

Abstract Submitted
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Fabrication of Bi_2Te_3 Nanodots by Droplet Epitaxy

on GaAs substrates ZHAOQUAN ZENG, CHEN LI, Department of Physics, University of Arkansas, Fayetteville, AR 72701, DONGSHENG FAN, Department of Electrical Engineering, University of Arkansas, Fayetteville, AR 72701, YUSUKE HIRONO, TIMOTHY MORGAN, XIAN HU, Department of Physics, University of Arkansas, Fayetteville, AR 72701, JIAN WANG, MEENAKSHI SINGH, The Center for Nanoscale Science and Department of Physics, The Pennsylvania State University, University Park, PA 16802, ZHIMING WANG, State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, SHUI-QING YU, Department of Electrical Engineering, University of Arkansas, Fayetteville, AR 72701, AQIANG GUO, GREGORY SALAMO, Department of Physics, University of Arkansas, Fayetteville, AR 72701, GREGORY J. SALAMO TEAM, SHUI-QING YU TEAM, ZHIMING WANG TEAM, JIAN WANG TEAM — Bi_2Te_3 , as a three-dimensional topological insulator, causes wide attention. Here, we report the fabrication of Bi_2Te_3 nanodots on GaAs substrate by droplet epitaxy using molecular beam epitaxy (MBE). Reflection high energy electron diffraction (RHEED), atomic force microscopy (AFM), x-ray photoelectron spectroscopy (XPS), and Raman measurement revealed the existence of Bi_2Te_3 nanodots. Several approaches were developed to control the size and density of as-grown Bi_2Te_3 nanodots. Temperature and density dependent magneto-transport measurements were investigated. This may provide a platform for the interaction investigation among topological insulators, semiconductors, ferromagnets and superconductors.

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