PROCEEDINGS OF SPIE

Nanoscale and Quantum Materials: From Synthesis and Laser Processing to Applications 2024

Andrei V. Kabashin Maria Farsari Masoud Mahjouri-Samani Editors

27–28 January 2024 San Francisco, California, United States

Sponsored and Published by SPIE

Volume 12874

Proceedings of SPIE 0277-786X, V. 12874

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

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 SPIEDigitalLibrary.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 Nanoscale and Quantum Materials: From Synthesis and Laser Processing to Applications 2024, edited by Andrei V. Kabashin, Maria Farsari, Masoud Mahjouri-Samani, Proc. of SPIE 12874, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510670082 ISBN: 9781510670099 (electronic)

Published by **SPIE** P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time) SPIE.org Copyright © 2024 Society of Photo-Optical Instrumentation Engineers (SPIE).

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 fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center 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.

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.



Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE 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

v Conference Committee

	LASER PROCESSING AND MODIFICATION OF NANOSCALE AND QUANTUM MATERIALS
12874 02	Nanofabrication and inspection of fuel capsules for inertial confinement fusion (Invited Paper, 3D Printing Best Paper Award in LASE) [12874-13]
12874 03	Laser-nanostructured substrates for enhanced hydrogen evolution reaction (Invited Paper) [12874-1]
12874 04	Mechanisms of laser-based synthesis and modifications of nanomaterials (Invited Paper) [12874-3]
12874 05	Laser written nitrogen vacancy centers in diamond integrated with transfer print GaN solid immersion lenses [12874-5]
	LASER-BASED ADDITIVE MICRO-NANOMANUFACTURING I
12874 06	Laser-made mechanical metamaterials: towards the development of 4D scaffolds for cell growth [12874-11]
1287407	Tuning Young's modulus in multiphoton lithography [12874-12]
	PHOTONIC PROPERTIES AND APPLICATIONS OF NANOMATERIALS
12874 08	Unconventional redox mechanism of gold surfaces revealed by sum frequency generation (Invited Paper) [12874-17]
12874 09	Optical spin injection and detection in submonolayer InAs/GaAs nanostructures [12874-19]
	SYNTHESIS AND CHARACTERIZATION OF NANOSCALE AND QUANTUM MATERIALS I
12874 0A	Laser-generated nanoalloys as theranostic and biodegradable platforms for cancer nanomedicine (Invited Paper) [12874-22]
12874 OB	Comparison of optical and photoacoustic response of laser-synthesized TiN nanoparticles [12874-25]

SYNTHESIS AND CHARACTERIZATION OF NANOSCALE AND QUANTUM MATERIALS II

12874 OC Fabrication and analysis of zirconium thin films on silicon (Si) by pulsed laser deposition [12874-29]