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Transport properties of electrodeposited Ni films on GaAs(110) SREENIVASULU VUTUKURI, RAINER SCHAD, PATRICK LECLAIR, MINT Center, University of Alabama, Tuscaloosa, AL — Epitaxial ferromagnetic materials grown on semiconductors are potential candidates for new class of spintronic devices which can be used as contacts for spin injection. In this respect electrodeposition has proven to be a promising method as it avoids interface because it is a low-energy, room temperature process. Here we report the electrical transport properties of electrodeposited Ni thin films on GaAs(110) substrate. We have performed resistivity and Hall Effect measurements as a function of film thickness. The results show that the thickness dependence of the electrical resistivity follows the Fuchs[1] model. The bulk resistivity at room temperature is close to the reported bulk properties. The low temperature resistivity values are dominated by surface scattering with the bulk resistivity being essentially zero. The low temperature ordinary Hall coefficient $R_o$of the films is almost independent of the film thickness, whereas the spontaneous Hall coefficient R_s decreases with increasing film thickness. The spontaneous Hall coefficient scales with the resistivity as $R_s \propto \rho^{1.3}$, indicating a scattering mechanism which is mixture of both skew scattering and side jump scattering. 1. K. Fuchs, Proc. Camb. Phil. Soc. **34**, 100 (1938)

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