

Abstract Submitted  
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**Magnetic and magneto-transport studies of MBE grown  $\text{Cr}_2\text{Te}_3$  thin films with perpendicular magnetic anisotropy**<sup>1</sup> ANUPAM ROY, SAMARESH GUCHHAIT, RIK DEY, TANMOY PRAMANIK, CHENG-CHIH HSIEH, AMRITESH RAI, SANJAY BANERJEE, Microelectronics Research Center, The University of Texas at Austin, TX —  $\text{Cr}_2\text{Te}_3$  is one of the very intriguing compounds in chromium chalcogenides family because of its unusual magnetic and magneto-transport properties. Here we have presented studies of molecular beam epitaxy (MBE) grown (001)-oriented  $\text{Cr}_2\text{Te}_3$  thin films on  $\text{Al}_2\text{O}_3(0001)$  and  $\text{Si}(111)-(7\times 7)$  surfaces. Reflection high energy electron diffraction (RHEED), scanning tunneling microscopy (STM), vibrating sample magnetometry (VSM) and other physical property measurements are used to investigate the structure, morphology, magnetic and magneto-transport properties of as-grown films. Sharp streaks in RHEED patterns imply smooth film growth on both the substrates. STM studies show hexagonal arrangements of surface atoms and measured lattice parameters agree well with the bulk crystal structures. Magnetic studies confirm the film to be ferromagnetic having a Curie temperature of about 180 K and a spin glass-like behavior is observed below 35 K. The grown films are metallic and show perpendicular magnetic anisotropy (PMA). Magneto-transport measurements reveal that the film possesses a magnetic easy axis perpendicular to the surface and this may be very useful for spintronics applications.

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