

Abstract Submitted
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Elevated Temperature Dependent Transport Properties of As- and P-doped Zinc Oxide B. CAI, M. L. NAKARMI, Department of Physics, Brooklyn College and Graduate Center of the CUNY, Brooklyn, NY, T. ODER, M. MCMASTER, A. SMITH, N. VELPUKONDA, Department of Physics and Astronomy, Youngstown State University, Youngstown, Ohio — Achieving highly conductive p-type zinc oxide (ZnO) is desired for the development of ZnO based optoelectronic devices. Understanding electrical properties of ZnO, doped with p-type dopants, is necessary for improving p-type conductivity. We employed temperature dependent Hall effect measurement to study the electrical transport properties of As- and P-doped ZnO epilayers. The samples were grown on sapphire substrates by magnetron sputtering technique. From the Hall effect measurements performed at elevated temperatures ranging from 20 to 750 K, we observed double activation processes in both As- and P-doped ZnO epilayers. We will compare the results of uniform doped and delta-doped samples. Correlation between electrical properties from these Hall effect measurements and optical properties from low temperature photoluminescence measurements will also be discussed.

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