

2nd International Conference on **Smart Materials & Structures**

February 29-March 02, 2016 Philadelphia, Pennsylvania, USA

Novel technologies and future developments of MEMS-based displays

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Display technologies in mobile, tablet, laptop, desktop and TV have been used from day to day. As a new member of display technologies, microelectromechanical systems (MEMS)-based displays, compared with traditional display mode like LCD and OLED, show merits on optical performance, color performance and energy-saving. In this talk, different display modes of available MEME-based display technologies, such as digital micromirror device (DMD), digital micro-shutter (DMS), interferometric modulator display (IMOD), time multiplexed optical shutter (TMOS) and grating light valve (GLV) and their operational concepts as well device principals for transmissive, reflective and projection displays are presented. These devices are achieved by controlling light by transmittance, reflective or diffraction behaviors. The issues in the reliability tests are stressed and the solution for these problems are presented. The challenge and new opportunities on material science involved in MEMS technologies are proposed.

Biography

Ji Ma received PhD at Changchun Institute of Optics, Fine mechanics and Physics, Chinese Academy of Sciences in 2006 and his BS at Changchun University of Science and Technology in 2000. Currently, he is a Group Lead and Senior R&D Scientist at Qualcomm Inc. for MEMS-based display technology. He is also active at Liquid Crystal Institute, Kent State University for novel display technologies from 2008. He has been working in liquid crystal displays and MEMS displays in both academia and industry. He has published 3 book chapters, more than 40 peer-reviewed papers and more than 20 patents.

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