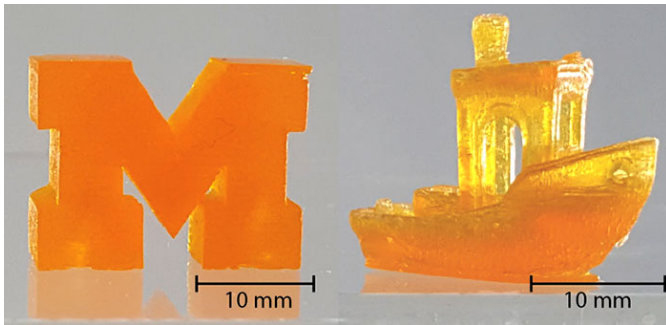


Faster 3D Printing Through Light

Written by Marco Attard
16 January 2019

Researchers at the University of Michigan have come up with a novel approach for 3D printing--solidifying liquid resin using the power of light, in a system claiming to be up to 100 times faster than conventional processes.



The light-based system literally lifts complex objects from a vat of liquid. To do so, the researchers use two lights to control where the resin hardens and where it remains fluid, allowing them to solidify the resin into more sophisticated patterns. The creation of a regions with no solidification allows the use of thicker resins (potentially with strengthening powder additives) for the production of more durable objects.

Key to the system is the chemistry of the resin. Conventional vat-printing systems use a single reaction, namely a photoactivator hardening the resin wherever the light shines. The Michigan system adds a photoinhibitor able to respond to different wavelengths of light. As a result, the researchers can pattern two kinds of light to harden the resin at any 3D place near the illumination window.

The system can create a 3D bas-relief in a single shot, rather than a series of 1D or 2D cross-sections, and bests the structural integrity of filament 3D printing by creating objects lacking weak points at the interfaces between layers. As part of a demonstration, the Michigan team created a number of objects, including a lattice, a toy boat and a block M.

The team filed 3 patent applications to protect the innovative approach to 3D printing, and is set to launch a startup company soon.

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