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Formation of Thermoelectric Elements by Net Shape Sintering

Disclosure Number

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Technology Summary

Practices are described for preparing fine-grain stress-tolerant, brittle, doped semiconductor thermoelectric elements better suited to withstand thermal and mechanical loads without cracking or fracture. Preparation entails net shape powder processing of substantially isotropic thermoelectric compounds such as skutterudites under conditions which promote small average grain sizes. Nearly three-fold improvements in fracture strength over conventionally-processed thermoelectric elements are observed. The net shape powder processing is adapted for the ready incorporation of the net shape thermoelectric elements into a thermoelectric device.

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