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Optical Medical Imaging Standards

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The optical medical imaging community has made slow but steady progress in the translation of optical bench instruments to implementation in the clinic as diagnostic devices. In order to facilitate this translation process and give clinicians relatively low-cost noninvasive devices to aid in monitoring patient health and disease state, it is necessary for the various people involved in this process—from the optical systems inventors, to the clinical end users as well as the device regulator—to have the capability to assess technologies with tools of scientific rigor. It becomes apparent, for all imaging technologies, that measurement standards are needed to expedite clinical translation.

A Workshop on Standards for the Advancement of Optical Medical Imaging was convened at the Gaithersburg campus of the National Institute of Standards and Technology on 26–27 August, 2014. The workshop was attended by a broad swath of the optical medical imaging community. These included optical device developers from small groups and large companies, clinicians highlighting problem case studies, as well as regulatory agency representatives. Papers contributed to that meeting, as well as related papers, were submitted to this special section of the *Journal of Biomedical Optics* (JBO) and underwent rigorous peer review. The workshop as well as this special section focuses on methodologies that

lead to solutions of standardization problems encountered in optical medical imaging.

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David W. Allen is a research chemist at NIST and is currently responsible for the advancement of spectral imaging standards related to medicine, safety, and environmental applications.

Jeeseong Hwang is a research biophysicist at NIST, working on measurement science and standards in biophotonics for quantitative biophysics and optical medical imaging. Previously, he worked on nanoscale bioimaging research jointly at the Johns Hopkins University and AT&T Bell Laboratories. He serves professional societies including IEEE-Nanotechnology, SPIE BIOS, and ISO. His recent awards include a US/DoC Silver Medal and the Washington Academy of Sciences in Biological Sciences.

Maritoni Litorja is a research chemist at NIST working on tools for dissemination of the SI in optical technologies for metrology of dimensions (length) and substance quantification. She works on applications of measurement science in diverse areas encompassing biomedicine, forensics, and climate research. She is part of the NIST team to receive the US/DoC Gold Medal in 2013 “for overcoming longstanding challenges in ensuring the accuracy of the longest unbroken satellite climate record through rigorous measurement science.”