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**Neil Anthony Salmon
Eddie L. Jacobs**
Editors

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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