PROCEEDINGS OF SPIE

8th International Workshop on Reliability of NDT/NDE

Daniel Kanzler Norbert G. Meyendorf *Editors*

13–14 March 2023 Long Beach, California, United States

Sponsored by SPIF

Cooperating Organization International Committee for Non-Destructive Testing (Austria)

Published by SPIE

Volume 12491

Proceedings of SPIE 0277-786X, V. 12491

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 8th International Workshop on Reliability of NDT/NDE, edited by Daniel Kanzler, Norbert G. Meyendorf, Proc. of SPIE 12491, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510660892

ISBN: 9781510660908 (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.



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

V	Conterence Committee
	STANDARDIZATION
12491 02	NormPOD: a generalized POD approach: from ferritic welding to reinforced concrete structures [12491-2]
12491 03	Simple and multiple linear regression for probability of detection [12491-3]
	HUMAN FACTORS
	HOMAN TACTORS
12491 04	Inclusion of human factors in POD assessments: a theoretical approach [12491-6]
10401.05	
12491 05	An automatic system for categorizing and quantifying human factors [12491-7]
	APPLICATION IN INDUSTRY
12491 06	New approach for reliability assessment of guided wave-based structure health monitoring system on a pipe application [12491-11]
12491 07	Ways to unlock the potential of non-destructive concrete testing for the reliability assessment
	of our built environment [12491-12]
12491 08	Investigation of manufacturing techniques to develop controlled flaws for x-ray computed
	tomography reliability assessment [12491-13]
	JOINT SESSION WITH 12491 AND 12489
12491 09	Reliability evaluation of testing systems and their connection to NDE 4.0 [12491-17]
12491 0A	A simulation of probability of rejection as an aid to understanding the significance of sizing accuracy [12491-18]
	ucculacy [12471-10]

Conference Committee

Symposium Chairs

Anastasia Muliana, Texas A&M University (United States)
Wiesław M. Ostachowicz, The Szewalski Institute of Fluid-Flow Machinery (Poland)

Symposium Co-chairs

Haiying Huang, The University of Texas at Arlington (United States) **Hani E. Naguib**, University of Toronto (Canada)

Conference Chair

Daniel Kanzler, Applied Validation of NDT (AV-NDT) (Germany)

Conference Co-chair

Norbert G. Meyendorf, University of Dayton (United States)

Conference Program Committee

Abdeldjalil Bennecer, The University of Northampton (United Kingdom)

Marija Bertovic, Federal Institute for Materials Research and Testing (Germany)

Pierre Calmon, CEA Saclay DIGITEO (France)

Eric Cataldi-Spinola, SBB Swiss Federal Railways (Switzerland)

Younho Cho, Pusan National University (Korea, Republic of)

Francesco Falcetelli, Università degli Studi di Bologna (Italy)

David Forsyth, Texas Research Institute Austin, Inc. (United States)

Fermín Gómez Fraile, Asociación Española de Ensayos No

Destructivos (Spain) and European Federation for NDT (EFNDT) (Belgium)

Sylvia Kessler, Helmut-Schmidt University (Germany)

Felix Kim, National Institute of Standards and Technology (United States)

Bernard McGrath, Jacobs (United Kingdom)

Vamsi Krishna Rentala, Applied Validation of NDT (Germany)

Greg Selby, Electric Power Research Institute, Inc. (United States)

likka Virkkunen, Aalto University (Finland)