

Study of MnBi₂Te₄ growth on BaF₂ and Sapphire

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Abstract

Magnetic topological insulators (TIs) are expected to open new doors in the field of spintronics, electronics, quantum computation and metrology. MnBi₂Te₄ has attracted great interest because it combines non-trivial band topology and antiferromagnetic order [1,2]. Bulk MnBi₂Te₄ has a Néel temperature of 25K and a spin-flop transition at a magnetic field of about 3.5T [1,3].

In this work, we report a study of the structural, magnetic and magnetotransport properties of the MnBi₂Te₄ films grown by MBE. Films have been grown on BaF₂ (111), and on C-plane and A-plane sapphire (11-20). We identify the corresponding Néel temperatures and compare the response of the films with SQUID magnetometry and x-ray circular dichroism. We further analyse their structural differences and correlate them with their magnetic properties.

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References

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Figures

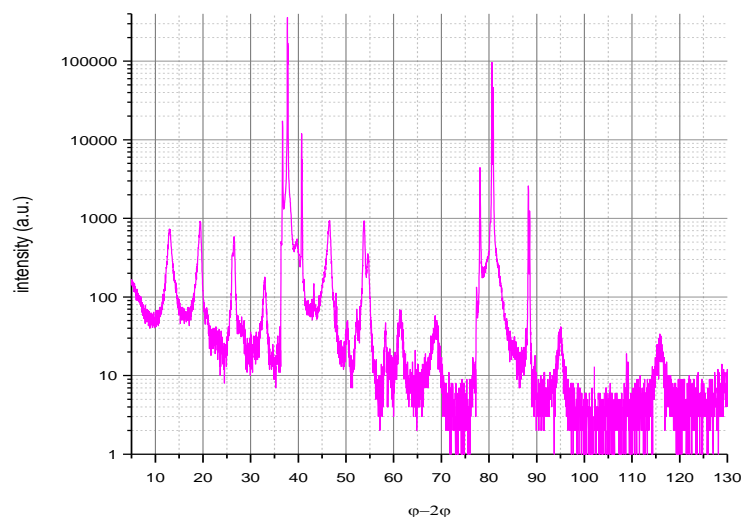


Figure 1: θ - 2θ scan for Bi₂MnTe₄ on sapphire A-plane (11-20)