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**Electronic and magnetic structures of double perovskite multifunctional $La_2NiMnO_6$ thin films**[1] HAIZHONG GUO, JIANDI ZHANG, Department of Physics, Florida International University, Miami, FL 33199, ARUNAVA GUPTA, Center for Materials for Information Technology and Department of Chemistry, University of Alabama, Tuscaloosa, Alabama 35487, M. VARELA, S.J. PENNYCOOK, Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831 — Electronic and magnetic structures of the ordered double perovskite $La_2NiMnO_6$ (LNMO) thin films grown by pulsed laser deposition have been studied by x-ray absorption spectroscopy (XAS) and magnetic circular dichroism spectroscopy (XMCD). Based upon the results of XMCD, we find that the primary ion valence states to be $Mn^{4+}/Ni^{2+}$, and the ferromagnetism resulting from $Mn^{4+}$ -O - $Ni^{2+}$ superexchange interaction. Additionally, we show that the LNMO samples contain some $Mn^{3+}$ and $Ni^{3+}$ Jahn-Teller ions caused by oxygen or cation related defects. The orbital and spin magnetic moments of the Mn 3*d*and Ni 3*d*also have been deduced from the magneto-optical sum rules and compared with magnetization measurements.

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