Sustainable Thermal Energy Harvesting Materials

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Thermoelectric (TE) materials are solid-state materials that can be used to harvest waste-heat and directly convert to usable electrical power. In this respect, they can play a significant role in the green transition. Conventional TE materials generally contain toxic or scarce components, and methods used for their synthesis are energy and time intensive. In this presentation, recent developments in the field of inorganic TE materials synthesis, sustainable materials compositions and energy effective methods enabling their synthesis in matter of minutes are presented. Hybrid TE materials using common polymers and their power factor enhancement using molecular linkers will also be discussed along with the future perspectives of integration with more sustainable lignocellulose-based materials.