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Spectroscopic and structural studies of L-arginine doped Potassium Dihydrogen Phosphate crystals¹ JAYESH GOVANI, CRISTIAN BOTEZ, WILLIAM DURRER, FELICIA MANCIU, Physics Department, University of Texas at El Paso, TX 79968 — We report in this study the spectroscopic and structural characterization of standard and L-arginine doped potassium dihydrogen phosphate crystals synthesized by a solution growth technique. The infrared absorption and Raman results demonstrate chemical functionalization between the amino (NH_3^+) groups of the organic material and the phosphate units of the inorganic crystals. This affirmation, which also implies the achievement of successful doping, is supported by the existence of extra vibrational lines in the IR and Raman spectra of L-arginine doped potassium dihydrogen phosphate crystals; these vibrational lines exhibit shifting towards lower frequencies as compared with the characteristic bands of L-arginine. Incorporation of the amino acid into the structure of the inorganic material is revealed by X-ray diffraction results also, where the shifting of diffraction lines and the appearance of a new one are observed.

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