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978-1-107-40865-4 - Ion-Beam-Based Nanofabrication: Materials Research Society

Symposium Proceedings: Volume 1020

Editors: Daryush ILA, John Baglin, Naoki Kishimoto and Paul K. Chu

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**MATERIALS RESEARCH SOCIETY
SYMPOSIUM PROCEEDINGS VOLUME 1020**

Ion-Beam-Based Nanofabrication

Symposium held April 10–12, 2007, San Francisco, California, U.S.A.

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Materials Research Society
Warrendale, Pennsylvania

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Cambridge, New York, Melbourne, Madrid, Cape Town,
Singapore, São Paulo, Delhi, Mexico City

Cambridge University Press
32 Avenue of the Americas, New York NY 10013-2473, USA

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9781107408654

Materials Research Society
506 Keystone Drive, Warrendale, PA 15086
<http://www.mrs.org>

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First published 2007
First paperback edition 2012

Single article reprints from this publication are available through
University Microfilms Inc., 300 North Zeeb Road, Ann Arbor, MI 48106

CODEN: MRSPDH

ISBN 978-1-107-40865-4 Paperback

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PREFACE

Symposium GG, "Ion-Beam-Based Nanofabrication," was held April 10–12 at the 2007 MRS Spring Meeting, in San Francisco, California.

Ion beam technologies now evidently offer a robust and highly versatile approach, both for commercial fabrication, and for nanometer-scale manipulation in research. The presentations during this two and a half day symposium emphasized applications of ion beams in nanoscale fabrication for custom tailoring of surface properties and features, and structures in 1-D, 2-D or 3-D, at resolution down to a few nanometers. Applications discussed included quantum dot arrays, nanopore membranes for DNA sequencing, bio-sensors and lab-on-chip devices, growth of nanowires, 3-D device integration, and high-density non-volatile memory. The presentations reported customized ion beam processing such as locally patterned surface functionalization to promote selective adhesion of cells in chosen arrays, or for biomedical implant materials; surface layer ultra-smoothing, by cluster ion bombardment; shallow implantation of dopants by ion clusters; induction of self-assembled surface ripples (a phenomenon of complex instability, whose full description is still eluding our best models); nanopore sculpting for electrophoretic DNA sequencing; growth of epitaxial nanowires on silicon; sculpting of intricate 3-D objects and arrays, including 'towers' with high aspect ratio; FIB-controlled growth of carbon nanotube devices; and ion implantation controlled development of silicon nanocrystals for photonic device applications.

The proceedings volume is divided according to the original sections of Symposium GG.

The organizers would like to take this opportunity to thank the sponsors, National Institute for Materials Science (NIMS), NASA, NEC, and MRS for providing financial support for this symposium.

Daryush ILA
John E.E. Baglin
Naoki Kishimoto
Paul K. Chu

July 2007

Cambridge University Press

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