ENI AWARD 2018

Energy Frontiers

Zhong Lin Wang

Winner

Ultra-high Methane Storage, Carbon Dioxide Capture and Conversion, and Atmospheric Water Harvesting using Framework Materials

Research Description

Wang's research on self-powered nanosystems has inspired the worldwide effort in academia and industry for harvesting ambient energy for micro-nano-systems, which is now a distinct disciplinary in energy science for future sensor networks and internet of things.
Nanogenerators have applications in internet of things that is made if billions of moving objects, wearable/flexible electronics that will revolutionize every corner of our life, human-machine interfacing for robotics and artificial intelligence, implantable medical devices, health care, self-powered sensors for infrastructure monitoring, and national security.
Major multinational corporations are investing extensively in this technology, e.g., Samsung (powering wearable electronics), Hyundai (pressure monitoring and door lighting), Lenovo (smart keyboard), and Medtronic (pacemaker). The technologies originating from Wang's groundbreaking work and inventions have the potential of significant impact in addressing societal challenges such as those related to energy harvesting from large scale motions, security through embedded sensors, and human lifestyle and welfare with self-powered gadgets as well as medical devices. His research provides the power technology for driving internet of things, robotics and artificial intelligence, which is referred to as the energy for the new era.