



浙江大学  
ZHEJIANG UNIVERSITY



## 基于道路的压电能量收集系统

Prof. Hao Wang

Rutgers, The State University of New Jersey

时间: 2019年7月6日 (周六)上午10:00-12:00  
地点: 安中大楼A322

### SPEAKER'S BIOGRAPHY

汪浩, 美国罗格斯, 新泽西州立大学副教授(终身教授), 博士生导师, 土木与环境工程学院研究生项目主任。主要研究领域为交通基础设施材料和结构的多尺度仿真和分析, 绿色和功能性道路材料, 道路和机场道面的智能化和可持续发展。主持二十余项受美国联邦政府, 州交通厅, 以及工业界资助的科研项目。已发表100余篇SCI期刊论文, 包括多篇ESI高被引论文, Google Scholar 引用2152次, H-index 27。担任多本SCI期刊的副主编或编委和多个国际专业协会会员, 包ASCE 路面力学技术委员会主席, Journal of Transportation Engineering副主编, 和Journal of Engineering Mechanics 特刊主编。荣获多项国家级和协会奖励荣誉, 包括美国 AASHTO 最有价值研究项目奖(项目负责人), ASCE年度教育奖, 和罗格斯大学土木工程杰出研究奖。本科毕业于东南大学(2001), 硕士毕业于美国弗吉尼亚理工大学(2006)和东南大学(2004), 博士毕业于美国伊利诺伊大学香槟分校(2011)。

### ABSTRACT

This presentation introduces development and evaluation of an innovative piezoelectric energy harvester in roadway pavements through laboratory testing and multi-physics simulation. The energy harvester is composed of assembly of Bridge transducers with layered poling. The optimum configuration of transducer geometry and packaging design were evaluated considering the balance between energy harvesting performance and mechanical failure potential. Forensic analysis was conducted to investigate fatigue failure of piezoelectric transducers after repeated loading. After that, a decoupled approach was used to study the interaction between energy harvester and the surrounding pavement. The effects of embedment location, vehicle speed, and temperature on output power were investigated. The proposed energy harvester provides great potential to generate green energy from waste kinetic energy in roadway pavements.

\*\*\* All Interested Are Welcomed \*\*\*

For further information, please contact Prof. He Zhang at Tel. 13588731346.