



International Journal of ChemTech Research CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555 Vol.9, No.07 pp 324-333, 2016

Growth, Spectroscopic, Dielectric & Electrical studies of Glycine Manganous Acetate Single Crystal

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Abstract : A potentially useful semi organic material glycine with Manganous Acetate (GMnAc) has been grown by solution growth slow evaporation technique. Good transparent GMnAccrystals were obtained in a time span of 3 weeks. The grown crystals were characterized by Single crystal X-ray diffraction studies. The grown crystals have been subjected to powder X-ray diffraction to identify the intense peaks on various planes. The UV-VIS-NIR Spectrum of the grown GMn Accrystals shows less optical absorption and good transmittance in the entire visible region enabling its use in optical applications and the lower cut off wavelength as recorded from the absorption spectrum is 276 nm. The band gap energy was found to be 4.5 eV. The grown crystals were thermally stable up to 71.9°C. Mechanical properties such as micro hardness (Hv) and Meyer's index(n), Yield strength, elastic stiffness constant have been carried out by indentation method. The dielectric constant and dielectric loss measurements of the GMnAc crystal at different temperatures and frequencies of theapplied field are measured and calculated. Electrical properties of the material were investigated over wide frequency and temperature range. The ac/dc conductivity studies are calculated and the activation energy is determined. GMnAc is an electrically non conducting material at room temperature.

Keywords : Semiorganic crystal, Optical properties, Mechanical properties, Dielectric properties, Electrical properties, Spectroscopic.

P. Geetha et al /International Journal of ChemTech Research, 2016,9(7),pp 324-333.
