

**DANIEL J. EPSTEIN DEPARTMENT OF  
INDUSTRIAL AND SYSTEMS ENGINEERING**

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**EPSTEIN INSTITUTE SEMINAR • ISE 651 SEMINAR**

***Biomedical Design and Manufacturing – A New  
Frontier of Interdisciplinary Research to  
Transform Healthcare and Aging Society***

**Dr. Albert Shih**

**Professor, Mechanical Engineering, Biomedical Engineering  
University of Michigan**

**ABSTRACT**

Healthcare and aging society are two grand and interconnected challenges, but also the great opportunities for engineering – particularly the design and manufacturing – as the frontier and a key, integral part to provide system solution. This talk starts with the needs in healthcare demonstrated by a person's journey in the current healthcare system to show the complex and dynamic interactions across the three levels – social, healthcare provider, and personal. The overlapping needs in the aging society for reconfigurable, personalized, and socially adoptable assistive devices and systems are then elaborated. Examples of our prior research projects in pathology tray system, needle-based devices, surgical thermal management system, and geriatric assistive devices and systems are presented to demonstrate how the design and manufacturing research and education can link with each other and make an impact in the future healthcare. An introduction of the Medical Innovation Center (MIC) with close collaboration of engineering, medical, and business schools will also be presented.

**TUESDAY, SEPTEMBER 13, 2011  
ELECTRICAL ENGINEERING BLDG ROOM 248  
4:00 – 5:20 PM**

## **BIO**

Albert Shih, Professor, Mechanical Engineering, Biomedical Engineering, Associate Director of the Medical Innovation Center, Acting Director of Manufacturing Engineering, University of Michigan at Ann Arbor. After received his PhD degree at Purdue, Dr. Shih worked at Cummins Inc. at Columbus, Indiana as a manufacturing engineer to develop advanced machining process for a wide variety of diesel engines and fuel systems applications. From 1998 to 2002, he was Associate Professor in the Department of Mechanical and Aerospace Engineering, North Carolina State University. He joined University of Michigan (UM) in 2003. Dr. Shih's research and teaching interests are in design and manufacturing. He has conducted research in precision machining of advanced materials, precision machine design, non-contact optical metrology, electrical discharge machining, semiconductor ceramic machining, and friction stir joining. Currently, Professor Shih's research and teaching focus are in biomedical design and manufacturing - the application of advanced design and manufacturing technology to advance medical devices, healthcare operations, and patient safety. He works closely with collaborators in the Medical School and is a co-founder of the Medical Innovation Center. Professor Shih is the Fellow of ASME and SME. He is the recipient of the 1999 ASME BOSS Award, 2000 NSF CAREER Award, 2004 SAE Ralph Teetor Education Award, 2009 Fulbright Scholar, 2010 UM Rackham Faculty Recognition Award, and 2011 UM College of Engineering Research Award.