

# Precision Instrumentation Design for Nanomanufacturing Applications

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**Thursday May 14, 2015**  
**4pm – 5pm**  
**SMART Enterprise Wing Level 5,**  
**Perseverance Rooms 1 & 2**

This seminar will present the development of several new precision and optical instrumentations through the application of precision engineering principles including design/modeling of compliant mechanisms, implementation of control, and optics. Three projects will be presented: (1) design of a flexure-based roll-to-roll machine for printing flexible electronics with 100nm resolution, (2) development of a precision vacuum imprinting system for fabricating micro-lens arrays on curved substrates, and (3) development of a 3-D resolved parallel laser machining system based on ultrashort pulse lasers and temporal focusing. The presentation will be concluded with future research directions, including issues relating to ultra-precision machine design and applications of femtosecond lasers for imaging and material processing.



Dr. Shih-Chi Chen received his B.S. degree in Mechanical Engineering from the National Tsing Hua University, Taiwan, in 1999. He received his S.M. and Ph.D. degrees in Mechanical Engineering from the Massachusetts Institute of Technology, Cambridge, in 2003 and 2007, respectively. Following his graduate work, he entered a post-doctoral fellowship in the Wellman Center for Photomedicine, Harvard Medical School, where his research focused on biomedical optics and endomicroscopy. He is currently an Assistant Professor in the Department of Mechanical and Automation Engineering at the Chinese University of Hong Kong (CUHK). Before joining CUHK, he was a Senior Scientist at Nano Terra, Inc., a start-up company founded by Prof. George Whitesides at Harvard University, to develop novel methods and instruments for the control of various interface functionalities and soft lithography. His current research interests include precision engineering, biomedical devices/optics, microcontact printing, and nanomanufacturing. Prof. Chen is a Member of the American Society of Mechanical Engineers (ASME) and the American Society for Precision Engineering (ASPE). He is the recipient of a 2003 R&D 100 Award for the design of a microscale six-axis nanopositioner.