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**Investigation on the influence of foreign metal ions in crystal growth and characterization of L -Alaninium Maleate (LAM) single crystals**

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**Abstract**

A Nonlinear Optical, good quality, single crystals of doped and undoped L-Alaninium Maleate (LAM) were grown by slow evaporation solution growth technique at room temperature. The lattice parameters were analyzed by single crystal X-ray diffraction technique. The identification of Cadmium ion in the doped crystals was done using the EDAX spectrum. The presence of functional group of the dopant with LAM molecule was studied using FTIR spectra. The results of UV-Vis study is used to compare the transparencies of the doped and undoped LAM crystals. The optical band gap energy of the grown crystal was also calculated. The relative second harmonic generation (SHG) efficiency measurement with KDP reference is used to find the incorporation of metal to L-Alaninium Maleate crystals and the parent material. Also the thermal stability of the grown crystals was studied by TGA/DTA spectrum. The mechanical stability of the grown crystals was confirmed through Vickers micro hardness study. By parallel plate capacitor technique, the dielectric response was studied over a wide range of frequencies at different temperatures. The various studies showed the incorporation of the impurity  $Cd^{2+}$  into LAM crystals and the investigations indicated that the impurity played an important role in the changes of the spectral and structural properties of LAM crystals.

**Key words:** NLO material; Growth from solution; Second-harmonic Generation; metal doped LAM.

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