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Research paper

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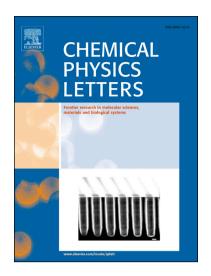
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ACCEPTED MANUSCRIPT

Synthesis, crystal structure, vibrational spectra and thermal properties of novel ionic organic-inorganic hybrid material

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Abstract:

A novel and simple approach to the synthesis of a new organic-inorganic $4C_3H_5N_3O_3^{2+}.2C_3H_4N_3O_3^{+}.5HPO_4^{2-}.4H_2O$ resulted from the reaction of melamine and phosphoric acid in methanol. It was identified by means of the single crystal X-ray diffraction and characterized using different physicochemical studies to gain deeper insight in its structure. The determination of the crystal structure showed that the compound crystallizes in monoclinic system with the space group P2₁, lattice parameters a=11.3061Å, b=20.9911)Å, c=12.2711Å. The UV-Vis shows a good transmittance in the visible range, with an absorption threshold at 255 nm. The thermal behavior divulges a good thermal stability up to 230°C.

Key words: Organic-inorganic hybrid, FT-IR spectroscopy, Raman spectroscopy, crystal structure, X-ray crystallography.

1. Introduction

Organic-inorganic hybrid materials have been investigated for their interesting and important properties. Their expectations go further than mechanical strength, such as thermal and chemical stability. Hence these hybrids represent new generation of materials possessing promising applications. They can be applied in many branches of

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