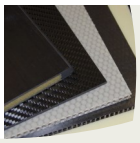
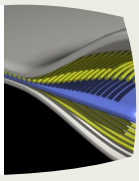




Presented By:
Ya Wang, Ph.D.
Assistant Professor
Mechanical Engineering
State University of New York

UCI Samueli School of Engineering

Department of Civil and Environmental Engineering

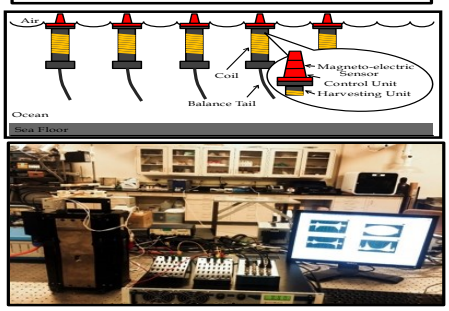
Civil Engineering
Seminar Series

Wednesday, June 1st, 2016
Colloquia Room (EH2430)
3:00PM to 4:00PM

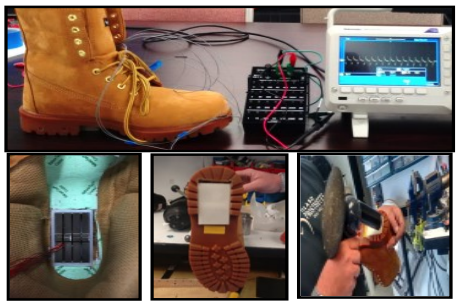
Broadband-Energy-Harvesting Driven by Low-Frequency Ambient Vibrations

Ambient vibrations have a broadband nature and are particularly rich in the low-frequency regions. This talk introduces energy harvesting driven by ambient vibrations using piezoelectric and magneto-restrictive materials. The harvesting principles are elaborated and illustrated through several applications, including an ocean wave energy converter with tunable resonance, a broadband nonlinear magneto-electric energy harvester, and a footstep energy harvester with deformable frame. The amount of energy may not be large, but sufficient for powering wireless sensor nodes, elastomer actuators, wearable electronics, medical devices etc. This presentation also discusses the synthesis of Au-$_m$SiO$_2$ coated magnetic nanoparticles and their potential applications in hyperthermia cancer treatment and bone regeneration.

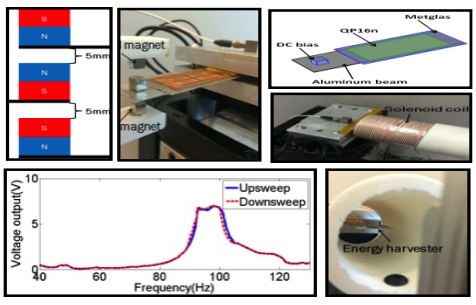
Wave Energy Harvester



Footstep Energy Harvester



Magneto-electric Harvester



Dr. Ya Wang is an Assistant Professor at the Department of Mechanical Engineering, State University of New York, Stony Brook (2013 - date). Before then, she was a Postdoc Research fellow at the Department of Aerospace Engineering, University of Michigan (2012 - 2013). She received her Ph.D. (2007 – 2012) in Mechanical Engineering from Virginia Tech under the supervision of Prof. Daniel J. Inman. Dr. Wang is active in research involving smart materials and structures as applied to sensing, energy harvesting, and control. Her work has been sponsored by AFOSR, DOE-ARPA-E, ONR, UTRC, NY State and local industrials. Dr. Wang was awarded 2015 Special Congressional Recognition. She has authored 1 book chapter, 18 journal papers and 22 conference proceeding papers. She is an editorial board member for the International Journal of Mechanical Systems Engineering.

Questions? - cee@uci.edu - (949) 824-7548