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(57) Abstract :
Abstract Glycine potassium iodide has been synthesized as a crystalline solid in de-ionized water to use the steady solvent evaporation method at chamber temperature. The GPI crystal has the monoclinic space group Cc. The FTIR spectral analysis of the sample allowed us to determine the functional groups present. The UV-Vis-NIR transmission spectra of the crystals were measured from 250 to 1100 nm to learn more about them. The Kurtz–Perry powder approach proved the validity of second-harmonic generation. As part of an investigation into the 3rd-order NLO characteristics of GPI crystals. The 3rd nonlinear susceptible, diffusion coefficient and nonlinear absorptivity have all been calculated employing data from a Z-scan experiment. Positive photoconductivity has been established for the crystal that has been created through this investigation. Characterization experiments verified the produced crystal's potential for use in nonlinear optical applications. When examining the optical properties of GPI at a wavelength range of 282 nm, the crystalline determined to have a significant coefficient of absorption inside this visible light range. This was one of the findings of the study. The straight band gap is predicted to have a potential energy of 4.77 eV. When compared to potassium dihydrogen phosphate (KDP), glycine potassium iodide has an SHG efficiency of 0.89 times higher, according to the Kurtz Perry method. The Z-scan utilized to examine the 3rd-order NLO characteristics of GPI. Examination of photoconductivity reveals that the formed GPI crystal exhibits positive photoconductivity.

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