

DEPARTMENT OF MECHANICAL ENGINEERING

WILLIAM MAXWELL REED SEMINAR SERIES

“Design and Analysis of a Dual-Purpose Vibration Isolator Energy Harvester Device”

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Abstract: Mechanical vibrations are consequences of natural processes as well as human made structures and equipment. However, these vibrations may cause damages to structures or prevent their operations if they are not controlled. On the other side, these unwanted vibrations carry kinetic energy that is taken off from the oscillation source and the vibration isolation systems turn this energy into wasted heat which conducts away to the environment. In parallel to progresses in vibration isolation systems, there has been recent advances in electronics industries that employs low-power miniature wireless sensing technologies. Moreover, there is an increasing trend to deploy advanced technology sensors in the future that are integrated into equipment or make a wireless sensor networks for things around us. The serious challenge arises from providing power supply to these sensors. That's where it opens up an opportunity for utilizing vibrations experienced by those structures and machineries as a power source to operate the onboard sensors. This seminar is focused on developing a dual-purpose vibration isolation energy harvesting system. This system acts as a vibration isolator and energy scavenging system at the same time. On the other hand, the dual-purpose device is preventing vibrations from traveling through the isolated mass. Also, as a secondary task, it converts some of the energy contained in these oscillations into useful electric charge instead of wasted heat.

Bio: Dr. Mofidian is an adjunct faculty in department of mechanical engineering at LaTech University. He received his PhD in Micro/Nano engineering from LaTech University, Institute for Micromanufacturing in 2019. Also, he holds two master's degrees on Mechanical Engineering and Sustainable Energy engineering from Iran U of Sci and Tech, and U of North Dakota respectively. His research interests include the design and analysis of vibratory systems, energy harvesting devices, 3D printed sensors and computational fluid dynamics.

Date: March 2, Tuesday

Time: 3-4 pm (CST); 4-5pm (EST)

Place: <https://uky.zoom.us/j/83008957257?pwd=MmVWeW9MODBJaW1HZXpPaEkzSko2Zz09>

Attendance open to all interested persons



Paducah Engineering Seminar Series

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