Method to Fabricate Composite Photonic Crystals of Porous Silicon and Polymers with Highly Regular Particle Dimensions

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BACKGROUND

UC San Diego researchers have developed an extensive platform of technologies based on porous silicon and/or polymeric nano-particles ("smart dust"). This platform encompasses multiple uses of nano-scale particles of porous silicon photonic crystals and takes advantage of the optical properties and other physical characteristics of this material.

TECHNOLOGY DESCRIPTION

Until now, the simplest methods of making nano-particles of porous silicon have resulted in irregular particle shapes and sizes. The more complicated fabrication methods, while rendering particles of more consistent quality, were more cumbersome to use for making large quantities of material. UC San Diego researchers have now discovered a method to make composite photonic crystals of porous silicon and polymer on a micron scale and with a high degree of particle size regularity. This method is simple and inexpensive and does not require the use of a pre-patterned "master" to determine particle shape or size. The resultant crystals have greatly improved mechanical and chemical stability and are of a more uniform geometry than could be obtained previously.

APPLICATIONS

Porous silicon composites are useful in a number of biological and chemical applications, including chemical and biological sensing, high- and low-throughput screening, drug delivery, and diagnostics.

RELATED MATERIALS

- See inventor's advanced materials presentation and smart dust presentation from 2005.
- See inventor's lab link at http://chem-faculty.ucsd.edu/sailor/research.

INTELLECTUAL PROPERTY INFO

This technology is available for licensing, sponsored research or both. More detailed information can be obtained under a confidentiality agreement.

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OTHER INFORMATION

CATEGORIZED AS

- **Medical**
  - Delivery Systems
  - Diagnostics
  - Screening
- **Sensors & Instrumentation**
  - Biosensors
  - Environmental Sensors
  - Scientific/Research

RELATED CASES

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