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Spectroscopic and thermal studies of L-arginine doped Potassium Dihydrogen Phosphate crystals JAYESH GOVANI, FELICIA MANCIU, Department of Physics, University of Texas at El Paso, El Paso, TX -79968, U.S.A, MIHIR JOSHI, KETAN PARIKH, DIPAK DAVE, Department of Physics, Saurashtra University, Rajkot, Gujarat- 360 005, India — We have used IR transmission and Raman spectroscopy to study the active doping of potassium dihydrogen phosphate (KDP) crystals with L-arginine amino acid. In the present investigation, pure and doped KDP crystals were grown by slow evaporation solution method. Although the dominant bands observed in the infrared absorption spectra correspond to KDP crystals, the existence of vibrational lines at 1401 $cm^{-1}(CH_2)$, 1637 cm^{-1} (COO^-), 1716 cm^{-1} (NH_3^+), and 3127 cm^{-1} (NH_3^+) indicate that successful doping was achieved. This affirmation is further corroborated by the FT-Raman data, where strong lines are observed in the 2800 cm^{-1} – 3100 cm^{-1} region, which is associated with C-H stretching modes of amino acids. The crystal structure and the thermal stability of the samples were also examined by powder X-ray diffraction and thermogravimetric techniques, respectively. Thermogravimetric analysis demonstrates a decrease of the thermal stability with increasing doping amount. An increase of second harmonic generation efficiency was found with more L-Arginine doping.

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