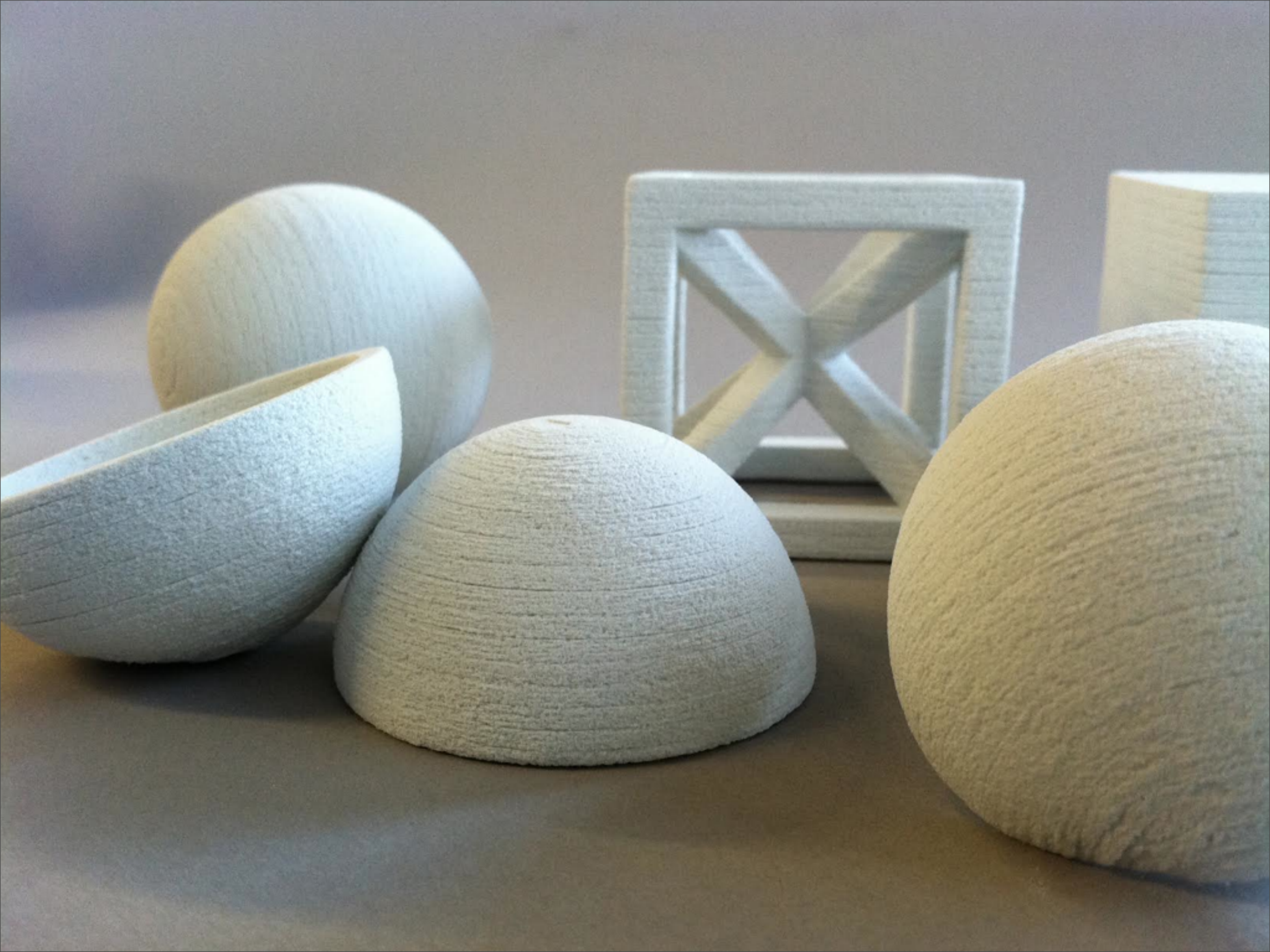


A ROOM FOR LIVING











A ROOM FOR LIVING: AN SCG / BERKELEY RESEARCH PROJECT

