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**Epitaxial half metallic/oxide semiconductor schottky contacts** J. JHAVERI, Department of Physics, University of Florida, Gainesville, FL, A. VENIMADHAV, QI LI, Department of Physics, Pennsylvania State University, PA16801 — Half metallic/semiconductor junctions are useful for spintronic devices. With such an interface, one can potentially inject a large percentage of spin polarized electrons into the semiconductor in a active spintronic device. We fabricated half-metallic $Sr_2FeMoO_6$ (SFMO) and 0.1% Nb doped $SrTiO_3$(Nb: STO) schottky contacts using Pulsed Laser Deposition (PLD). $Sr_2FeMoO_6$films were grown epitaxially on Nb-$SrTiO_3$ with Ar and small amounts of $O_2$ (0.02%) while the substrate was kept at $800^o$ C. The current versus voltage characteristics of the junction were measured on 1 $mm^2$ contact area. The I-V curves were measured at several temperatures and in each case, the junction exhibited a clear rectifying behavior. A strong rectifying behavior was observed at room temperature with a small activation voltage of 0.2 V. Temperature dependence of I-V characteristics shows a clear schottky nature of the contacts. The barrier height and ideality factor of the junction were calculated using the thermionic model given by $I = I_s(e^{V/nkT} - 1)$. Here, $I_s = AA^* T^2 e^{q\phi/kT}$, where $A$is the active area, $A^*$ is the effective Richardson constant, $\phi$ is the Schottky barrier height, and $n$is the ideality factor. We found that the ideality factor was approximately constant as the temperature was varied with small deviations, and the barrier height decreased with temperature and more abruptly below 100K.

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