



Isomorphous phosphonoacetic acid salts with magnesium(II), manganese(II), cobalt(II), zinc(II) and copper(II).

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Streszczenie

All crystals of the title compounds, with general formula $M_2p(C_2H_4O_5P)_2(H_2O)_2$, (MAP), are isomorphous and crystallize in the space group $P112_1$ with $Z=2$. The two crystallographically independent M_2p cations are situated on a center of symmetry and are octahedrally co-ordinated by two phosphonate monoanions and two water molecules. In the case of Cu_2p cation, Jahn-Teller effect causes strong extension of two $Cu-O$ bonds. The mono-anions coordinate the metal ions by one carboxylic and one phosphonate oxygen atom, which is facilitated by their specific overall conformation. In each monoanion, one of the phosphonate O atoms is nearly antiperiplanar to the carboxylic C atom, and the remaining phosphonate O atoms are nearly gauche (pseudocyclic) with respect to the mentioned C atom. The carboxylic O atoms are in positions close to pseudocyclic in relation to the phosphonate P atom. The complex molecules form well separated layers in all MAP compounds. The phosphonate and carboxylic groups act as donors in medium strong and weak intermolecular $O-H\cdots O$ hydrogen bonding and, as acceptors, in $C-H\cdots O$ hydrogen interactions in all structures. Additionally both crystallographically independent water molecules are donors of weak hydrogen bonding to phosphonate oxygen atoms from adjacent complex molecules.

Adres publiczny

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