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Crystal Structure, Magnetism, and Infrared Reflectivity of Double Perovskites Sr_2BUO_6 and Sr_2BUO_{6-d}, B=Mn, Fe, Co, Ni, Zn R.M. PINACCA, M. DEL C. VIOLA, J.C. PEDREGOSA, FQBF, UNSL, San Luis, Argentina, R.E. CARBONIO, INFIQC, UNC, Córdoba, Argentina, M.J. MARTINEZ-LOPE, J.A. ALONSO, ICMM, CSIC, Cantoblanco, Madrid, Spain, F.P. DE LA CRUZ, N.E. MASSA, LANAIS EFO-CEQUINOR, U.N.L.P., C. C. 962, (1900) La Plata, Argentina — Double perovskites Sr_2BUO_6 where B'=Mn, Fe, Co, Ni, Zn have been prepared as a polycrystalline powder by solid- state reaction. and studied by X-ray diffraction and magnetic measurements. At 300K, they present the same monoclinic distorted crystal structure, space group $P2_1$ /n. The perovskite lattice consists of a completely ordered array of BO_6 and UO_6 octahedra exhibiting a slight tilting of the type $a^-b^+a^-$. Magnetic measurements show antiferromagnetism for the phases with B=Co, Ni and Mn at low temperature. The effective magnetic moment at $T \geq T_{Neel}$ (5.22l B/f.u. for Co phase and 3.26 B/f.u. for Ni phase) suggests an unquenched orbital contribution. The value for the Mn phase (5.74 B/f.u.) is consistent with that expected for high-spin Mn^{2+} (5.91 B/f.u.). The topotactic reduction of the stoichiometric sample leads to oxygen deficient disordered perovskites, $SrB_{0.5}U_{0.5}O_{3-d}$ having an orthorhombic distorted structure, space group Pbnm, at 300K. We will also comment on the temperature dependent infrared reflectivity of Sr_2CoUO_6 and isomorphous compounds.

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