



## Online Registration

Please register on or before  
7<sup>th</sup> April 2016, Thursday



# A Technology for Monolithic MEMS-CMOS Integration and Its Application to the Realization of an Active-Matrix Tactile Sensor

<b>Speakers:</b>	<b>Prof. Man Wong</b> Professor, Department of Electronic & Computer Engineering, HKUST
<b>Date:</b>	<b>7 April 2016, Thursday</b>
<b>Time:</b>	<b>11:00 am – 12:00 pm (Registration starts at 10:45am)</b>
<b>Venue:</b>	<b>Room 501 – 502, 5/F, Photonics Centre, 2 Science Park West Avenue, Hong Kong Science Park, Shatin, Hong Kong</b>
<b>Language:</b>	English
<b>Online Registration:</b>	<a href="http://www.astri.org/registration-form/?pid=14510">http://www.astri.org/registration-form/?pid=14510</a>

## Speaker's Biography



**Prof. Man Wong** was born in Beijing, China. From 1979 to 1984, he studied at the Massachusetts Institute of Technology, USA, where he obtained his BS and MS degrees in Electrical Engineering. From 1985 to 1988, he was at the Center for Integrated Systems at Stanford University, USA, where he worked on tungsten-gate MOS technology and obtained his PhD degree, also in Electrical Engineering. From 1988 to 1992, he was with the Semiconductor Process and Design Center of Texas Instruments, USA and worked on the modeling and development of integrated-circuit metallization systems and dry/vapor surface-conditioning processes. He is currently with the Department of Electronic and Computer Engineering at the Hong Kong University of Science and Technology, Hong Kong. His research interests include micro-fabrication technology, device structure and material; physics and technology of thin-film transistor; organic light-emitting diode display technology; modeling and implementation of integrated micro-systems; and thin-film solar cell device and process technology. He is a member of Tau Beta Pi, Eta Kappa Nu and Sigma Xi. He was appointed an Honorary Guest Professor of Nankai University, Tianjin, China, in 2003; a Visiting Professor of Soochow University, Suzhou, China, in 2011; a Distinguished Visiting Professor of the State Key Laboratory of Transducers Technology at the Institute of Microsystems and Information Technology of the Chinese Academy of Sciences, Shanghai, China, in 2015; and a Visiting Professor of Xiangtang University, Xiangtang, China, in 2015.

## Abstract

Presently described is an application of a technology based on the surface-migration of silicon for the monolithic integration of micro-mechanical devices and complementary metal-oxide-semiconductor (CMOS) electronic circuits. A cavity sealed with a cover-diaphragm is first formed without a sacrificial layer etch. The electronic devices are next fabricated. The issues of material- and process-incompatibility inherently present in many integration schemes are largely avoided. A 16×16 active-matrix tactile sensor integrating 256 force-sensing diaphragms, 512 pixel transistors and 512 piezo resistors was designed, realized and characterized. The spatial resolution of the sensor was ~145 “pixels per inch” and the pressure sensitivity was ~0.07  $\mu\text{V}/\text{V}/\text{Pa}$ .