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**Ba and Sr templates on Ge(001) for epitaxial oxide growth** MIRI CHOI, AGHAM POSADAS, CHIH-KANG SHIH, ALEXANDER A. DEMKOV, The University of Texas at Austin — In the epitaxial growth of oxides on semiconductors, Ba and Sr templates are used as transition layers for perovskite deposition. Furthermore, the interface between complex oxides and semiconductors are relatively unexplored. The ability to control the interface between them can lead to new phenomena and new combinations of oxide-semiconductor heterostructures. In this work, we compare the differences between the Sr template with Ba templates on Ge(001) at various temperatures. The sub-monolayer coverage of Ba and Sr shows different morphology and nucleation behavior depending on the deposition temperature. For example, at higher deposition temperature, the electron diffraction pattern of Sr on Ge shows a 9x1 phase which was not observed at lower deposition temperature. We perform an atomic-scale study of Ba and Sr templates grown on Ge(001) by molecular beam epitaxy as a function of deposition temperature and coverage, using a combination of reflection high energy electron diffraction and *in situ* scanning tunneling microscopy (STM). An understanding of the behavior of Ba and Sr template formation on germanium can potentially be used as a means of better controlling the subsequent oxide growth.

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