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Synchroton Soft X-ray Absorption Studies of $YbFe_{1-x}Mn_xO_3$ ($0.0 \leq x \leq 1.0$) Perovskites P. OLALDE-VELASCO, W.L. YANG, Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA, C. HERNANDEZ, E. CHAVIRA, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, 04510 México D. F., México, I. ROSALES, Facultad de Quimica, Universidad Nacional Autónoma de México, 04510 México D. F., México, A. TEJADA, L. HUERTA, J. JIMENEZ-MIER, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, 04510 México D. F., México, E.E. MARINERO, HGST San José Research Center, 3404 Yerba Buena Rd., San José, CA 95135, USA — This work aims to correlate the interplay between structure-bonding (O2p-TM3d) and magnetic properties (TM 3d) in $YbFe_{1-x}Mn_xO_3$ ($0.0 \leq x \leq 1.0$) perovskites which are synthesized by the solid state reaction method. We have investigated by XAS the O2p and the magnetic TM3d unoccupied states of $YbFe_{1-x}Mn_xO_3$ ($0 \leq x \leq 1$). We find that increasing Mn doping promotes the creation of new states at the O2p band, it also induces a shifts towards lower energies of the O K pre-edge (with reference to the O2p-TM3d hybridization) and changes the spectral distribution in the region of TM 4s, p – O 2p- Yb 5d hybridization. These changes are most marked for $x > 0.2$. A correlated effect with Mn doping is observed in the Fe $L_{2,3}$ spectra where again new electronic states and systematic changes are observed $x > 0.2$. This is in contrast with Mn $L_{2,3}$ spectra, where all the spectra are very similar except for $x=0.2$. Thus, we provide a comprehensive picture of the electronic structure evolution in the conduction band in these materials as a function of the Mn content.

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