PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 11612

, "Front Matter: Volume 11612," Proc. SPIE 11612, Advances in Patterning Materials and Processes XXXVIII, 1161201 (18 March 2021); doi: 10.1117/12.2595795

Event: SPIE Advanced Lithography, 2021, Online Only

PROCEEDINGS OF SPIE

Advances in Patterning Materials and Processes XXXVIII

**Daniel P. Sanders
Douglas Guerrero**
Editors

**22–26 February 2021
Online Only, United States**

Sponsored by
SPIE

Cosponsored by
TEL Tokyo Electron, Ltd. (Japan)

Published by
SPIE

Volume 11612

Proceedings of SPIE 0277-786X, V. 11612

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Advances in Patterning Materials and Processes XXXVIII, edited by Daniel P. Sanders,
Douglas Guerrero, Proc. of SPIE Vol. 11612, 1161201 · © 2021 SPIE
CCC code: 0277-786X/21/\$21 · doi: 10.1117/12.2595795

Proc. of SPIE Vol. 11612 1161201-1

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in *Advances in Patterning Materials and Processes XXXVIII*, edited by Daniel P. Sanders, Douglas Guerrero, Proceedings of SPIE Vol. 11612 (SPIE, Bellingham, WA, 2021) Seven-digit Article CID Number.

ISSN: 0277-786X
ISSN: 1996-756X (electronic)

ISBN: 9781510640573
ISBN: 9781510640580 (electronic)

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445
SPIE.org
Copyright © 2021, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$21.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/21/\$21.00.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIE. DIGITAL LIBRARY
SPIDigitalLibrary.org

Paper Numbering: *Proceedings of SPIE* follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

KEYNOTE SESSION

11612 05 **Nano-scale effects of selective spin-on deposition [11612-3]**

RESIST CHEMISTRY: JOINT SESSIONS WITH CONFERENCES 11609 AND 11612

11612 07 **Improved non-CAR type hemicellulose resists for EUV lithography [11612-5]**

MOR AND INFILTRATION METHODS: JOINT SESSIONS WITH CONFERENCES 11609 AND 11612

11612 08 **Development of metal-organic cluster based negative tone resist: pre-screened through the helium-ion beam prelude to extreme ultraviolet lithography (EUVL) applications [11612-7]**

11612 09 **Preventing method of volume expansion of polymer after metal infiltration [11612-8]**

11612 0A **Hybrid resist synthesis by ex-situ vapor-phase infiltration of metal oxides into conventional organic resists [11612-9]**

RESIST FUNDAMENTALS

11612 0C **Probing ion diffusion in chemically amplified resists through experiments and atomistic simulations [11612-11]**

11612 0D **Fundamental study of polymer dynamic behavior in resist processing [11612-12]**

11612 0E **Chemistry working for lithography: the Marangoni-effect-based single layer for enhanced planarization [11612-39]**

UNDERLAYERS AND DEFECT REDUCTION

11612 0F **Reducing the absorbance of a high etch resistant spin-on carbon hardmask [11612-15]**

11612 0G **Development of metal purifiers specific to lithography materials [11612-17]**

11612 0H **High performance filtration for bulk materials: a novel HDPE membrane filter designed for EUV lithography [11612-19]**

NOVEL RESIST CONCEPTS AND TRACK PROCESSES

- 11612 0I **Multidimensional process optimization of a negative e-beam photoresist for silicon-waveguide manufacturing** [11612-20]
- 11612 0J **Highly fluorinated alternating copolymers possessing high glass transition temperature and cross-linking capabilities under extreme UV radiation** [11612-21]
- 11612 0L **EUV resist performance enhancement by UV flood exposure for high NA EUV lithography** [11612-23]
- 11612 0M **EUV lithographic process enablement with novel litho track hardware** [11612-24]

DSA

- 11612 0N **Self-aligned double pattern process using DSA pattern** [11612-25]
- 11612 0O **Top-coats for scalable nano-manufacturing with high- χ block copolymers in lithographic applications** [11612-26]
- 11612 0Q **Spatial arrangement of block copolymer nanopatterns using photoactive homopolymer substrates** [11612-29]

POSTER SESSION

- 11612 0R **Analysis of dissolution kinetics of poly(4-hydroxystyrene) with different molecular weight distributions in alkaline aqueous solution using machine learning** [11612-30]
- 11612 0S **Next generation purification method for achieving low trace metals in ultra-high purity chemicals** [11612-31]
- 11612 0T **EUV defect reduction activities using coater/developer and etching technique** [11612-32]
- 11612 0U **High contact angle embedded barrier layer materials for next-generation 193 immersion lithography** [11612-33]
- 11612 0V **Enabling EUV pattern transfer by optimized under layer** [11612-34]
- 11612 0W **Sequential infiltration synthesis and pattern transfer using 6 nm half-pitch carbohydrate-based fingerprint block copolymer** [11612-35]
- 11612 0X **Optimization of point-of-use filtration for metal oxide photoresist** [11612-36]
- 11612 10 **Modeling the acid-catalyzed cleavage of carbon-oxygen bonds** [11612-38]