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Growth and Characterization of Semi-Organic Third Order NLO Material: Bisglycine Barium Dichloride Single Crystals

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Abstract : Optical quality single crystals of bisglycine barium dichloride were grown by slow evaporation solution growth technique. The cell parameters of the grown crystals were estimated by single crystal X – ray diffraction analysis. The grown crystals were characterized by powder X – ray diffraction and Fourier transforms infrared spectral analysis. The range and percentage of optical transmission was ascertained by recording UV – Vis – NIR transmittance spectral analysis. The mechanical strength of grown crystal was estimated by using Vicker's microhardness tester. The dielectric response of the grown crystal was investigated in the frequency range of 50 Hz – 2 MHz. Thermogravimetric and differential thermal analysis were carried out to investigate the thermal properties of grown crystal. The third order nonlinear optical properties were studied in detail by Z – scan technique with He-Ne laser radiation of wavelength at 632.8 nm and the corresponding nonlinear refractive index, absorption coefficient and optical susceptibility were calculated.
Keywords: Synthesis. Crystal growth. X – ray diffraction. Z – Scan studies.

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