

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Patterned porous silicon structures for microphotonics DANIEL GARGAS, UCSB, DONALD SIRBULY, UC-Berkeley, OVIDIU MURESAN, STEVE BURATTO, UCSB — Dry-removal soft lithography is used to fabricate microstructures in porous silicon films for use in microphotonics. In our experiments a heated porous silicon film is brought into contact with a patterned PDMS stamp. The stamp is then peeled from the film removing the porous Si from regions in contact with the film leaving behind a patterned structure. [1] The removed porous Si can be then be transferred from the PDMS stamp to other polymer films by this same contact and peel procedure to create patterned porous Si on polymer substrates. Details of our lithographic technique will be presented. We have also used this lithographic technique to create microscale and nanoscale patterned porous Si structures for a number of new applications including porous Si waveguides, amplified stimulated emission in waveguides, patterned Bragg mirrors and chemical sensors based on reflectivity and luminescence. Details of these applications will also be discussed. [1] Sirbuly D.J.; Lowman G.M.; Scott B.; Stucky G.D.; and Buratto S.K.: *Adv. Mater.* 15, 149 (2003).

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Date submitted: 07 Dec 2004

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