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Magnetically doped nanoplate crystals of topological insulators Sb_2Te_3 and Bi_2Te_3[1] LUKAS ZHAO, LIN BO, LIMIN HUANG, ALISA AGAFONOVA, SIMON DIVILOV, STEPHEN O'BRIEN, MYRIAM SARACHIK, LIA KRUSIN-ELBAUM, CCNY — The surface states of topological insulators are robustly protected by time-reversal symmetry. Introducing magnetic impurities should open a gap in the otherwise gapless surface states. Recent first-principle calculations predict that when topological insulators are doped with transition metal elements, such as Cr or Fe, a *magnetically ordered* insulating state will form, a state distinctly different from the conventional dilute magnetic semiconductors. In thin (quasi-2D) samples, this magnetic order gives rise to a topological electronic structure, with the quantized Hall conductance. Here we report synthesis and electrical and magnetic characterization of Fe and Cr doped *thin* nanoplates of topological insulators Sb_2Te_3 and Bi_2Te_3. Nanoplate crystals were grown by catalyst-free vapor-liquid-solid method and were doped using the *in situ* exchange of sources. Low-temperature magnetic, in-plane resistivity, and Hall measurements were performed in magnetic fields up to 9 T fields. The effects of magnetic dopant concentration on susceptibility and charge transport will be discussed.

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Lukas Zhao
CCNY

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