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**SYNTHESIS AND CHARACTERIZATION OF L-TYROSINE HYDROCHLORIDE CRYSTALS SUBMITTED TO HIGH AND LOW TEMPERATURES**

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New materials are emerging and generate advances in nonlinear optics that studies the phenomena related to changes in optical properties when occurs interaction of light with the matter. Semiorganic crystals present such properties. The goal is this work is to produce semiorganic single crystal of L-tyrosine hydrochloride (LTHCl) and verify their thermal stability when subjected to high and low temperatures. The single crystals of LTHCl were produced for solubilization of amino acid L-tyrosine in hydrochloric acid using slow solvent evaporation technique at a constant temperature of 25oC. The X-ray diffraction (XRD) and refining by the Rietveld method were used to confirm the structure of the material. The thermal stability was investigated using DSC, TGA-DTA. The LTHCl crystal belongs to the monoclinic system, with two molecules per unit cell. The refinement by the Rietveld method showed good results with Rwp= 8.49% and Rp= 6.29% with S=1.13. Thermal analysis shown an endothermic event at about 160°C, which can be associated with phase transition occurred in LTHCl crystal. It was also observed that the crystal melting point occurs at a temperature of 230°C. No water of crystallization was found in the crystal structure, which was confirmed by Raman spectroscopy and thermal analysis. From the Raman spectroscopy experiments in function of temperature, no significant changes was observe in the behavior of vibrational n ormal modes between temperatures of -253 and 170oC. Finally, a monoclinic crystal system LTHCl is stable up to 160°C at high temperatures and -253°C at low temperatures. Therefore, our investigation has proved that LTHCl crystals can be used in this range of temperature without the lost of their nonlinear optical properties.