Abstract Submitted
for the OSS18 Meeting of
The American Physical Society

Characterzation Of Defects In β- Ga_2O_3 Thin Film Grown By Metal Organic Chemical Vapor Deposition ARMANDO HERNANDEZ, SAHIL AGARWAL, DAVID WINARSKI, POONEH SAADATKIA, FARIDA SELIM, BGSU — $\beta-$Gallium(III)oxide (Ga_2O_3) is emerging as a semiconducting material of great interest for fabrication and advancement of high powered devices because of its very wide bandgap, excellent electrical properties and high breakdown voltage. In this work, epitaxial films of as-grown and Si doped β-Ga_2O_3 were fabricated by Metalorganic Chemical Vapor Deposition (MOCVD) and were characterized by X-Ray Diffraction (XRD), Thermoluminescence (TL) and Hall Effect measurements. The XRD patterns revealed formation of pure epitaxial β-Ga_2O_3 phase. Luminescence was recorded in the range of 200-800nm using TL between -190 °C to 360 °C to detect all emission centers. An electron trap was identified at very low temperatures. Electrical properties including resistivity, density and mobility were determined using Hall Effect measurements. This study illustrates an efficient method to grow pure epitaxial β-Ga_2O_3 as well as identify its fundamental properties and investigate the role of defects.

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Date submitted: 12 Mar 2018 Electronic form version 1.4