

Magnetotransport and Seebeck coefficient of epitaxial FeGe film grown on GaAs(100)

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Skyrmions are small magnetic vortices, which was firstly discovered in manganese silicide thin film. FeGe thin film is one of magnetic materials with skyrmion state. [1, 2] Skyrmions could form the basis of future hard-disk technologies because they might be made much smaller to create storage devices, resulting in much higher density than the disks using magnetic domains. [3] Here we report the magnetism and anomalous Hall effect of FeGe epitaxy thin film grown on GaAs (100) substrate by molecular beam epitaxy (MBE). A hexagonal structure of FeGe thin film was confirmed by XRD pattern. Metallic behavior of film was confirmed by temperature dependence of resistivity. Ferromagnetic ordering was observed in temperature range from 20 to 400 K. Magnetic moments at 20 K and room temperature are 0.76 m_B/Fe and 0.71 m_B/Fe. The anomalous Hall effect (AHE) originating from asymmetric scattering in the presence of magnetization was observed.

References

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