

PROCEEDINGS OF SPIE

Surface Engineering and Forensics

Akhlesh Lakhtakia
Satish T. Bukkapatnam
Editors

15–16 March 2023
Long Beach, California, United States

Sponsored and Published by
SPIE

Volume 12490

Proceedings of SPIE 0277-786X, V. 12490

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 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 *Surface Engineering and Forensics*, edited by Akhlesh Lakhtakia, Satish T. Bukkapatnam, Proc. of SPIE 12490, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510660878

ISBN: 9781510660885 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2023 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.

**SPIE. DIGITAL
LIBRARY**

SPIDigitalLibrary.org

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*

SURFACE TREATMENT AND CHARACTERIZATION II

12490 02 **Coloration of stainless-steel surfaces using magnetic abrasive finishing (Invited Paper)**
[12490-3]

SURFACE TREATMENT AND CHARACTERIZATION III

12490 03 **Hydrophilic surface morphology for intricate conductive coatings** [12490-6]

SURFACE TREATMENT AND CHARACTERIZATION VI

12490 04 **Alteration of optical Bragg phenomenon by substrate roughness** [12490-16]

SURFACE TREATMENT AND CHARACTERIZATION VII

12490 05 **Surface analyses of bitumen in a context of decarbonization: importance to introduce low frequency dielectric spectroscopy investigation (Invited Paper)** [12490-18]

SURFACE TREATMENT AND CHARACTERIZATION VIII

12490 06 **A sensor-based analytic approach for predictions of nanomachined surface profile variations via capturing temporal-spectral Acoustic Emission (AE) features for vibration-assisted Atomic Force Microscopic (AFM) based nanopatterning (Invited Paper)** [12490-20]

12490 07 **In-process surface metrology for thin film flexible electronic devices (Invited Paper)** [12490-21]