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Available Technologies

Process for Forming Tellurium Nanostructures with Controlled Dimensions

SUMMARY

Presented here is a multi-scale processing method for producing tellurium (Te)-containing nanostructures with selected diameter and size dimensions. This novel method provides a wide variety of Te-containing structures of a macro-, micro-, or nano-scale size in a single process. This is possible via control of (1) the initial pressure inside the reaction vessel, (2) the initial mass of material, and (3) the temperature gradient inside the reaction vessel. For example, conducting the reaction at a temperature of 85 C affords structures with diameters 57 ± 5 nm, while a temperature of 115 C provides diameters of 374 ± 11 nm. The process is a cheaper alternative to known methods that require high pressure reactions (hydrothermal), solvent-based reactions (solvo-thermal), and like conditions.

Technology Portfolio(s)

- Electronics
- Materials Synthesis and Functionalization

Potential Industry Applications

- Chemicals

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