

Energy Harvesting: From Technologies to Applications

BY Prof. Lei Zuo

*Dept. of Mechanical and Aerospace Engineering
State University of New York at Stony Brook*

ABSTRACT: Extensive research has been done in the past ten years on the energy harvesting. Most the work is on small scale with promising but limited applications like wireless sensors. In this seminar the speaker will present his unique efforts and recent results on large scale energy harvesting and applications. After a brief background overview, we will first discuss the kinetic energy harvesting, including energy harvesting semi-active of vehicle suspensions, energy harvesting from railway track, energy harvesting and vibration control of tall buildings, and ocean wave energy harvesting. Then we will talk about thermoelectric materials and applications to energy harvesting from the heat of vehicle exhaust and nuclear reactors. Vibration energy harvesting based on piezoelectric materials will also be discussed in which we stress our strategies of increasing the harvesting power and achieving simultaneous vibration control.

BIOGRAPHY: Lei Zuo completed his PhD in Mechanical Engineering from MIT in 2004 and MS degrees in both Mechanical Engineering and Electrical Engineering. After working in industry for four years he joined in Stony Brook University (SBU) in 2008 and established the Energy Harvesting and Mechatronics Research Lab. He was promoted to Associated Professor with tenure in 2013. At SBU he has secured over 20 research projects of total more than 4 million US dollars from federal agency NSF, DOE, DOT, and EPA, state agency NYSERDA, and industry. He authors/co-authors over 80 papers including 31 in journals. He also holds several US patents. Zuo's research interest includes energy harvesting, mechatronic system design, vibration control, smart structures, thermoelectric materials, and sensors. He won a R&D 100 award in 2011 by R&D 100 Magazine, and was the winner of Best Technology Development of Energy Harvesting in 2010 and winner of Best Application of Energy Harvesting in 2012 at the Energy Harvesting and Storage USA Conferences.



EVENT DETAILS

DATE:

October 30, 2013

TIME:

1:00 PM

LOCATION:

Carnegie 315
Stevens Institute of
Technology

ATTENDANCE:

Public