



# IEEE

## Ottawa Section



*The IEEE Ottawa Antennas and Propagation Society and Microwave Theory & Techniques Society (AP/MTT) Joint Chapter, Electromagnetic Compatibility (EMC) Chapter, Components, Packaging and Manufacturing Technology (CPMT) Chapter, Communications Society, Broadcast Technology Society, and Consumer Electronics Society (ComSoc/BTS/CES) Joint Chapter, Engineering Medicine and Biology (EMB) Chapter, Vehicular Technology (VT) Chapter, Aerospace and Electronic Systems (AES) Chapter, IEEE Ottawa Section (OS), and Department of Electronics at Carleton University (DoE Carleton) are inviting all interested IEEE members and other engineers, technologists, and students to the IEEE MTT-S Distinguished Lecture.*

**DATE:** Wednesday, September 18, 2013.

**TIME:** 2:00 pm – 4:00 pm.

Refreshments and Networking: 2:00 pm – 2:30 pm.

Seminar: 2:30 pm – 4:00 pm.

**PLACE:** Carleton University, Department of Electronics (DoE), Mackenzie Engineering Building, Room ME 4124, 1125 Colonel By Drive, Ottawa, Ontario, Canada.

**ADMISSION:** Free. Registration required. To ensure a seat, please contact Qingsheng Zeng ([qingsheng.zeng@crc.gc.ca](mailto:qingsheng.zeng@crc.gc.ca))

## Implantable Wireless Medical Devices and Systems

by

Prof. J. C. Chiao

Department of Electrical Engineering  
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### Abstract

The presentation focuses on the development of wireless micro devices and systems for medical applications at UT-Arlington. They are based on technology platforms such as wireless energy transfer for batteryless implants, miniature electrochemical sensors, nanoparticle modified surfaces, MEMS devices and wireless communication. An integrated wireless body network for chronic pain management will be discussed. The system provides a wireless closed loop for neurorecorders to recognize pain signals and neurostimulators to inhibit pain. Batteryless endoluminal sensing telemeter architecture will also be discussed with an esophagus implant for remote diagnosis of gastroesophageal reflux disease (GERD), an endoscopically-implantable wireless gastro-stimulator for gastroparesis management, and a wireless bladder volume monitoring implant for urinary incontinence management. These applications enable new medicines to improve human welfare and assist better living.

### Speaker's Bio



J.C. Chiao is Greene endowed professor and Garrett endowed professor of Electrical Engineering at University of Texas – Arlington; and an Adjunct Associate Professor in the Internal Medicine Department at UT-Southwestern, Medical Center.

Dr. Chiao received the 2011 O'Donnell Award in Engineering presented by The Academy of Medicine, Engineering and Science of Texas (TAMEST). He also received the 2011 Tech Titan Technology Innovator Award; 2011 Lockheed Martin Aeronautics Excellence in Engineering Teaching Award; 2012 Research in Medicine milestone award by Heroes of Healthcare; and 2012 IEEE Region 5 Outstanding Engineering Educator award. His webpage is at

<http://www.uta.edu/faculty/jcchiao/>.