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Crystal Growth, Spectral, Optical and Thermal Studies of Thiourea Ammonium Acetate Doped Potassium Dihydrogen Phosphate Crystal for NLO Applications

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Abstract

The non-linear optical single crystal of thiourea ammonium acetate doped potassium dihydrogen phosphate was grown by slow evaporation solution technique of size $19 \times 11 \times 4$ mm³. The crystallographic unit cell parameters of grown crystal were determined by single crystal X-ray diffraction study. The optical study revealed that the doped KDP crystal has high transmittance, low cut off wavelength and high optical band gap. The enhanced second harmonic generation efficiency of doped KDP crystal was determined by employing Kurtz-Perry powder technique. The third order non-linear absorption coefficient (β), non-linear refractive index (n_2) and susceptibility [$\chi^{(3)}$] were calculated using Z-scan technique. The laser damage threshold of grown crystal has been determined. The thermal properties of the grown crystal were carried out by thermogravimetric and differential thermal analysis.

Q KEYWORDS: Crystal growth NLO material Z-scan laser damage threshold thermal studies

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