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Investigation on Growth and Characterization of Non – linear Optical Crystal L – Valine Magnesium Chloride

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Abstract : New nonlinear optical (NLO) single crystal of L –Valine magnesium chloride (LVMgCl) was grown by slow evaporation method. The grown crystal was characterized by X-ray diffractometry (XRD), UV–vis–NIR, Fourier Transform infrared (FTIR), TG - DTA and Microhardness studies. Single crystal X-ray diffraction analysis reveals that LVMgcl belongs to monoclinic crystal system. The optical absorption studies show that the crystal is transparent in the entire visible region with lower cut-off wavelength at 24enm. FTIR studies have been carried out to identify the functional groups present in the crystal. The thermal stability of LVMgCl single crystal has been analyzed by TGA/DTA studies. The grown crystals were subjected to microhardness studies, to analyse the mechanical behavior of the grown crystal. Finally, NLO test was performed by Kurtz and Perry powder technique to confirm the Second Harmonic Generation by the grown crystal.
Keywords : Solution growth, X – ray diffraction (XRD), Vicker's hardness test, NLO.

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