ABSTRACT

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LAA [L-arginine acetate] is an efficient organic nonlinear optical material for second harmonic generation. It has a low $\varepsilon_r$ value and have a UV cutoff around 240 nm which makes it suitable for frequency conversion purposes. It belongs to the monoclinic crystal system. Several investigators have shown considerable interest on this material.

In the present study, L-arginine acetate (LAA), was doped separately with formic acid, hydrochloric acid, and oxalic acid and single crystals were grown by the slow evaporation method. The grown crystals were characterized by single crystal XRD, PXRD, density, EDAX, FTIR, UV-Vis spectral, SHG, thermal and AC electrical measurements.

The results obtained indicate that the pure and doped LAA crystals crystallize in the monoclinic crystal system. All the crystals grown are found to be transparent, hard and thermally stable. The SHG efficiency of all the samples is comparable to that of the KDP crystals.

The dielectric studies indicate that the $\varepsilon_r$ and tan $\delta$ values increase with the increase in temperature indicating the normal dielectric behaviour. The low $\varepsilon_r$ values observed indicate that all the grown crystals are not only efficient NLO materials but also promising low $\varepsilon_r$ value dielectric materials.