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Since its invention, holography has been valued for its great potential in 3-D imaging and display. Huge efforts have been spent to investigate and develop it as a real 3-D tool. At the same time, during the pioneering age of holography in the 1970s, the research community was aware that holography had potential in metrology thanks to the invention of holographic interferometry.

From the seeds of holography and holographic interferometry, a number of interesting related research fields blossomed, wherein many groups in industry and academia started harvesting good fruits for many practical applications that impact our everyday life (e.g., 3-D measurement of displacement/deformations; engineering metrology; biology; medicine; nondestructive testing of materials; engineering design and quality control of products in automotive, aerospace, and manufacturing; embossed holograms to deter counterfeit currency; head-up displays; microscopy; data storage; etc.). The movement toward research and development in holography was renewed by the advent of digital devices for recording and display, such as charge-coupled diodes, complementary metal-oxide semiconductor cameras, high-speed computers, and liquid crystal spatial light modulators. In fact, the simultaneous availability of numerical processing capability offered by computer processors joined with digital detectors has opened new scenarios and perspectives in the fertile soil of holography. Holography and related fields (such as speckle, interferometry, etc.) are still prominent research topics that see huge numbers of groups working worldwide.

This special section on practical holography presents the latest achievements in holography and related topics with special emphasis on practical aspects in experimental as well as numerical processing. A total of 16 quality papers are included, which cover a broad range of diversified application fields such as biomedicine, mechanics, microscopy, displays, imaging, photopolymers, extension of holography

to the midinfrared spectrum region, nondestructive testing, etc. Moreover, this collection includes a couple of papers that review recent accomplishments in 3-D profile tracking and extension of depth of focus in microscopy, which are especially suited for the emerging field of lab-on-chip devices for biomedicine and microfluidics.

Finally, we are particularly proud to include a paper by Karl A. Stetson on the study of clarinet reeds by using digital holography because the last quarter of 2014 marks the 50th anniversary of a set of experiments Robert Powell and Karl A. Stetson performed at the University of Michigan's Institute of Science and Technology that led to the invention of holographic interferometry. His paper gives us the chance to celebrate here that important date in conjunction with a richness of recent research papers and young emerging investigators who contributed to this topic.

Angarai R. Ganesan has been an associate professor in the Department of Physics at the Indian Institute of Technology Madras since June 2006. He received his PhD from the same Institute in 1989. He is a recipient of the coveted Alexander von Humboldt fellowship from Germany. He has published 1 book on optics and more than 75 papers in journals and conferences. His areas of research include holography, speckle metrology, optical instrumentation, fiber-optic sensors, adaptive optics, and vision science. He has been the principal investigator for several sponsored projects. He is an associate editor of *Optical Engineering* and a Fellow of the Optical Society of India.

Pietro Ferraro is currently the director of the Napoli Unit of Istituto Nazionale di Ottica del CNR, Pozzuoli, Italy. Previously he worked as a principal investigator with Alenia Aeronautics. He has published 12 book chapters and more than 200 papers in peer-reviewed journals. He edited two books and holds 14 patents. His scientific interests include holography, interferometry, biomedical optics, microscopy, fabrication of nanostructures, ferroelectric crystals, fiber Bragg grating sensors, nanomicrofluidics, and optofluidics. He is a topical editor of *Optics Letters*, the *Journal of Display Technology*, *Optics and Lasers in Engineering*, and *Measurement Science and Technology*. He is a Fellow of SPIE and OSA.