

Nanostructured Casting of Organic and Biopolymers in Porous Silicon Templates

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BACKGROUND

Synthesis of materials inside templates has emerged as a useful and versatile technique to generate three-dimensional nanostructures.

Previous approaches use templates consisting of microporous membranes, zeolites, and crystalline colloidal arrays. These have been used to construct elaborate electronic, mechanical, or optical structures. Porous Si is an attractive candidate as a template because the porosity and average pore size can be readily tuned by adjustment of the electrochemical preparation conditions. Additionally, elaborate 2- and 2.5-dimensional photonic crystals are readily prepared in porous Si.

TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have demonstrated the templating of solution-cast and injection molded thermoplastic organic, inorganic, and biopolymers in porous Si multilayer (Rugate, Bragg filter) structures. The castings retain the photonic structure of the template. Demonstrated uses of the castings include vapor sensors, deformable and tunable optical filters, as well as self-reporting, bioresorbable drug-delivery materials.

RELATED MATERIALS

- View inventor's [Smart Dust](#) presentation from 2005.
- Visit inventor's lab link at <http://chem-faculty.ucsd.edu/sailor/research>.

INTELLECTUAL PROPERTY INFO

This technology is available for licensing.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	7,713,778	05/11/2010	2003-024

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OTHER INFORMATION

CATEGORIZED AS

- [Nanotechnology](#)
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