7th Annual Congress on

Materials Research and Technology

February 20-21, 2017 Be

Berlin, Germany

Synthesis and characterization of single-crystal bismuth telluride nanowires

Ming Y Chern National Taiwan University, Taiwan

T opological insulators have high values in both theoretical and application aspects. In this work, we synthesize and study the nanowires of topological insulator bismuth telluride (Bi₂Te₃). The nanowires are grown on glass substrates by thermal evaporation of bulk Bi₂Te₃ at elevated temperature in an argon flow two-zone furnace, where the substrate temperature can be adjusted independently. The growth temperature has a strong influence on the growth direction of the nanowires. Currently, the known growth direction of the Bi₂Te₃ nanowires is rhombohedral indexing, less is known about other growth directions. We are able to grow nanowires of Bi₂Te₃ in different directions by tuning the substrate temperature. Other growth factors such as the flow rate of the argon gas, the background pressure, and the vapor pressure of Bi₂Te₃ are discussed. We examine the nanowires with XRD, SEM and TEM. We also measure the transport properties of single nanowires. The properties and anisotropy of these nanowires are discussed.

Biography

Ming Y Chern has his expertise in "The synthesis and characterization of thin films and nanomaterials". His current research interests include "ZnO and Bi₂Te₃ nanowires with focus on potential applications in optoelectronics and spintronics".

mychern@phys.ntu.edu.tw

Notes: