**A study on optical properties of MnO doped borobismuthate glasses**

**Pavan Kumar Pothuganti**

Department of Physics,

JNTUA-College of Engineering, Ananthapuramu, Andhra Pradesh, India- 515 002

pavan.p.kumar@gmail.com

**Ashok Bhogi**

Department of Humanities and Sciences (Physics),

VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, Telangana, India-500 090

**Muralidhara Reddy Kalimi**

Department of EIE,

R.G.M. College of Engineering & Technology, Nandyal, Andhra Pradesh, India- 518 501

**Padamasuvarna Reniguntla**

Department of Physics,

JNTUA-College of Engineering, Ananthapuramu, Andhra Pradesh, India- 515 002

**ABSTRACT**

A series of borobismuthate glasses doped with MnO with 0, 0.2, 0.4, 0.6, 0.8 and 1 mol% were prepared by melt quenching technique. The amorphous nature of samples was confirmed by X-Ray Diffraction (XRD) studies. The parameters density, molar volume, molar refraction and oxygen packing density (OPD) were calculated and it is observed that density decreases and molar volume increases with increase in MnO component due to formation of Non Bridging Oxygens (NBO). Optical absorption studies were done for glass samples and it shows that optical bandgap energy (Eopt) and metallization criterion (M) decreases with increase in MnO component indicates that these glasses can behave as amorphous semiconductors. Apart from this the optical parameters such as refractive index (n), absorption coefficient (α), extinction coefficient (K), optical conductivity (σop), optical polarizability (αo) and optical basicity (Λth) have also been evaluated for all samples and studied as a function of wavelength.

*Keywords: Oxide glasses, UV-Vis, optical bandgap,absorption coefficient, extinction coefficient, Optical basicity*