



The Xube

Unleash Your Research Potential with xolo

Pioneers in Volumetric 3D Printing Technology

01

Xolography

02

Xube

03

Materials

04

Applications

The Xolography Edge: Speed, Smoothness, and Material Diversity



Fast up to
100 $\mu\text{m/s}$



Smooth
Surfaces



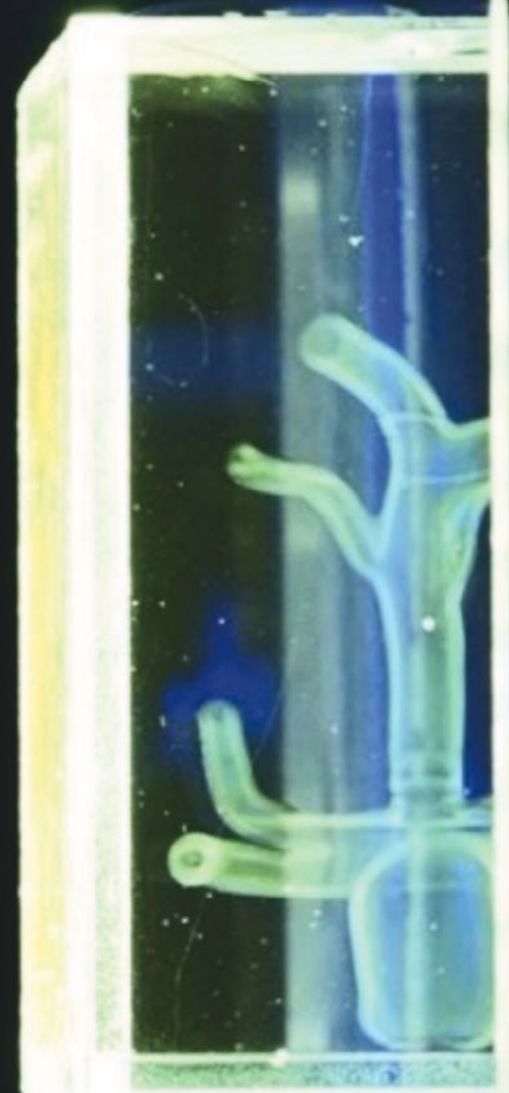
No Support
Structures



Isotropic
Materials



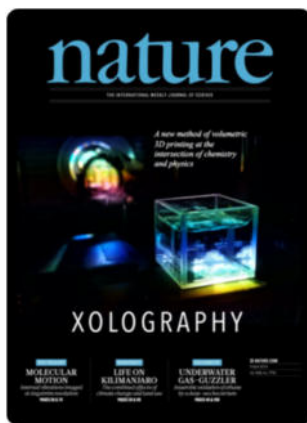
No Layers



Anything out of nothing: Aneurysm model
Build room (x,y,z): 30 x 50 x 30 mm
Resolution x,y: 15 μm , z: 50 μm
Print time: 5 minutes

Inspiring Scientific Creativity

Explore New Frontiers in 3D Printing with Xolography



Regehly, M. et al.: Xolography for linear volumetric 3D printing, *Nature* 588, 620–624 (2020).

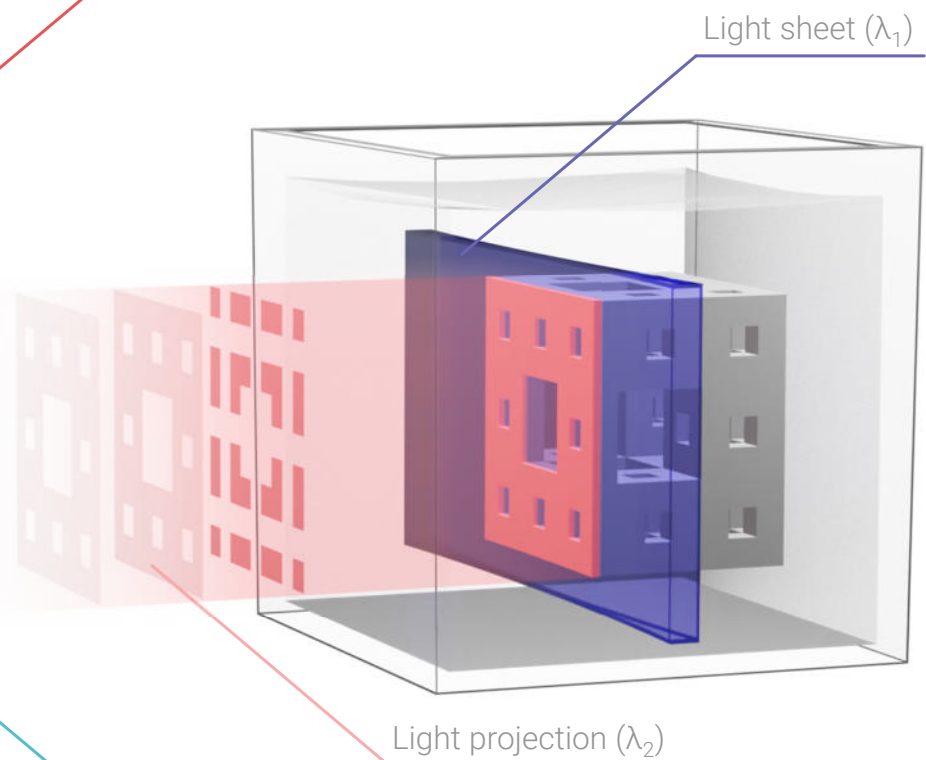
Xolography rapidly produces objects from sub-centimeter scale up to the size of dental models with feature sizes as small as 5 μm in x and y, and 10 μm in z – all within a matter of minutes.

It is a novel volumetric 3D printing technology that leverages dual-color photopolymerization (DCP). Two intersecting light beams of different wavelengths solidify localized regions in a transparent resin material.

HOW DOES IT WORK?

In Xolography, a light sheet of the first wavelength excites a thin layer of dual-color photoinitiator (DCPI) molecules within a transparent resin. A projector generates light of a second wavelength, focusing sectional images of the 3D model onto the plane of the continuously moving light sheet.

Dual-Color Photopolymerization True Volumetric 3D Printing Unlocked



Our proprietary DCPIs can be combined with any transparent resin enabling true volumetric 3D printing with Xolography.



Dormant

Absorbs only light of wavelength λ_1 that converts A to B

Latent

Absorbs wavelength λ_2 leading to formation of C. In absence of λ_2 , B rapidly returns to A.

Active

Initiates polymerization reactions and crosslinking



The First Ever Commercial Volumetric Printer

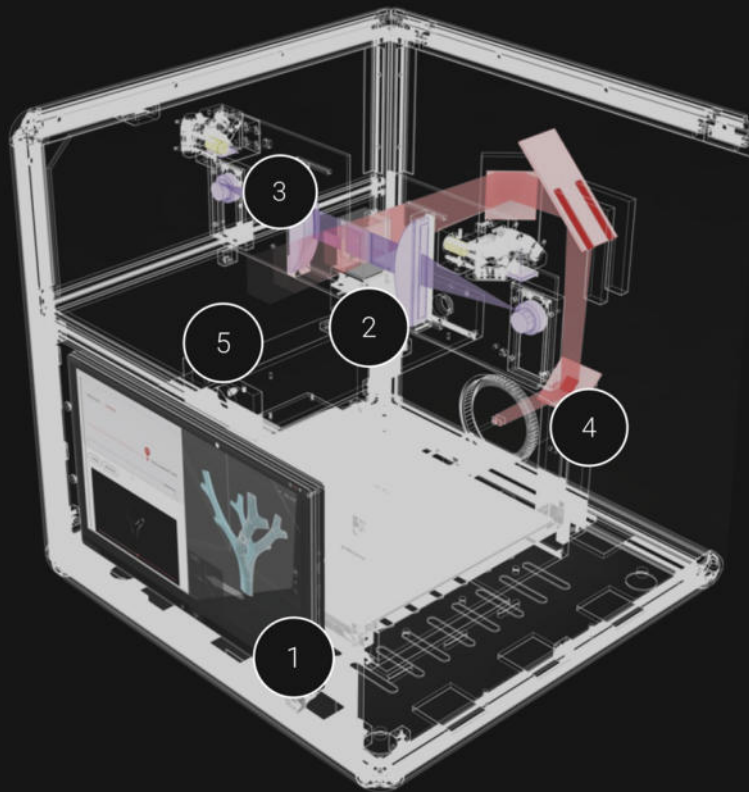
Introducing the first-generation volumetric printer, expertly crafted to empower trailblazing scientists in their quest to approach new horizons in 3D printing.

Xube Specs

BUILD VOLUME	10 x 17 x 30 mm ³
CUVETTE SIZE	10 x 17 x 10 mm ³
OPTICAL RESOLUTION	5 μm (x,y), 10 – 40 μm (z)
LIGHTSHEET	2 x 375 nm or 405 nm diode lasers 200-500 mW
PROJECTOR	Red/Green DLP 3840 x 2160 Pixel (UHD)
TYPICAL PRINT SPEED	20 sec – 5 min
EXTERNAL FOOTPRINT	50 x 50 x 50 cm ³

Inside the Xube

The Core of Xolography Revealed



Step ①

A 3D CAD/STL file is imported into the 'xolid' software.

Step ②

The pre-filled vat is placed into the Xube.

Step ③

The lightsheet modules produce a 10 – 40 μm thin lightsheet based on 375 or 405 nm lasers.

Step ④

An in-house developed visible light DLP projector focuses a movie of the sliced model onto the lightsheet.

Step ⑤

The vat moves on an axis through the lightsheet. The object evolves where light sheet and projection intersect.

Materials

Breaking free from support structures: explore the untouched world of ultra high viscosity resins



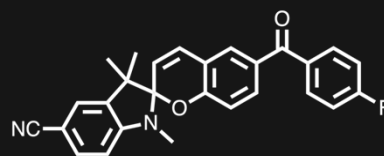
Every Xube comes with a starter kit of pre-filled cuvettes (10 x 17 x 10 mm³) ready to print. With pre-defined specs printing is as simple as pushing a button.



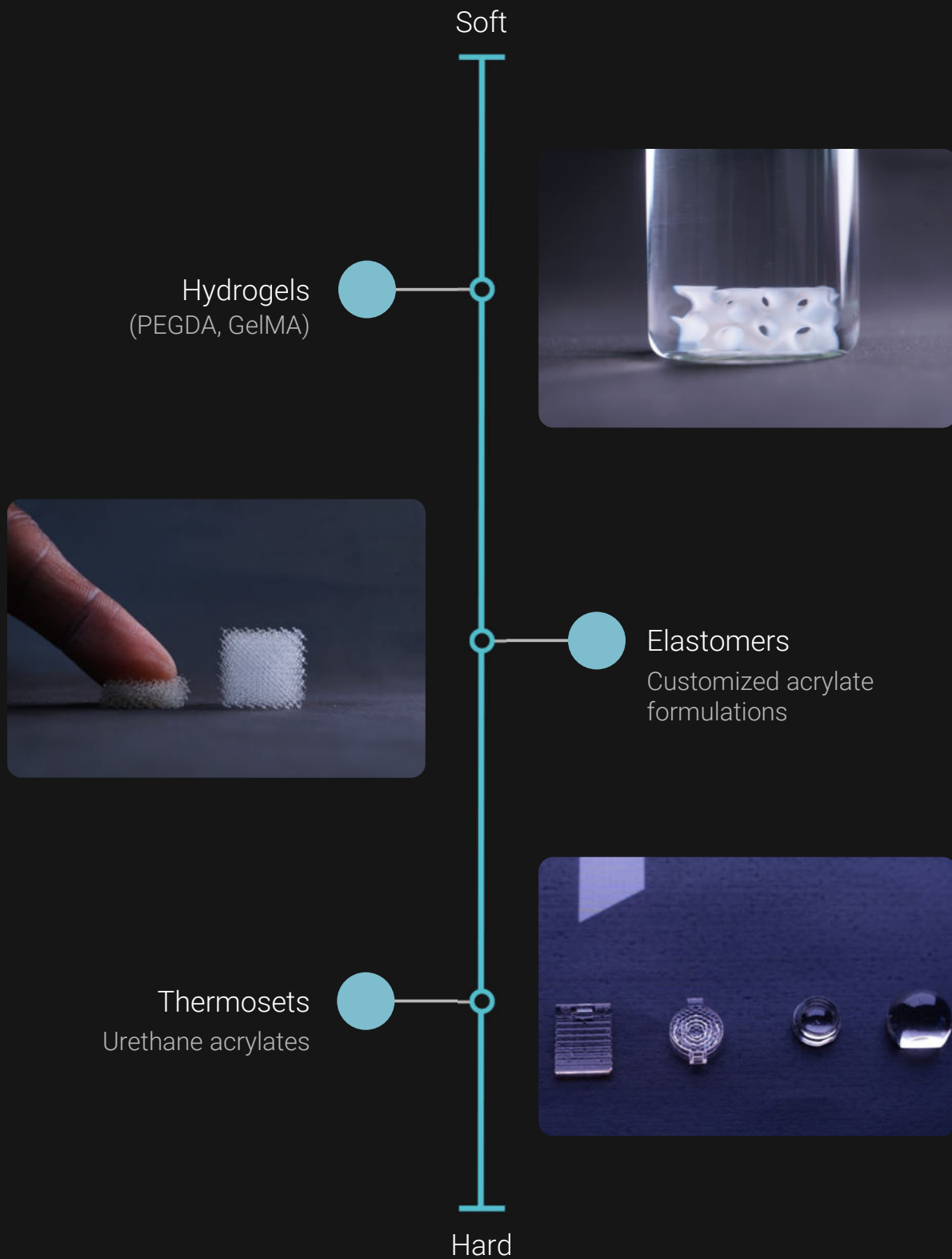
Re-useable cuvettes can be refilled with your own materials, including a wide range of resins for direct oligomer printing (rethane acrylates, GelMA, PEGDA).



You have access to our dual-color photo-initiators and our expertise to transform your ideas and creativity into reality.

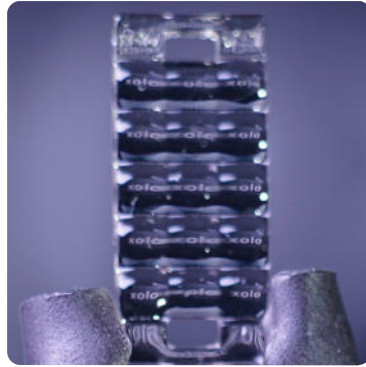


Final Material Properties



Xolography in Action

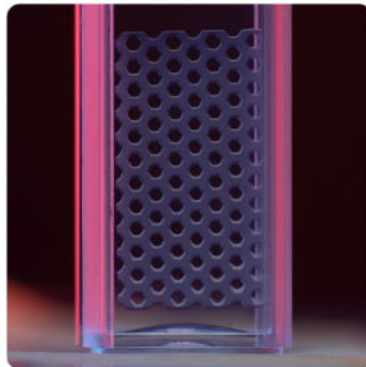
Applications and Print Examples



Optics



Xolography excels at printing optical elements. Creating isotropic materials and smooth surfaces due to true volumetric polymerization.



Bioprinting



Shape soft materials with Xolography: Print 3D scaffolds using synthetic hydrogels, biomaterials and cell-laden bioinks.

Microfluidics



Rapidly fabricate microfluidic channels with Xolography, enabling swift testing of unique geometries.



Dental + Otoplastics



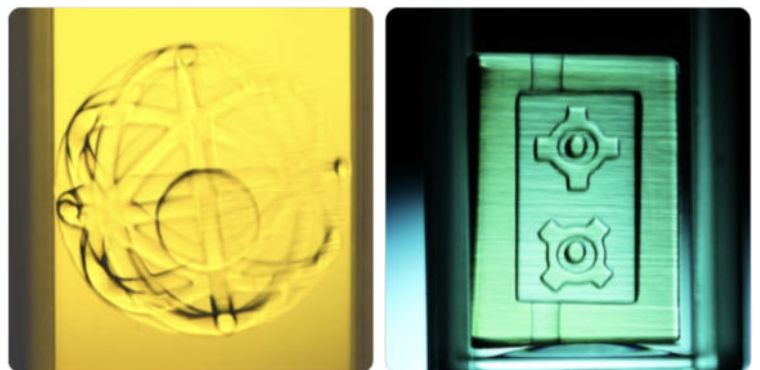
Investigate novel dental and otoplastic applications with Xolography: innovative materials and the potential to print around integrated electronics.



Exploratory Concepts



Envision enclosed objects, miniature machinery, and one-step flow cell fabrication. Everything without layers and without the aid of support structures.





xolo

Revolutionizing Mass Customization One Piece at a Time



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