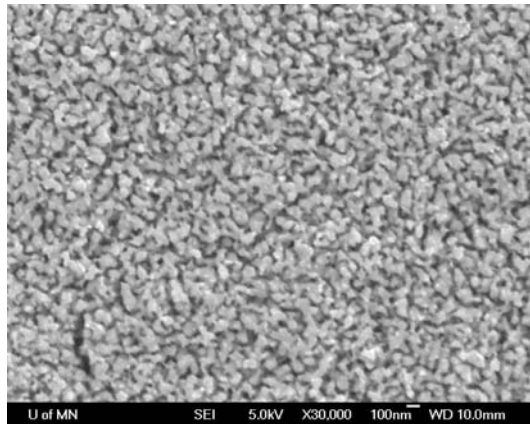
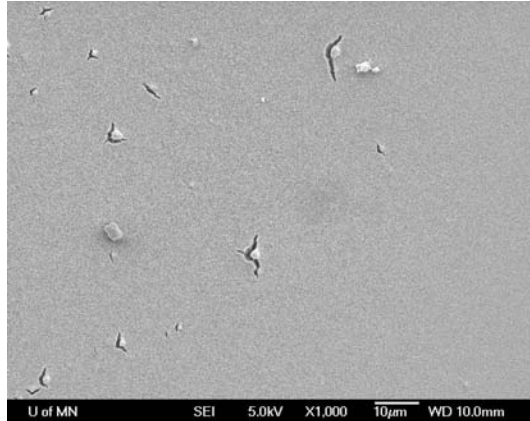


Nanostructured Thermoelectric Materials

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NNIN Facilities utilized: Characterization Facility & Nanofabrication Center



Nanoporous Ge film was made by Rapid Thermal Anneal in the NFC of a nanocrystalline Ge film. SEM image taken in the CharFac using JEOL 6500.

- Thermoelectrics require low thermal conductivity, k , high electrical conductivity, σ , and high Seebeck coefficient, S , to have a high Figure of Merit, ZT .

$$ZT = \frac{S^2 \sigma}{k} T$$

- Nanomaterials have many interfaces to limit heat transfer.
- Our preliminary work suggests that sintering nanocrystalline films can improve electrical conductivity while pores and grain boundaries limit heat transfer.