

## **Webinar**

### **Disorder and Distortion Driven Optimisation of Energy Materials**

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Waste heat is a ubiquitous natural by-product of our energy usage cycle – nearly two-thirds of our energy production irreversibly gets wasted as dissipated heat. Thermoelectric energy conversion allows direct conversion of waste heat into useful electricity and could be a promising addition to our renewable energy sources. The interdependence between electrical conductivity, Seebeck coefficient and thermal conductivity in a solid, however, makes it challenging to achieve a high thermoelectric energy conversion efficiency. I will briefly discuss the established strategies for decoupling these material parameters based on electronic structure modulations and phonon transport optimisations. I will then present the emerging new ideas based on the optimisation of atomic disorder and local structural distortion to simultaneously tune multiple thermoelectric parameters and achieve a high thermoelectric figure of merit. Finally, I will discuss how lattice distortion can be used to functionalise other material properties with an example of ferroelectricity in layered materials.

***Monday, March 28<sup>th</sup> 2022***

***04:00 PM***