

Abstract Submitted
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Tuning Magnetism by Excessive Cr in $\text{Cr}_{1+x}\text{Te}_2$ Single Crystals¹

GUIXIN CAO, QIANG ZHANG, Department of Physics and Astronomy, Louisiana State University, Baton Rouge, Louisiana 70803, USA, MATTHIAS FRONTZEK, Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831, USA, WILLIAM PHELAN, JOHN DITUSA, RONGYING JIN, Department of Physics and Astronomy, Louisiana State University, Baton Rouge, Louisiana 70803, USA — Layered transition-metal dichalcogenides exhibit various interesting electronic and magnetic properties. CrTe_2 is one of such compounds that is a ferromagnetic (FM) metal below 310 K. We report experimental investigations on the electrical transport and magnetic properties of single-crystalline $\text{Cr}_{1+x}\text{Te}_2$ with the extra Cr ($x = 0.16, 0.23$) located between the CrTe_2 layers. Measurements of magnetization along both the ab -plane and c -axis indicate that the insertion of Cr between layers switches the easy FM direction from the ab -plane to the c -axis and lowers Curie temperature, T_C , when compared to the stoichiometric case ($x = 0$). Interestingly, both T_C and the electrical conductivity increase with increasing x , suggesting a variation of the electronic structure with x . This is further confirmed by the low-temperature specific heat, which reveals a larger electronic contribution at higher x

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