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Edward W. Taylor
David A. Cardimona
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Introduction

The second SPIE Nanophotonics and Macrophotonics for Space Environments (NMSE II) proved to be a well-attended conference since, in part, it was an outgrowth from the previous SPIE Photonics for Space Environments I–XI conferences. The synergism of nanotechnology and photonics for addressing and advancing space applications was clearly evident and has proven to be an excellent choice for this conference, providing a unique and useful forum.

A large number of invited papers were presented as well as two excellent keynote presentations by Dr. Charles Lee of the Air Force Office of Scientific Research and Dr. Thomas Caudill of the Air Force Research Laboratory, Space Vehicles Directorate. Dr. Lee's talk dealt with his portfolio of organic materials research, and Dr. Caudill described the monumental problems inherent in the requirements of Space Situational Awareness (being aware of everything in space, all the time). As in the first NMSE conference, this year there were quite a few papers on the effects of ionizing radiation on photonic materials and devices (including quantum-dot-based solar cells, self-cleaning optical coatings, germanium-nanocrystal-based electronic devices, radiation-hardened-by-design readout integrated circuits, rare-earth-doped optical fibers, LEDs, and various laser and optical elements). The other large group of papers this year described novel photonic devices that could be used in space to improve the performance of sensor systems (including low-noise InGaAs p-i-n photoreceivers, surface-acoustic-wave quantum well photodetectors, nanowire-based IR focal plane arrays, quantum dot IR detectors, and enhanced IR absorption in photonic crystals). We also had a couple of very interesting papers on optical fibers: one describing the incorporation of noble metal nanoparticles, and one describing the qualification and integration of a fiber array for the Lunar Reconnaissance Orbiter. Unlike last year, this year there were only a couple of papers on polymer photonic devices: an antireflective coating for polymer optics, and a hybrid electro-optic polymer/sol-gel modulator.

We look forward to the next convening of the SPIE NMSE conference and expect that additional and advanced nano-, micro- and macrophtonic areas of research and development will be presented and continue to expand and improve the conference objectives.

The chairs wish to thank the SPIE NMSE II program committee, speakers, session chairs, and especially the SPIE staff for their many contributions to making the NMSE II conference a success.

Edward W. Taylor
David A. Cardimona