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Structural and magnetic properties of epitaxial $FeMn_2O_4$ film on MgO (100). THIET DUONG VAN, THI MINH HAI NGUYEN, ANH PHUONG NGUYEN, DUNG DANG DUC, ANH TUAN DUONG, QUANG NGUYEN VAN, SUNGLAE CHO, Univ of Ulsan — FeM_2X_4 spinel structures, where M is a transition metal and X is oxygen or sulfur, are candidate materials for spin filters, one of the key devices in spintronics. On the other hand, the electronic and magnetic properties of these spinel structures could be modified via the control of cation distribution. Among the spinel oxides, iron manganese oxide is one of promising materials for applications. $FeMn_2O_4$ shows inverse spinel structure above 390 K and ferrimagnetic properties below the temperature. In this work, we report on the structural and magnetic properties of epitaxial $FeMn_2O_4$ thin film on MgO(100) substrate. The reflection high energy electron diffraction (RHEED) and X-ray diffraction (XRD) results indicated that films were epitaxially grown on MgO(100) without the impurity phases. The valance states of Fe and Mn in the $FeMn_2O_4$ film were carried out using x-ray photoelectron spectrometer (XPS). The magnetic properties were measured by vibrating sample magnetometer (VSM), indicating that the samples are ferromagnetic at room temperature. The structural detail and origin of magnetic ordering in $FeMn_2O_4$ will be discussed.

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