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Epitaxial Cd_3As_2 Thin Films Synthesized by Molecular Beam Epitaxy TIMO SCHUMANN, MANIK GOYAL, SUSANNE STEMMER, Univ of California - Santa Barbara — Cd_3As_2 is a three-dimensional (3D) Dirac semimetal, i.e. it possesses Dirac cones in a 3D bulk state where the band dispersion relation is linear near the Fermi energy. Cd_3As_2 is has raised considerable interest due to its high electron mobilities in bulk crystals and for novel quantum phenomena, such as chiral anomalies. However, few studies have been performed using thin films of Cd_3As_2. In this presentation, we report on the synthesis of Cd_3As_2 thin films by molecular beam epitaxy (MBE). Single phase, epitaxial films were grown on undoped GaSb(111)B substrates with the (112) facet of Cd_3As_2 parallel to the GaSb(111) surface. We report on the structural quality and orientation variants in the films. Electrical transport properties indicate electron mobilities exceeding 6000 $cm^2V^{-1}s^{-1}$. We discuss the impact of the MBE growth parameters and substrate preparation on the structural and electrical properties of the films.

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