Nano Letters publishes Dr. Yong Shi's energy harvesting technology

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The journal, *Nano Letters*, recently published an article highlighting the fascinating nanogenerators developed by Dr. Yong Shi, a professor in the Mechanical Engineering Department at Stevens Institute of Technology. The paper was entitled, "1.6 V Nanogenerator for Mechanical Energy Harvesting Using PZT Nanofibers."

Dr. Shi's work focuses on miniature energy harvesting technologies that could potentially power wireless electronics, portable devices, stretchable electronics, and implantable biosensors. The concept involves piezoelectric nanowire- and nanofiber-based generators that would power such devices through a conversion of mechanical energy into electrical energy. Dr. Shi uses a piezoelectric nanogenerator based on PZT nanofibers. The PZT nanofibers, with a diameter and length of approximately 60 nm and 500 ìm, are aligned on interdigitated electrodes of platinum fine wires and packaged using a soft polymer on a silicon substrate. The measured output voltage and power under periodic stress application to the soft polymer was 1.63 V and 0.03 MicroWatts, respectively.

This amazing breakthrough in piezoelectric nanofiber research has incredible potential to enable new technology development across a multitude of science and engineering industries and related research.

"One of the major limitations of current active implantable biomedical devices is that they are battery powered. This means that they either have to be recharged or replaced periodically. Dr. Shi's group has demonstrated a technology that will allow implantable devices to recover some of the mechanical energy in flowing blood or peristaltic fluid movement in the GI tract to power smart implanable biomedical devices," says, Dr. Arthur Ritter, Director of Biomedical Engineering at Stevens. "The fact that his technology is based on nano-structures makes possible power supplies for nano-robots that can exist in the blood stream for extended periods of time and transmit diagnostic data, take samples for biopsy and/or send images wirelessly to external data bases for analysis."

SOURCE [1]

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