

**Purdue
School of Materials
Engineering**

Presents

**Peter G. Winchell
Distinguished
Lecture Series**

Seminar

Date: Monday,

Sept. 24, 2012

Time: 3:30 – Seminar

Place: ARMS 1010

4:45 – Refreshments

Armstrong Atrium



**Infinite
Possibilities**

Professor Yet-Ming Chiang

Kyocera Professor

Massachusetts Institute of Technology

Dept. of Materials Science & Engineering



**Materials Research for Electrochemical Storage
at Transportation and Grid Scales**

ABSTRACT

The ability to store electrical energy efficiently, economically, and at large scale is a critical unmet need in the drive towards energy independence and a low carbon economy. The advances in battery technology that have led to rapid growth of hybrid and electric transportation over the past decade have been fundamentally enabled by materials innovations. It is now recognized that energy storage will be equally critical to the growth of renewable energy technologies and the development of a “smart grid.” This talk will first discuss the advancements in battery technology that have enabled in succession HEVs, PHEVs, and EVs, as well as electric grid applications of surprisingly large scale (multiple MW). The barriers that still remain before truly widespread adoption of electric transportation and grid storage can be achieved, and some possible solutions, will be discussed.

SHORT BIO

Yet-Ming Chiang is Kyocera Professor in the Department of Materials Science and Engineering at Massachusetts Institute of Technology (MIT). He holds S.B. and Sc.D. degrees from MIT, where he has been a faculty member since 1984. His work focuses primarily on advanced materials and their role in clean energy. He is a member of the U.S. National Academy of Engineering, and a Fellow of the American Ceramic Society and the Materials Research Society. He has received the American Ceramic Society’s Ross Coffin Purdy, R.M. Fulrath, and F.H. Norton Awards. He has published over 200 scientific articles, one textbook, and holds about 35 issued patents and a similar number of pending patent applications.

In addition to his academic research, Chiang has throughout his career devoted continuous effort to the commercialization of technology based on research from his MIT laboratory. He has co-founded four companies: American Superconductor Corporation (NASDAQ: AMSC), A123 Systems (NASDAQ: AONE), SpringLeaf Therapeutics, and 24M Technologies. Of these, three are in the area of energy technology (Am. Super., A123, and 24M) and three grew out of research in batteries (A123, SpringLeaf and 24M).

Chiang also serves on numerous government and private advisory committees and study panels, including the U.S. Department of Energy’s Energy Efficiency and Renewable Energy Advisory Committee (ERAC) and Basic Energy Sciences Advisory Committee (BESAC), the Basic Energy Sciences’ Materials Science Division’s Materials Council, Princeton University’s Andlinger Center for Energy and Environment, and the Stanford Institute for Materials and Energy Sciences (SIMES). He also promotes the cause of electrochemistry and its role in energy technologies through frequent lectures to non-scientific audiences, and through his work on science and engineering education as a Trustee of the Boston Museum of Science.