

PROCEEDINGS OF SPIE

Sensing for Agriculture and Food Quality and Safety X

Moon S. Kim
Kuanglin Chao
Bryan A. Chin
Byoung-Kwan Cho
Editors

17–18 April 2018
Orlando, Florida, United States

Sponsored and Published by
SPIE

Volume 10665

Proceedings of SPIE 0277-786X, V. 10665

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 *Sensing for Agriculture and Food Quality and Safety X*, edited by Moon S. Kim, Kuanglin Chao, Bryan A. Chin, Byoung-Kwan Cho, Proceedings of SPIE Vol. 10665 (SPIE, Bellingham, WA, 2018) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510618411

ISBN: 9781510618428 (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 © 2018, 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 \$18.00 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/18/\$18.00.

Printed in the United States of America

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

v	<i>Authors</i>
vii	<i>Conference Committee</i>

SESSION 1 HYPERSPECTRAL AND MULTISPECTRAL IMAGING FOR FOODS

- | | |
|----------|---|
| 10665 02 | Study of visible imaging and near-infrared imaging spectroscopy for plant root phenotyping
[10665-1] |
| 10665 04 | Continuous gradient temperature Raman spectroscopy of unsaturated fatty acids: applications for fish and meat lipids and rendered meat source identification [10665-3] |

SESSION 2 SENSING FOR FOOD QUALITY AND SAFETY I

- | | |
|----------|---|
| 10665 09 | Detection of color dye contamination in spice powder using 1064-nm Raman chemical imaging system [10665-7] |
|----------|---|

SESSION 3 SENSING FOR FOOD QUALITY AND SAFETY II

- | | |
|----------|--|
| 10665 0C | Direct surface-scanning detection of pathogenic bacteria using a wireless biosensor
[10665-10] |
| 10665 0D | Capture and identification of Salmonella Typhimurium from large volumes of water using phage filter [10665-11] |
| 10665 0E | The combination of magnetoelastic (ME) wireless biosensing with surface swab sampling
[10665-12] |
| 10665 0F | Reconfigurable instrument for measuring variations of capacitor's dielectric: an application to olive oil quality monitoring [10665-13] |

SESSION 4 HIGH THROUGHPUT INSPECTION

- | | |
|----------|--|
| 10665 0G | Non-targeted and targeted Raman imaging detection of chemical contaminants in food powders [10665-14] |
| 10665 0J | Development of high speed dual-camera system for batch screening of aflatoxin contamination of corn using multispectral fluorescence imaging [10665-17] |

SESSION 5 VISIBLE AND NEAR INFRARED IMAGING FOR FOODS

- 10665 OK **Rapid and non-destructive detection of aflatoxin contamination of peanut kernels using visible/near-infrared (Vis/NIR) spectroscopy** [10665-18]
- 10665 OM **Miniature near infrared spectroscopy spectrometer and information and communication technologies to guarantee the integrity of the EU high added-value "acorn Iberian pig ham" (IP)** [10665-20]

POSTER SESSION

- 10665 ON **Isolation of highly selective phage-displayed oligopeptide probes for detection of *listeria monocytogenes* in ready-to-eat food** [10665-22]
- 10665 OO **Capture of bacterial pathogens in liquid streams by multiple layers of phage based bio-molecular filter** [10665-23]
- 10665 OR **Olive fruit ripening evaluation and quality assessment by hyperspectral sensing devices** [10665-26]
- 10665 OS **Kiwifruits ripening assessment by portable hyperspectral devices** [10665-27]
- 10665 OT **Non-destructive method to detect artificially ripened banana using hyperspectral sensing and RGB imaging** [10665-28]
- 10665 OU **Signal recovery for compressive spectrometers** [10665-29]
- 10665 OY **Study of near-infrared imaging spectroscopy for the inspection of peeled potato tubers** [10665-33]