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(54) **NANOSTRUCTURED BULK THERMOELECTRIC MATERIAL**

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See application file for complete search history.

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(57) **ABSTRACT**

A thermoelectric material comprises two or more components, at least one of which is a thermoelectric material. The first component is nanostructured, for example as an electrically conducting nanostructured network, and can include nanowires, nanoparticles, or other nanostructures of the first component. The second component may comprise an electrical insulator, such as an inorganic oxide, other electrical insulator, other low thermal conductivity material, voids, air-filled gaps, and the like. Additional components may be included, for example to improve mechanical properties. Quantum size effects within the nanostructured first component can advantageously modify the thermoelectric properties of the first component. In other examples, the second component may be a thermoelectric material, and additional components may be included.

18 Claims, 14 Drawing Sheets

