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Editors

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Introduction

The past twenty years have seen a massive investment in photonics, electronics and MEMS, aimed at developing new telecommunications capabilities and innovative consumer products. These investments have led to advances in miniature optics, light sources, tunable filters, array detectors, fiber optic sensors, and a range of other photonic devices, across the whole electromagnetic spectrum, along with technologies for their mass production. These and related advances are increasingly being exploited in new spectroscopic instruments.

Portable and handheld instruments are being developed that are often more sensitive and selective, smaller, cheaper, and more robust than their laboratory predecessors. Concurrent improvements in analytical theory, data analysis methods, and portable processors enable these spectroscopic devices to give specific answers to their non-specialist operators. Spectroscopy-based systems are now making critical judgments in environments and applications that were unreachable twenty years ago, from hazardous materials to the operating theater, and from field geologists to customs and border personnel.

Advances in array detectors (CCD, CID, InGaAs, InSb, MCT, etc.) are enabling a new generation of faster imaging spectrometers, with both laboratory and field applications. Again, advances in spectroscopic data processing are providing the ability to generate chemical-based images answers from the mass of data produced. Finally, spectrometers are being coupled to functionalized sensors to detect specific species.

This conference premiered at Optics East 2007 in Boston, MA and is now part of the SPIE Defense, Security, and Sensing Symposium. The emphasis of these Proceedings is on advanced technologies for spectroscopic instrumentation, particularly the IR, near-IR, and Raman molecular techniques. This two-day conference was divided into sessions focusing on applications of novel spectrometers, chemometrics, imaging, enabling technologies, and novel spectrometers. In all, over thirty papers were presented and we are pleased to be able to bring you twenty-four of them in these Proceedings.

On behalf of our program committee members, we hope that we can count on your participation in a future Next-Generation Spectroscopic Technologies conference.

Mark A. Druy
Christopher D. Brown
Richard A. Crocombe