

Abstract Submitted
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Electrical conductivity measurements of sputter-deposited Scandium Nitride thin films. MARK LITTLE, ANDREW MOORE, Hope College, MATT KOEPKE, West Virginia University — The electrical and optical properties of sputter-deposited ScN films on sapphire have been investigated using hall measurement and absorption techniques. Film growth temperature was varied from room temperature to 800° C. Sheet resistance is seen to decrease exponentially with increasing growth temperature from $\sim 5e11$ to 12000 Ohms/square. Sheet carrier density was observed to increase exponentially and while mobility remained relatively constant ($\sim 2 \text{ cm}^2/\text{Vs}$) for growth temperatures above 400° C. Absorption measurements show an average band gap 2.8 eV with some samples having a distinct increase in adsorption at ~ 4.6 eV. Currently, film composition and structure are being analyzed by RBS and XRD to help determine the nature of the electrical and optical measurements. The results of both investigations will also be presented.

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