

Abstract Submitted
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Vapor-Liquid-Solid Synthesis of Bi_2Te_3 Nanowires via Metalorganic Chemical Vapor Deposition¹ L.D. ALEGRIA, J.R. PETTA, Princeton University — Bi_2Te_3 is a topological insulator and high figure-of-merit thermoelectric material. In the context of thermoelectrics, the synthesis of ultra-thin nanowires could enable more efficient energy conversion technologies due to quantum confinement. We describe a route for the synthesis of Bi_2Te_3 nanowires using low-pressure metalorganic chemical vapor deposition (MOCVD). The combination of metalorganic precursors trimethyl bismuth and diisopropyl telluride allow a low 350°C growth temperature that is conducive to nanowire formation. The nanowires form by VLS growth from gold nanoparticles deposited on a growth substrate. Structural and chemical characterizations of the growth products are presented, indicating that the nanowires are high quality, single crystals of Bi_2Te_3 .

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