

**STEVENS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING**

Wednesday March 29, 2006
Carnegie Bldg, Room 315, 11:30 am

Harvesting Energy Using Piezoelectric Materials

Professor Karla Mossi

Assistant Professor, Department of Mechanical Engineering
Virginia Commonwealth University

Wireless, powerless devices that can detect, and transmit information have become part of an increasing field. Advances in MEMS, NEMS sensors and actuators as well as nanotechnology, greatly reduces the need for energy. The feasibility to power sensors and actuators at small scales has been proven with the use conventional battery power. The issue resides in being able to collect, store, and transmit information from many sensors to a central location. A wireless sensor is simply not cost effective unless it can maintain a long battery life or harvest energy from another source. Piezoelectric materials are viable energy harvesting device source for a wireless sensor because of their inherent ability to detect vibrations. Currently a wide variety of piezoelectric materials are available and the appropriate choice for sensing, actuating, or harvesting energy depends on their characteristics and properties. This talk focuses on methods of energy harvesting using piezoelectric materials or composites and factors that may affect their performance.

Dr. Karla Mossi obtained her undergraduate degree from Honduras and masters and Ph.D. from Old Dominion University. Her graduate work was in collaboration with NASA Langley Research Center on piezoelectric composites for airflow control applications. She continued her work in industry working in the manufacturing of piezoelectric composites at Face International at Norfolk, VA where she headed the R&D department. In 2001, she joined the faculty of Mechanical Engineering at Virginia Commonwealth University establishing a smart materials laboratory where she continues working with piezoelectric materials.