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Ferromagnetism in van der Waals compound $MnSb_{1.8}Bi_{0.2}Te_4$

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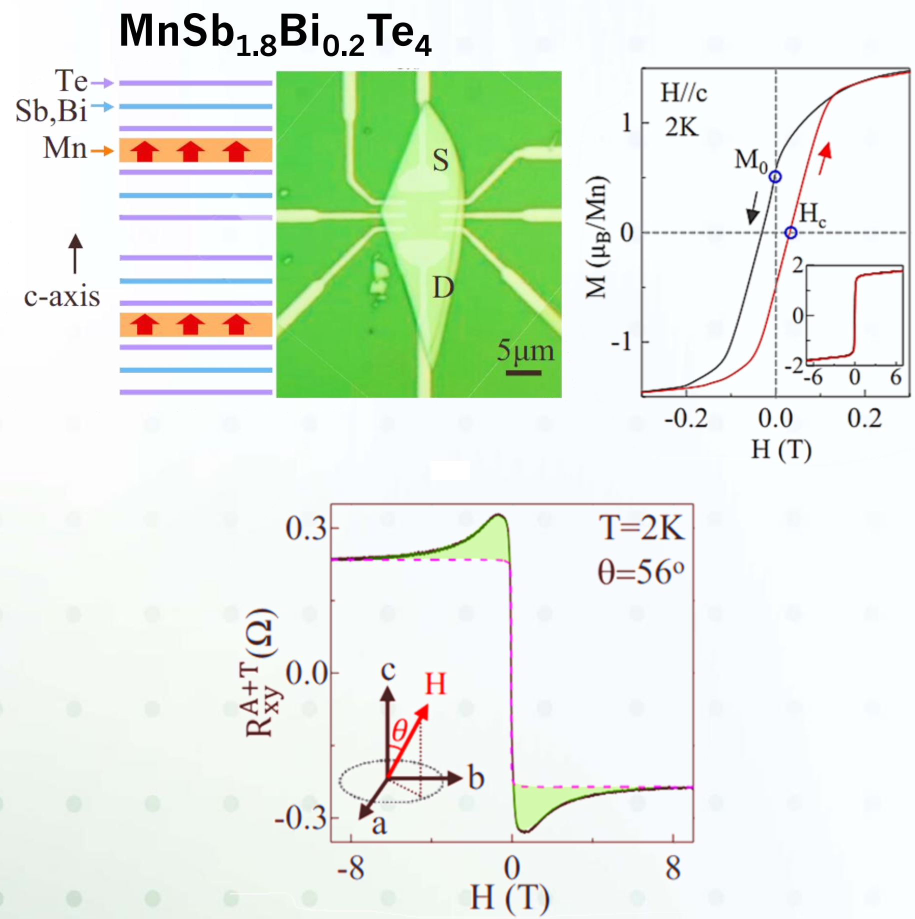
$MnBi_2Te_4$ has recently been established as the first intrinsic antiferromagnetic (AFM) topological insulator. Although quantum anomalous Hall effect (QAHE) has been observed in $MnBi_2Te_4$, it is only realized with odd numbers of septuple layers due to the AFM interlayer coupling. Therefore, it is crucial to stabilize ferromagnetic (FM) phase in $MnBi_2Te_4$. We have discovered a new FM phase with the Curie temperature of 26 K in the $MnSb_{1.8}Bi_{0.2}Te_4$ sample through tuning growth conditions, in contrast to the AFM order seen in the $Mn(Bi_{1-x}Sb_x)_2Te_4$ family. We have investigated magnetotransport properties of the FM thin flakes and observed features similar to topological Hall effect. Our work pushes forward the realization of intrinsic FM topological insulator and establishes a new platform to explore novel topological quantum states arising from the interplay between magnetism and band topology.



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