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Structural and electrical properties of $Bi_{2-x}M_xIr_2O_7$ ($M= Na^+$, Ca^{2+} and Ce^{4+}) pyrochlores CARLOS COSIO-CASTAÑEDA, OLIVER MARTíNEZ-ANAYA, GUSTAVO TAVIZÓN, Fac. de Quimica, PABLO DE LA MORA, Fac. de Ciencias, UNAM, Mexico, D.F. — In α-pyrochlores, $A_2B_2O_7$, it is possible to appreciate different magnetic couplings depending on A and B spin-arrangement. In order to investigate how these magnetic and electrical properties are related with the iridium oxidation-state, we investigate the $Bi_{2-x}M_xIr_2O_7$ system ($M = Na^+$, Ca^{2+} and Ce^{4+}). Polycrystalline samples have been synthesized by the conventional solid-state reaction method. Single-phase polycrystalline samples were confirmed by X-ray diffraction patterns. Structural characterizations were performed by X- ray Rietveld refinement of powders and the temperature dependence of the electrical resistivity was studied in the 10- 300 K range. The samples showed a metallic-type behavior that depended on the Iridium oxidation-state. This behavior could be explained on the basis of the hole/electron doping when we introduce some different Bi^{3+}-substituent metals in order to change the iridium electronic state. In this way, Ce^{4+}- doping will produce a change from Ir^{4+} ($t_{2g}^5 e_g^0$, electronic state in octahedral coordination) to Ir^{3+} ($t_{2g}^6 e_g^0$)

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