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Magnetism and proximity effects in layered two-dimensional materials DEVASHISH GOPALAN, SERGIO DE LA BARRERA, NATHAN DRUCKER, Carnegie Mellon University, AMANDA HAGLUND, DAVID MANDRUS, University of Tennessee, Knoxville, BENJAMIN HUNT, Carnegie Mellon University, MANDRUS RESEARCH GROUP - UNIVERSITY OF TENNESSEE, KNOXVILLE TEAM, HUNT LAB - CARNEGIE MELLON UNIVERSITY TEAM
— The versatility of layered van der Waals materials has allowed a study of diverse physical phenomena in the two-dimensional limit. Furthermore, by means of proximity effects, one material can acquire the properties of an adjacent material by bringing them in close contact. Despite these advances, magnetism in van der Waals materials has remained largely unexplored. Chromium silicon tritelluride ($CrSiTe_3$) is a layered ferromagnetic semiconductor with a bulk Curie temperature (T_c) of 33 K. Therefore, one can conceivably use $CrSiTe_3$ and the proximity effect to introduce long range magnetic order in graphene, which implicitly has a high mobility. Here, we report on progress in assembling mesoscopic devices of $CrSiTe_3$ as well as proximity devices based on graphene/ $CrSiTe_3$ heterostructures. Results from magneto-transport measurements and Kerr microscopy will be discussed.

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