Now, waving hands will charge your iPods, cell phones (re-issue)

Washington, Mar 29, 2009 (ANI): Forget about plugging your iPod or BlackBerry into a power source ever again, for now you can charge these devices just by waving your hand, or stretching your arm, and even by taking a walk.

Scientists at Georgia have now come up with a new technology, called “nanogenerator”, that converts mechanical energy from body movements or even the flow of blood in the body into electric energy. And this electric energy can be used to power a broad range of electronic devices without using batteries.

“This research will have a major impact on defense technology, environmental monitoring, biomedical sciences and even personal electronics,” said lead researcher Zhong Lin Wang, Regents” Professor, School of Material Science and Engineering at the Georgia Institute of Technology.

The new “nanogenerator” could have countless applications, among them a way to run electronic devices used by the military when troops are far in the field. The researchers have described how it’s possible to harvest energy from the environment by converting low-frequency vibrations, like simple body movements, the beating of the heart or movement of the wind, into electricity, using zinc oxide (ZnO) nanowires that conduct the electricity.

The ZnO nanowires are ***piezoelectric*** - they generate an electric current when subjected to mechanical stress. The diameter and length of the wire are 1/5,000th and 1/25th the diameter of a human hair.

The process of generating energy from movement made the researchers to conclude that it was most effective to develop a method that worked at low frequencies and was based on flexible materials. The ZnO nanowires met these requirements.

Also, Wang said that a real advantage of the technology was that the nanowires could be grown easily on a wide variety of surfaces, like metals, ceramics, polymers, clothing and even tents. And the nanogenerators could operate in the air or in liquids once properly packaged. “Quite simply, this technology can be used to generate energy under any circumstances as long as there is movement,” said Wang.

The nanogenerator would be particularly critical to troops in the field, where they are far from energy sources and need to use sensors or communication devices. Wang also said that having a sensor, which doesnt need batteries, could be extremely useful to the military and police sampling air for potential bioterrorism attacks in the United States.

Although biosensors have been miniaturized and can be implanted under the skin, he points out that such devices still require batteries, and the new nanogenerator would offer much more flexibility. A major advantage of the new technology is that many nanogenerators can produce electricity continuously and simultaneously.

The study was presented at the American Chemical Society’s 237th National Meeting. (ANI)