

K₂Mn₂II(H₂O)(₂)C₂O₄(HPO₃)(₂): a new 2D manganese(II) oxalatophosphite with double-layered honeycomb sheets stabilized by potassium ions

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Resumen

A novel 2D metal oxalatophosphite, K₂Mn₂II(H₂O)(₂)C₂O₄(HPO₃)(₂) (KMnCP), was hydrothermally synthesized and characterized. The hexagonal morphology and crystal growth faces of KMnCP were predicted by the Bravais-Friedel-Donnay-Harker (BFDH) theory. Single crystal X-ray diffraction analysis revealed that the compound displays a unique double layered structure constructed from Mn(H₂O)(HPO₃) single layers linked by oxalate ligands, where the potassium levels interrupt the 3D connectivity through the organic bridges. Moreover, in order to classify this archetype, a crystallochemical revision of metal oxalatophosphites with anionic frameworks has been carried out. Several secondary building units (SBUs) formed from metal-phosphite substructures and different roles of the oxalate bridges have been observed, which has led us to propose a new structural classification for these kinds of materials that share common features with classic inorganic metal phosphates and coordination polymers. Finally, the thermal, spectroscopic and magnetic properties together with the electronic structure of the studied compound are discussed.

Palabras clave

KeyWords Plus: [INORGANIC-ORGANIC HYBRID](#); [GALLIUM PHOSPHITE-OXALATES](#); [OPEN-FRAMEWORK STRUCTURES](#); [SOLID-STATE NMR](#); [CRYSTAL-STRUCTURE](#); [MAGNETIC-PROPERTIES](#); [VANADYL OXALATOPHOSPHITE](#); [VARYING DIMENSIONALITY](#); [METAL-COMPOUNDS](#); [BATTERIES](#)

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