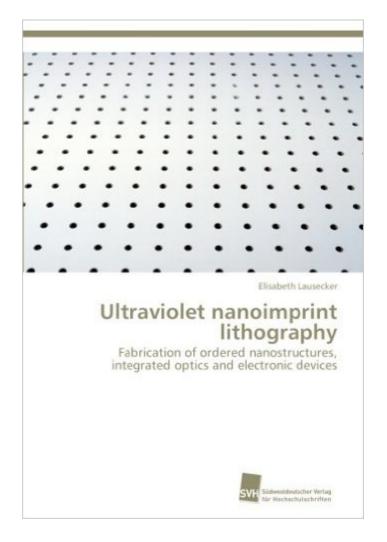
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## Ultraviolet Nanoimprint Lithography: Fabrication Of Ordered Nanostructures, Integrated Optics And Electronic Devices





## Synopsis

Nanoimprint lithography (NIL) is a lithographic technique that allows the patterning of substrates with nanostructures over large areas with high density. NIL relies on the simplicity of mechanically deforming a polymeric resist layer by a patterned mold. The author gives a detailed introduction to NIL and developed ultraviolet NIL for the pit-patterning of substrate surfaces. By combining the self-assembled growth of silicon-germanium (SiGe) islands by molecular-beam epitaxy with the pit-patterning of the Si substrate, an ordering of the islands is achieved. Both, a position-control of the SiGe islands and an improvement of their homogeneity and emission efficiency is accomplished. Moreover, the work towards integrating these ordered SiGe islands into a two-dimensional photonic crystal slab was pursued, demanding a second imprinted layer precisely aligned to the first one. Finally, self-aligned imprint lithography was developed at Princeton University, USA, for the fabrication of the first top-gate amorphous Si thin-film transistor. The book contains detailed descriptions of executed process steps.

## **Book Information**

Paperback: 276 pages Publisher: SÃf dwestdeutscher Verlag fÃf r Hochschulschriften (September 12, 2012) Language: English ISBN-10: 3838130804 ISBN-13: 978-3838130804 Product Dimensions: 5.9 × 0.6 × 8.7 inches Shipping Weight: 13.4 ounces (View shipping rates and policies) Average Customer Review: Be the first to review this item Best Sellers Rank: #8,045,531 in Books (See Top 100 in Books) #88 in Books > Arts & Photography > Graphic Design > Lithography #19993 in Books > Textbooks > Science & Mathematics > Physics #86710 in Books > Science & Math > Physics

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