

New microfabrication technology announced

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U.S. scientists have created a new method of rapidly engineering complex micro-scale patterns and 3D microstructures from biocompatible proteins.

Hason Shear and Bryan Kaehr of the University of Texas say their microfabrication technology involves a laser technique to fabricate detailed shapes by condensing, or crosslinking, proteins in solution into a solid matrix.

The technique, called mask-directed multi-photon lithography, is modeled after the lithography processes widely used to transfer electronic circuits onto a semiconductor wafer by projecting light through a pattern or "mask." However, the new method uses a special laser to scan objects or patterns printed on transparency film with an ordinary desktop printer.

The silhouette ultimately is refocused into the protein solution using the objective lens of a microscope. Because protein molecules must be extremely close to the laser focus to undergo crosslinking into solid material, the method allows structures to be created with complex 3-D shapes. The process takes only minutes, the researchers report.

The research is to appear in the Feb. 28 issue of the *Journal of the American Chemical Society*.

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