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Singapore researcher draw on thermoelectric technology to create sustainable and renewable energy sources

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Finding ways to recycle electronic products to produce thermoelectric materials, paving the way for sustainable and environmentally-friendly renewable energy sources.Finding alternative energy sources and reducing energy consumption have become top priorities for many countries globally, owing to the negative environmental impacts of traditional energy sources, such as fossil fuels and oil. Thermoelectric technologies, a culmination of efficient, clean and sustainable methods to achieve renewable energy from heat, have garnered growing attention from the scientific community.

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Working at the forefront to improve the performance of thermoelectric materials is Adjunct Assistant Professor Ady Suwardi from the Department of Materials Science and Engineering under the College of Design and Engineering at NUS. He has achieved a spot on this yearâ??s TR35 Asia Pacific list as a *Visionary* for his research focusing on discovering ways to recycle discarded electronic products and devices, such as solar panels, into useful thermoelectric materials and devices to harness heat to produce electricity.

Adj Asst Prof Suwardi and his team proposed an innovative method to convert recycled non-purified silicon solar cells into valuable thermoelectric materials. By introducing phosphorus and germanium doping, they achieved materials with high thermoelectric performance. This breakthrough facilitates the development of sustainable thermoelectric devices as a source

of renewable energy.

Adj Asst Prof Suwardi also holds a position as Assistant Professor in the Department of Electronic Engineering at the Chinese University of Hong Kong.

Adj Asst Prof Suwardi said, â??Being commended on the TR35 Asia Pacific list has provided me a platform to spread awareness on the potential of thermoelectric technology and exchange ideas with peers across the region. I am very honoured and fortunate to be among the 35 young innovators recognised in this year's list, and I look forward to contributing more impactful works in the years to come."