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Crystal structure of baryum dicobalt iron(III) three(orthophosphate) belonging to a-CrPO4 family

Adam BOURAIMA

Faculté des Sciences, Université des Sciences et Techniques de Masuku

Abstract

The new compound, BaCo2Fe(PO4)3, has been synthesized by solid state reaction. The analysis by X-ray diffraction technique showed that it crystallizes in the orthorhombic system with the space group Imma . The structure is closely linked to that of -CrPO4 type structure. In this structure two oxygen atoms (O1, O2) are in general position and the others in special positions. The three- dimensional network of the crystal structure is made up of two types of chains running to [001] direction. The first chain is originated from two edge-sharing CoO6 octahedra leading to the formation of Co2O10 dimers that are connected to two PO4 tetrahedra by a common edge. The junction of FeO6 octahedra and PO4 tetrahedra sharing vertices allowed to built the second chain. These chains are linked together by common vertices of tetrahedra PO4 to form an open three-dimensional framework that delimits two types of tunnels parallel to [010] and [100] where the BaII cations are located. Indeed, each Barium cation is surrounded by eight oxygen atoms.

Biography

Adam bouraima works at the Department of Science ,Université des Sciences et Techniques de Masuku . Adam Bouraima does research in Applied Mathematics and Analysis.

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