

Abstract Submitted  
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**Magnetotransport in the amorphous Ge(1-x)Mn(x) with self-assembled nanostructures**<sup>1</sup> WENJING YIN, University of Virginia, JAN JAROSZYNSKI, National High Magnetic Field Lab, JIWEI LU, University of Virginia, COPELAND KELL, LI HE, Rensselaer Polytechnic Institute, MELISSA DOLPH, JERROLD FLORO, STUART WOLF, University of Virginia — Mn ions have been reported to segregate into intermetallic precipitates or form coherent clusters in crystalline Ge(1-x)Mn(x) thin films. In this study, we investigated the microstructure of amorphous Ge(1-x)Mn(x) synthesized using low temperature molecular beam epitaxy, and observed the self-assembly of Mn rich nanostructures in Ge matrix with both cluster and column shapes by varying the Mn concentration. The magnetotransport properties were found to closely correlate with the magnetism. Negative magnetoresistance (MR) showed a dominant effect in as-grown materials, and required a very high magnetic field to saturate, whereas only positive MR was observed in post-annealed Ge(1-x)Mn(x). The anisotropic behavior in magnetism and magnetoresistance will also be discussed.

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