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Emerging Digital Micromirror Device Based Systems and Applications V

**Michael R. Douglass
Patrick I. Oden**
Editors

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Introduction

We are once again pleased to have chaired a MOEMS/MEMS conference at SPIE Photonics West 2013. For the fifth year, our conference on Emerging DMD-Based Systems and Applications V was an exciting forum for presenting and networking with colleagues in this internationally recognized symposium.

The Digital Micromirror Device (DMD) was conceived at Texas Instruments in 1987, following a decade of work on analog deformable-mirror and cantilever-mirror devices. This particular MOEMS device has been applied most famously to conference room and portable projectors, large-screen high-definition televisions, and digital cinema projection systems, all of which were enabled by DLP® technology.

As evidenced in this well-attended conference at Photonics West 2013, the DMD and associated development platforms are enabling many exciting new systems and applications beyond the traditional display technologies. The goal of this conference was to bring together scientists, technologists, and developers working on applications in these emerging markets. In that regard, it was a rousing success. In these proceedings, you will find 24 very interesting papers covering a wide range of applications. We categorized them into 7 separate sessions.

Session 1 – Biomedical Imaging and Cell Manipulation using a DMD or MEMS Array I
Session 2 – Biomedical Imaging and Cell Manipulation using a DMD or MEMS Array II
Session 3 – Spatial Light Modulators – Applications (Additive Manufacturing)
Session 4 – Spectroscopy and Hyperspectral Imaging
Session 5 - 3D Measurement Systems Using Structured Light
Session 6 – Beam Shaping and Special Image Encoding
Session 7 – Advanced and Immersive Displays.

Sessions 1 and 2 were joint sessions with BIOS conference 8587, "Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues." This provided some great interaction between BIOS and MEMS conferences highlighting ways to use MEMS to improve medical research.

Our four invited authors are considered experts in their fields and we are honored that they participated in our conference. They and the other authors shared their progress on developing new applications using a DMD to process and manipulate light.

We want to thank our program committee for the great work they did developing the conference theme, finding all these wonderful speakers, and organizing the papers into a cohesive structure. Special thanks go to the session chairs for working with their authors, coordinating the conference and keeping it on schedule. And of course extra special thanks to the authors who did a fantastic job presenting their subjects in an interesting and passionate way. You made the conference a success.

We also want to thank Dr. Harald Schenk and Dr. David Dickensheets (symposium chair and cochair) for their support and guidance. And of course thanks to the SPIE staff for keeping us on task.

If you were able to attend the conference, we know you enjoyed it and are looking forward to reading more about these interesting DMD applications. For those that did not attend, we hope you enjoy reading the papers as well. Keep those innovations coming; who knows what might be around the next corner.

Michael R. Douglass
Patrick I. Oden