

Abstract Submitted
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Investigation of Gadolinium Gallium Oxide using spectroscopic ellipsometry¹ KUNAL BHATNAGAR, TONI SAUNCY, Angelo State University, RAVI DROOPAD, Texas State University — Spectroscopic Ellipsometry (SE) is a non-destructive characterization technique used for determining film thickness, interfacial roughness and optical properties of single and multilayered materials. SE measures the change in the polarization state of the incident light upon reflection from these layers providing insight into the properties and composition of topmost and underlying materials. The Horiba Jobin Yvon - UVISSEL located in the Angelo State Materials Characterization Lab is based on the principle of phase modulated spectroscopic ellipsometry. This tool has been used to successfully characterize a variety of semiconductor samples. We will detail results from semiconductor heterostructures containing Gadolinium Gallium Oxide (GdGaO_3), a novel material with promise for application as a high-k dielectric in the design of compound semiconductor MOSFETs. Models for this unusual material have been developed and used to characterize various structures with success. We have obtained reasonable values for electrical and optical parameters for the GGO not found in current literature.

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