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【183】 Thermoelectric properties of individual silicon nanotubes

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Large amounts of waste heat generated in our economy could be converted into useful electric power using thermoelectric generators. However, the low efficiency, scarcity, high cost, and poor production scalability of conventional thermoelectric material hinder their mass deployment. Nanoengineering has proven an excellent approach for enhancing the thermoelectric properties of abundant and cheap materials such as silicon. Recently, a family of nano-enabled materials in the form of large-area paper-like fabrics made of nanotubes has been developed as a cost-effective and scalable solution for thermoelectric generation. In this project, the thermoelectrical properties of the described nanotubes will be measured using different techniques (such as self-heating, nano calorimeters, and Raman thermography).

Theoretical Work

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