Abstract Submitted
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Magnetotransport properties of ferromagnetic $Ga_{1-x}Mn_xSb$ random alloys with different Sb/Ga flux ratio[1] H. LUO, G.B. KIM, M. CHEON, S. WANG, B.D. MCCOMBE, Department of Physics, University at Buffalo, The State University of New York — Magnetotransport measurements provide important information about electronic properties of ferromagnetic diluted magnetic semiconductors. We have carried out a study of magnetotransport properties of ferromagnetic $Ga_{1-x}Mn_xSb$ random alloys with different Sb/Ga flux ratios and the same Mn concentration (x = 0.023). Between flux ratios of 4.6 and 5.3 the magnetization of these samples showed large, nearly square hysteresis loops with large coercive fields. The negative magnetoresistance also showed strong dependence on Sb/Ga flux ratio, decreasing with increasing values of Sb/Ga. The sheet resistance vs. temperature showed weakly localized behavior for Sb/Ga = 4.6 and metallic behavior for Sb/Ga = 5.3. The Hall resistance for the sample with Sb/Ga = 4.6 shows unusual behavior; the sign of the anomalous Hall coefficient is negative below 2.2K and changes to positive at the temperature range of 2.7K to 7K, and then back to negative above 10K. The hole densities from fitting the Hall resistance at high magnetic fields show large differences, while T_C remains the same at 24K. These results will be discussed in terms of impurity band conduction and localization.

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