

**Synthesis, crystal structure and Hirshfeld surface analysis of acidic salt
[4-methyl phenyl ammonium][(*O*-phenyl)(hydroxyl)phosphate],
[4-CH₃-C₆H₄NH₃][(C₆H₅O)P(O)(O)(OH)]**

F. Karimi Ahmadabad¹, M. Pourayoubi^{*1}, M. Nečas^{2,3}

- 1- Department of Chemistry, Faculty of Sciences, Ferdowsi University of Mashhad, Mashhad, Iran
2- CEITEC – Central European Institute of Technology, Masaryk University, Kamenice 5, Brno, CZ–62500, Czech Republic
3- Department of Chemistry, Faculty of Science, Masaryk University, Kotlarska 2, Brno CZ–61137, Czech Republic

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Abstract: The synthesis and X-ray diffraction analysis of a new acidic salt, [4-methyl-phenyl ammonium][(*O*-phenyl)(hydroxyl)phosphate], [4-CH₃-C₆H₄NH₃][(C₆H₅O)P(O)(O)(OH)], is reported. This compound crystallizes in the monoclinic system, with space group *P*2₁/*c* (*a* = 9.5147(4) Å, *b* = 23.2158(10) Å, *c* = 13.2740(6) Å and β = 111.244(4)°) with four independent components including two cations and two anions in the asymmetric unit. In the crystal, adjacent components are linked together through N–H···O and O–H···O hydrogen bonds building a ladder arrangement along [100] axis. The Hirshfeld surface analysis and two-dimensional fingerprint plot were used to study intermolecular interactions in the structure. The N–H···O and O–H···O hydrogen bonds are the characteristic interactions (red areas in the Hirshfeld surfaces). Two sharp spikes in the fingerprint plots of two anions are related to the O...H(O) contacts, while one nearly sharp spike in the fingerprint of two cations is assigned to the O...H(N) contacts.

Keywords: Acidic salt [4-methyl phenyl ammonium][(*O*-phenyl)(hydroxyl)phosphate]; X-ray diffraction analysis; hydrogen bonding; Hirshfeld surface analysis.

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*Corresponding author: Tel:05138805535, Fax: 05138796416, Email: pourayoubi@um.ac.ir