CubeSats, SmallSats, and Hosted Payloads for Remote Sensing VIII

Sachidananda R. Babu Thomas S. Pagano Jeffery J. Puschell Editors

18–19 August 2024 San Diego, California, United States

Sponsored and Published by SPIE

Volume 13146

Proceedings of SPIE 0277-786X, V. 13146

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 CubeSats, SmallSats, and Hosted Payloads for Remote Sensing VIII, edited by Sachidananda R. Babu, Thomas S. Pagano, Jeffery J. Puschell, Proc. of SPIE 13146, Sevendigit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510679528 ISBN: 9781510679535 (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

FLYING OR PLANNED EARTH FLIGHT INSTRUMENTS AND MISSIONS

- 13146 02 Payload development and validation for new spaceborne atmospheric observations: TROPICS and CREWSR (Invited Paper) [13146-1]
- 13146 04 Libera's wide-field-of-view camera for augmenting next-generation Earth radiation budget satellite observations [13146-4]

FUTURE EARTH INSTRUMENTS AND MISSION CONCEPTS

- 13146 05 Pyro-atmosphere infrared sounder (PIRS) airborne demonstration of the CubeSat infrared atmospheric sounder (CIRAS) [13146-8]
- 13146 06 Space-based sensors for extreme fire weather events [13146-9]

BEYOND EARTH MEASUREMENTS AND MISSIONS

- 13146 07 CLEW (compact lunar explorer for water): state of the art IR spectrometer for a lunar CubeSat orbiter [13146-14]
- 13146 08 Global mapping of lunar surface water and hydroxyl in context (Invited Paper) [13146-15]

ENABLING TECHNOLOGIES

- 13146 09 A miniaturized single-photon counting laser altimeter for space applications [13146-18]
- 13146 0A Design and control of a steering mirror for a free-space optical communications CubeSat for gigabit inter-satellite links [13146-19]
- 13146 0C Solar blind UV photodiodes with 100% internal quantum efficiency based on silicon direct band gap [13146-22]