

Project Summary

The project investigates the synthesis, characterization, and nonlinear optical (NLO) properties of zinc-doped L-glycine barium chloride (Zn:L-Glycine:BaCl₂) single crystals. These crystals are synthesized using the slow evaporation solution growth technique (SEST).

Key points include:

- **Objective:** To improve the NLO properties of L-glycine-based crystals by doping with zinc and combining with barium chloride to form a new single crystal material with enhanced structural and optical properties.
- **Synthesis:** Crystals were grown from aqueous solutions containing L-glycine, barium chloride, and zinc chloride in a stoichiometric ratio, and then left to evaporate slowly over time.
- **Characterization Techniques Used:**
 - Powder X-ray Diffraction (XRD): Confirmed the crystalline nature and phase purity.
 - Fourier Transform Infrared Spectroscopy (FTIR): Verified the presence of functional groups.
 - UV-Visible Spectroscopy: Showed good transparency in the visible region, suggesting suitability for optical applications.
 - Second Harmonic Generation (SHG) Test: Demonstrated NLO activity, validating the potential use in photonics.
- **Findings:**
 - The introduction of Zn ions influenced the crystal structure and enhanced the NLO efficiency compared to pure L-glycine crystals.
 - These doped crystals exhibit desirable properties for applications in optical and photonic devices.