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Sensing Technologies for Global Health, Military Medicine, and Environmental Monitoring IV

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Introduction

The 2014 SPIE Sensing Technologies for Global Health, Military Medicine, and Environmental Monitoring conference embraced a wealth of state-of-the-art information in basic and applied science. This event covered the latest developments in the following areas:

- Non-invasive Disease Diagnostics for Global Health— This opening series of two consecutive sessions focused on oral biospecimen based rapid assays and point-of-care devices for the detection of pathogens causing infectious diseases, biomarkers for cancer, and analytes for non-communicable diseases such as diabetes. They also covered presentations on the human proteasome and microbiome with linkage to human diseases and diagnostic approaches. The sessions were built on the past experience and expertise of the National Institutes of Health, National Institutes of Dental and Craniofacial Research.
- Military Medicine I: Traumatic Brain Injury and PTSD—This assembly covered oral-biomarker based diagnostics for brain damage and TBI as well as prevention and rehabilitation technologies. Neurorehabilitation and noninvasive neuromodulation were also discussed as critical approaches for effective functioning.
- Military Medicine II: Physiology and Medicine of Extreme Environments and Spaceflight—This scientific segment showcased physiological, pharmacological and diagnostic sensing methodologies during spaceflight per the National Aeronautics and Space Administration as well as military-relevant toxicans and future sensing trends per the Department of Defense. It also included latest technologies to determine hydration status in warfighters, eye surgery using the latest laser technologies, and sensing tools for blood analysis.
- Sensing Technologies for Disease Diagnostics and Environmental Monitoring—This closing series of two consecutive sessions provided the venues to learn and discuss more results on the next generation of diagnostic tools and field technologies for diseases, including biomarker detection by digital imaging, multiplex technologies, capillary electrophoresis and molecular platforms serving as labs-on-chips.

This conference allowed cross-fertilization of ideas, projects and collaborative work by a multidisciplinary audience of national and international colleagues from the academia, industry and federal government: The National Institutes of Health, National Aeronautics and Space Administration, and the Department of Defense.

In 2015, this conference will enhance its focus on Global Health as an encompassing umbrella to include sensing technologies at early, medium and advanced level of development and implementation for communicable and non-communicable diseases impacting public and military health.

The success of this conference lied in the compelling talks presented by distinguished speakers and the active and perceptive audience of colleagues who actively participated. The knowledge shared in this conference seeded projects that will translate into tangible and novel sensing tools to improve human health and quality of life. We look forward to enhancing the productivity and the success of this conference in 2015.

Šárka O. Southern
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