

Postdoctoral Position for Energy Harvesting Circuit

The **EDLab** (PI: Dr. Soobum Lee) is seeking for a postdoctoral research fellow in the area of power electronics for energy harvesting circuit design. This position provides exciting opportunities to contribute to a variety of development on battery-free sensor nodes by utilizing wasted vibration and kinematic energy. Possible application includes wind turbine monitoring sensors, tire pressure monitoring sensors (TPMS), and human/animal implantable sensors.

The ideal candidate will have a PhD, a strong background in power electronics, either a degree in electrical engineering or mechanical engineering. The candidate must have experience in power management circuit design (impedance matching, charging, and integration with end application/sensor) and prototype fabrication for small scale (mW~W, mm~cm) energy harvesters as well as data acquisition (voltage, power). In addition, the candidate should have excellent communication (written and verbal English skill) and interpersonal skills and be a good team player.

Job Descriptions:

1. Design/optimization power management circuit for small power electronics (energy harvesting)
2. Prototyping circuit and integration with power storage and end application (sensor)

Required Skills:

1. Circuit design tools: LTspice, PSIM, EAGLE
2. Computer programming language (e.g. MATLAB, C++)

Desired Skills:

3. NI DAQ with LabView (function generation, data acquisition)
4. Experience with wireless transmission module (e.g. ZigBee) and vibration sensor (accelerometer)
5. Optimization: theoretical background or experience with software is a plus

About University and Department:

UMBC has been nationally and internationally recognized by its leadership in innovative research and teaching. In 2018, U.S. News ranked **UMBC as #9 “Most Innovative” university** (higher than CalTech #11, Michigan #12, Harvard #14) and **#8 on undergraduate teaching** (tied with Rice and higher than Duke #10, GeorgiaTech #13). The Department of Mechanical Engineering has more than 20 faculty, 46 PhD, 53 MS, and 500+ BS students. The geographical privileges close to multiple federal agencies in **Washington D.C./Baltimore** area and the successful research outcome with them have raised UMBC's reputation as prestigious research institute. The research in the department is funded through federal sources (National Science Foundation, National Institutes of Health, Army Research Lab, Office of Naval Research) as well as from industrial partners.

For more information, please contact to Dr. Lee directly (sblee@umbc.edu)

Research group website: <https://userpages.umbc.edu/~sblee/>