

Abstract Submitted
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Magneto-Transport Studies of Molecular Beam Epitaxial Grown Osmium Silicides¹ RYAN COTTIER, WEI ZHAO, FATIMA AMIR, KHALID HOSSAIN, University of North Texas, NOUREDDINE ANIBOU, WOLFGANG DONNER, University of Houston, TERRY GOLDING, University of North Texas, UNIVERSITY OF NORTH TEXAS COLLABORATION, UNIVERSITY OF HOUSTON COLLABORATION — Semiconducting transition metal silicides present a possible solution to on-chip integration of optical and electronic Si-based circuitry. Two phases of osmium silicide (OsSi_2 and Os_2Si_3) are predicted to have promising optical characteristics but require additional development to fully determine their feasibility for high-quality devices. This study has been motivated by reports that OsSi_2 has a bandgap between 1.4–1.8eV [1, 2] and Os_2Si_3 may have a direct bandgap of 0.95 eV [3] or 2.3 eV [1]. In this paper we will present temperature dependent ($20 < T < 300$ K) magneto Hall measurements of molecular beam epitaxial grown osmium silicide thin films. Os and Si were coevaporated onto Si(100) substrates at varying growth rates and temperatures. XRD was performed in order to identify the silicide phases present. We will discuss our results in relation to the known phase diagrams and our growth parameters. [1] L. Schellenberg et al., *J. Less-Common Met.* **144**, 341 (1988). [2] K. Mason and G. Müller-Vogt, *J. Appl. Phys.* **63**, 34 (1983). [3] A. B. Filonov et al., *Phys. Rev. B* **60**(24), 16494 (1999).

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