



学术讲座

报告人：吴文中教授 台湾大学

时间： 12月27日（周四），上午9:00-10:30

地点： 物理馆502会议室

邀请人：张晓青教授 物理科学与工程学院



Micro Piezoelectric Vibration Energy Harvesters and Sensors and Actuators utilizing Piezoelectric Thick Film and Electret Materials

Abstract

The piezoelectric micro energy harvesters (PMEH) or so called MEMS generators which can scanvege power from ambient vibrations has been an important research topic in the past decade. With the advancement of PMEH and also SOC (system on chip) or SIP (system in package) integrated circuit technologies, it is possible to see a self-powered SOC or SIP in near future. In this presenation, the aerosal deposition method and the characterization of the piezoelectric thick-films deposited will be detailed. The transducer design, piezoelectric material selection, and also the fabrication processes of using stainless steel substrates instead of conventional silicon substrates will be detailed. The latest results show that the bimorph PMEH fabricated in the dimension of 6 mm by 9 mm with two 10 μm thick PZT active layers has a maximum output power of 304 μW tested with optimal load under 0.5 g acceleration vibration level in resonant frequency around 120 Hz. A self-powered wireless sensors demo power by the PMEH. The highlights of recent research activies of our research group, including sensors and actuators applications utiiling piezoletric thick film and electret materials will also be presented in this talk.

Curriculum vitae

Wen-Jong Wu is currently Professor with Department of Engineering Science and Ocean Engineering, Taiwan University, Taipei, Taiwan. Wen-Jong Wu got his Ph.D degree in Institute of Applied Mechanics from Taiwan University. He joined Department of Engineering Science and Ocean Engineering, Taiwan University as Assistant Professor since 2003, has been Associate Professor since 2010, and has been Professor since 2014. From 2007 to 2008, he was with Department of Mechanical and Aerospace Engineering, Cornell University, NY USA as a visiting assistant professor. He is currently associate editor of *Smart Materials and Structures*. His research interests are in piezoelectric power transducer, vibration energy harvesting, wireless sensor networks, and flexible electronics.