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Biography

Haixia(Alice) Zhang, received her Ph.D. degree from the Huazhong University of Science and Technology, joined the faculty of the Institute of Microelectronics in 2001. Her research fields include MEMS Design and Fabrication, Energy harvesting and applications. She is Senior Editor of IEEE TNANO, editor of IEEE-JMEMS, Microsystems & Nanoengineering, IET MNL, etc. She is co-author of 258 peer-reviewed publications, co-invented 32 patents (include 5 US patents). She served on the program committees of IEEE NEMS, IEEE Nano, Transducers, and MNE conferences. In particular he was General Chair for the IEEE NEMS 2016, Suzhou, and organizing chair of Transducers2011 Beijing. She is the chairs of IEEE NTC Beijing Chapter. She won National Invention Award of Science & Technology at 2006, Teaching Award at 2013, Geneva Invention Gold Medal at 2014.

Self Powered Smart Sensing System

As is well known, energy crisis are becoming a worldwide problem and researchers are making every effort to search for the green and renewable energy source. To solve the problem, self-powered system has been proposed, which focuses on harvesting energy from the ambient environment. In 2012, utilizing the friction to generate energy based on the combination of triboelectric and electrostatic effect is presented as triboelectric nanogenerators (TENGs) which can be applied to biomedical and environmental systems as a power supply or a self-powered active sensor.

In this talk, speaker will report their latest research work in TENGs with Hybrid mechanism. Frist, a r-shape hybrid piezoelectric and triboelectric NG is designed and integrated into a PC keyboard to harvest energy in the typing process, additionally, this device utilize in piano for self-recorder of composing. Second, another hybrid magnetic and triboelectric nanogenerators is introduced which can be used as self-powered visualized omnidirectional tilt sensing system. Third, an ultrathin flexible Piezoelectric and triboelectric Harvester for implantable applications will be discussed. The hybrid mechanism of Triboelectrical generator provides high performance and stability, which is important for powering implantable devices, touch panels, cell phone, artificial skins, sensor network nodes and so on.