Direct Patterning of Silicon by Photoelectrochemical Etching

Tech ID: 20633 / UC Case 2002-144-0

TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have invented a resistless projection lithographic method to generate three-dimensional patterns on silicon substrates. A porous silicon layer is formed first by projecting an image or test pattern onto a silicon substrate during standard electrochemical etching. The porous layer is then removed in a wet etch revealing a 3-D image or test pattern in micrometer resolution. This technique does not involve the use of complicated, multi-step lithography or mask aligners. It is also quick; a multilayered master can be made from a computer design in less than 60 minutes. Feature sizes of 70 microns have been demonstrated, but smaller features should be possible.

APPLICATIONS

A wide variety of fields, such as sensors, microfluidics, microanalysis, MEMS, and cell biology might benefit from this invention.

RELATED MATERIALS

- Visit the inventor's lab link at http://chem-faculty.ucsd.edu/sailor/research.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	7,433,811	10/07/2008	2002-144

CONTACT

University of California, San Diego
Office of Innovation and Commercialization
innovation@ucsd.edu
tel: 858.534.5815.

OTHER INFORMATION

CATEGORIZED AS

- **Imaging**
  - 3D/Immersive
- **Medical**
  - Imaging
- **Nanotechnology**
  - Tools and Devices
- **Engineering**
  - Other

RELATED CASES

2002-144-0