The future of electricity may be found in environmentally-friendly, thermoelectric cells

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The Air Force Office of Scientific Research and the National Science Foundation are funding research that may result in a military turbine aircraft that for the first time ever will produce its own electricity from exhaust heat generated from thermo electricity.

Dr. Daryoosh Vashaee and a team of co-researchers at Oklahoma State University's Helmerich Advanced Technology Research Center in Tulsa are using thermo electric nanotechnology to investigate the conversion of waste heat into electricity.

Up to this point, thermo electricity has not been used extensively beyond space and cooling applications because it could not be produced efficiently. However, the scientists' efforts in Oklahoma may soon change that and thermo electric technology may be heralded by the Air Force in a way that no other eco-friendly energy source has, because it has non- toxic emissions.

Vashaee and his co-researchers are examining thermo electric versus infrared technology, which is what the Air Force is currently using. The latter requires liquid nitrogen to cool down the infrared cells. Thermo electricity, on the other hand, would not make that necessary and it would also be inexpensive.

"The new thermo electric sensors also provide a means to make high performance infrared detectors that are structurally simple and small, suitable for being used in military missions," said Vashaee.

Vashaee noted that the next step is to develop thermo electric modules that can be used for power generation for Air Force aircraft, solar, thermal cells and waste heat recovery systems used in industry.

Source: Air Force Office of Scientific Research

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