

Abstract Submitted
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Growth of Single-Crystalline, Atomically Smooth MgO Films on Ge(001) by Molecular Beam Epitaxy WEI HAN, University of California, Riverside, YI ZHOU, University of California, Los Angeles, YONG WANG, The University of Queensland, Brisbane, Australia , YAN LI, JARED WONG, KEYU PI, ADRIAN SWARTZ, KATHY MCCREARY, University of California, Riverside, FAXIAN XIU, KANG WANG, University of California, Los Angeles, JIN ZOU, The University of Queensland, Brisbane, Australia , ROLAND KAWAKAMI, University of California, Riverside — Developing single-crystalline FM/MgO/Ge(001) heterostructures is essential for Ge-based spintronics. We investigate the growth of MgO thin films on Ge(001) via molecular beam epitaxy and find that the growth temperature plays a key role in the quality of MgO thin films. Reflection high-energy electron diffraction (RHEED) and atomic force microscopy show that the single-crystal quality and atomically smooth morphology are optimized for a growth temperature of 250 ° C. RHEED and transmission electron microscopy indicate that the MgO is (001)-oriented and the MgO unit cell has a 45 ° in-plane rotation with respect to that of Ge, providing a high quality film and interface for potential spin injection experiments.

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