

Abstract Submitted
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Bi₂Te₃ Nanostructure Synthesis on Multiple Substrates¹ NICHIA APICHITSOPA, JEROME T. MLACK, NINA MARKOVIC, Johns Hopkins University — The chalcogenide Bi₂Te₃ is a known and widely used thermoelectric material that has received renewed experimental interest due to the recent discovery of its topologically protected surface states. Nanodevices of this material are particularly interesting because of their high surface-to-volume ratio, which enhances surface-related transport properties by minimizing bulk contributions. Many synthesis processes for Bi₂Te₃ have been reported, such as as Au-catalyzed vapor-liquid-solid mechanism (VLS) and lithographically patterned galvanic displacement (LPGD). The VLS mechanism is much simpler than the highly-controlled LPGD; however, remnant of Au catalyst on the nanostructures can alter their electronic structure, resulting in modification of TI surface. We report the synthesis of Bi₂Te₃ nanostructures by VLS mechanism without using Au catalyst, which improves the quality of the nanostructures.

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