Nanostructured Copper Zinc Tin Sulfide-based Thermoelectric Energy Conversion

Thermoelectric materials directly convert temperature difference into electric voltage or vice versa. Therefore, thermoelectric materials can be used as an electric generator to recover waste heat into electricity or as a refrigerator.

Researchers at Purdue University have developed a new type of highly efficient, environmentally friendly thermoelectric material. These thermoelectric materials are based on a nanostructured Copper Zinc Tin Sulfide (CZTS), all of which are cheap, abundant, and non-toxic elements. In addition to being cheaper and safer to produce, this technology works for over a wider range of temperatures than most conventional thermoelectric materials.

Domain:
- Electrical Engineering

Advantages:
- High efficiency
- Work over wide range of temperatures
- Non-toxic

INNOVATOR BIOGRAPHY

Dr. Yue Wu received his PhD in 2006 from Harvard and moved to UC-Berkeley as Miller Research Fellow. His research focused on the development of non-toxic and abundant materials for semiconductor nanocrystal-based solar cells. In August 2009, he joined School of Chemical Engineering at Purdue University as an assistant professor.