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A Study on Spectral and Morphological Analysis on Unidirectional Neodymium Doped KDP Single Crystal

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Abstract : A nonlinear optical unidirectional $\langle 101 \rangle$ Single crystal of Neodymium doped Potassium dihydrogen orthophosphate (KDP) was grown by Sankaranarayanan-Ramasamy (SR) method. The $\langle 101 \rangle$ oriented seed crystals were mounted at the bottom of the glass ampoule and the crystal of 16mm diameter; 120mm length were grown by SR method. The laser damage threshold was measured using Q-switched Nd:YAG laser (1064 nm) and was found to be 5.456 Gwcm^{-2} respectively. The presence of functional groups was examined by Fourier transform infrared (FTIR) analysis. The surface morphology and dislocations along $\langle 101 \rangle$ plane was observed using Scanning electron microscope (SEM) and Transmission electron microscope (TEM).

Keywords : Single crystal growth; Laser damage threshold; FTIR; TEM Analysis.

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