Abstract Submitted
for the OSS18 Meeting of
The American Physical Society

Effects Of Dopants on the Electrical Transport Properties of Czochralski (CZ) and Edge-Defined Film-FED (EFG) Growth Grown β-$\mathbf{GA_2O_3}$[1] DHAN RANA, Bowling Green State Univ, POONEH SAADATKIA, SAHIL AGARWAL, FARIDA SELIM, Bowling Green State University — Gallium oxide (Ga_2O_3) is the widest band gap (4.8-5.0 eV) semiconducting oxide known so far transparent up to UV-C range. Due to wide band gap and high Baliga's Figure of Merit (FOM), it possesses excellent material properties for high power device applications. It exists in five different polymorphs (α, β, γ, δ and), with β being the most stable at all temperatures. Electrical transport properties of Czochralski (CZ) grown and Edge-Defined Film-Fed Growth (EFG) grown samples were evaluated by using Hall effect and Van der Pauw techniques. The conductivity of samples was found to be highly dependent on doping material. Un-doped β-Ga_2O_3 single crystal is highly resistive ($10^7\,\Omega$.cm), but the Sn-doped β-Ga_2O_3 has significantly lower resistivity. The resistivity of Mg-doped and Fe-doped samples were relatively higher than the un-doped samples. Positron annihilation measurements were conducted to investigate the effect of compensating defects on conductivity.

[1]Bowling Green State University

Dhan Rana
Bowling Green State Univ

Date submitted: 14 Mar 2018 Electronic form version 1.4