

PROCEEDINGS OF SPIE

Millimetre Wave and Terahertz Sensors and Technology VI

Neil Anthony Salmon
Eddie L. Jacobs
Editors

24–25 September 2013
Dresden, Germany

Sponsored by
SPIE

Cooperating Organisations
Fraunhofer-Gesellschaft (Germany)

Published by
SPIE

Volume 8900

Proceedings of SPIE 0277-786X, V. 8900

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

Millimetre Wave and Terahertz Sensors and Technology VI, edited by Neil Anthony Salmon, Eddie L. Jacobs,
Proc. of SPIE Vol. 8900, 890001 · © 2013 SPIE · CCC code: 0277-786X/13/\$18 · doi: 10.1117/12.2035264

Proc. of SPIE Vol. 8900 890001-1

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Author(s), "Title of Paper," in *Millimetre Wave and Terahertz Sensors and Technology VI*, edited by Neil Anthony Salmon, Eddie L. Jacobs, Proceedings of SPIE Vol. 8900 (SPIE, Bellingham, WA, 2013) Article CID Number.

ISSN: 0277-786X

ISBN: 9780819497697

Published by

SPIE

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

Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

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Printed in the United States of America.

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Introduction

The 6th international conference in the Millimetre Wave and Terahertz Sensors and Technology conference series, as part of the SPIE Europe Security + Defence meeting (held in Dresden this year), presents continued innovations in technologies and their applications for this frequency band.

In this year's conference, commercial security screening portals are presented which operate actively over the 20-80 GHz band, showing some spectacular imagery and making headway with legislative authorities for screening. Also in the lower frequency part of the millimetre wave band a novel active system for the security screening of shoes is introduced to aid rapid throughput of passengers at airports. Polarimetric discrimination techniques from the active remote sensing community are being exploited for threat classification in security screening sensors, which only collect a small number of cross-range pixels over a subject. In the band of a few hundred GHz compact and closed-cycle cryogenically cooled focal plane array detectors are showing promising performance by offering large numbers of pixels with excellent noise performance. These would be well suited for stand-off security screening imagers. The use of Principal Component Analysis is proving useful in the analysis of terahertz (> 0.3 THz) spectra to provide a means to identify suspicious materials contained within letters and parcels, whilst VOx microbolometer cameras (initially developed for the infra-red band) are providing imagery at a few THz of contents. The technology provides a complementary detection capability to x-ray security screening systems for critical types of material. The development of terahertz technology for biomedical applications shows steady progress with interest in nano-particle probes to enhance terahertz signatures from organic tissue.

The conference will continue to push to present emerging technologies which increase system performance and drive down system costs whilst highlighting customer drivers and making known signatures, phenomenology and capabilities in the millimetre to terahertz band. The 7th international conference in this series will take place in Amsterdam 22th-25th September 2014.

Neil Anthony Salmon
Eddie L. Jacobs