

Abstract: NeSA202100poster-03: Study of transport characteristics of type II Weyl semimetal MoTe₂ thin films grown by chemical vapor deposition grown MoTe₂ thin films

Time: 12:00-1:00 PM

Presenter:

Niraj Bhattarai

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Theoretical calculations and experimental observations show MoTe₂ is a type II Weyl semimetal, along with many members of transition metal dichalcogenides family. We have grown highly crystalline large-area MoTe₂ thin films on Si/SiO₂ substrates by chemical vapor deposition. Very uniform, continuous, and smooth films were obtained as confirmed by scanning electron microscopy and atomic force microscopy analyses. Measurements of the temperature dependence of longitudinal resistivity and current-voltage characteristics at different temperature are discussed. Unsaturated, positive quadratic magnetoresistance of the as-grown thin films has been observed at various temperatures below room temperature. Hall resistivity measurements confirm the majority charge carriers are holes. Using the single band model, carrier concentration was calculated to be 2.38×10^{21} holes cm⁻³ at 10 K, which is semimetallic, and increasing with temperature.