



Special issue on “Energy Harvesting in the Instrumentation and Measurement Framework”

in IEEE Instrumentation & Measurement Magazine

Recently, there has been an increasing demand for self-powered sensor nodes, smart sensing devices and autonomous measurement systems based on novel transducers for energy harvesting. It is worth noting that energy harvesters for sensing elements and transducers arouse interests in the I&M community where the idea to recovery energy from the environment and to supply or to sustain measurement architectures is highly felt in macro scale but also in integrated scale (MEMS, Micro-Electro-Mechanical-Systems) and nano scale (NEMS, Nano-Electro-Mechanical-Systems) also through the adoption of novel materials and composites.

Several ways to optimize the amount of harvested energy coming from the environment (i.e. kinetic vibrations, thermal gradients, light, etc.), have been explored in literature, and the interest regards also the conversion, extraction mechanisms, the exploitation of nonlinearity in order to improve the performance of the device which is able to supply or to sustain the specific sensor or transducer.

The special issue will be devoted to energy harvesting in the Instrumentation and Measurement framework including novel methodologies for efficient collection of energy from environmental sources, approaches for characterization, efficiency evaluation and uncertainty estimation, applications and development of battery-less sensors and transducers, design and fabrication of novel transducers, development of autonomous and self-sustained low-power devices.

Contributions are welcome but not limited to the following topics:

- Self-powered and autonomous sensors
- Transducers for energy scavenging
- Novel methodologies and wake-up solutions
- Linear and Nonlinear mechanisms and techniques
- Emerging technologies, materials and compounds for harvesting
- Power management and interfaces
- Theory, models and simulations in energy harvesters for sensors and transducers

We expect to receive your paper by May 31, 2022 to begin the review and production process. With your submission, please include a cover letter where you specify that this paper has been submitted for this special issue.

Schedule:

Full-length paper submission: May 31, 2022

GUEST EDITORS

Prof. Carlo Trigona, Prof. Olfa Kanoun