Isostructural phase transition in m-carboxyphenylammonium monohydrogenphosphite

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Description
Crystals of m-carboxyphenylammonium monohydrogenphosphite, C7H8NO_{2}^+·H2PO_3^{-} (m-CPAMP), space group P2_{1}/c, grown from aqueous solution undergo a reversible first-order single-crystal phase transition at Tc = 246 (2) K with a hysteresis of 3.6 K. The thermal behaviour of the sample was characterized by differential scanning calorimetry (DSC) experiments. Variations of the unit-cell parameters versus temperature between 100 and 320 K are reported. The transition from the higher-temperature phase (HTP) to the lower-temperature phase (LTP) is characterized by a unit-cell volume contraction of 1.77%. The average structure and unit-cell packing of m-CPAMP at lower temperature (100 K) are reported from accurate X-ray data sets and compared with those of the higher-temperature phase (293 K) in order to investigate the mechanism of the phase transition. The reciprocal lattice …