## BS12

# Critical Exponents of the Ferromagnetic-paramagnetic Phase Transition of $La_{0.7}Ba_{0.3}Mn_{0.95}Ti_{0.05}O_3$

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We have obtained the critical exponents, the corresponding amplitudes and the universal amplitude ratios for the $La_{0.7}Ba_{0.3}Mn_{0.95}Ti_{0.05}O_3$ compounds from detailed bulk magnetization measurements performed in the critical region near the magnetic phase transition temperature. The magnetic data analyzed in the critical region using the Modified Arrot plot, Kouvel-Fisher plot and Scaling plot methods give values for the critical temperature. The critical exponents determined are $\beta$, $\gamma$, and $\delta$, among which $\beta$ describes the temperature dependence of the spontaneous magnetization, $\gamma$ describe the temperature dependence of the zero-field susceptibility, and $\delta$ describes the field dependence of the magnetization at the Curie temperature, $T_C$. The values of $T_C$ obtained in the present investigation match very well those reported in the literature. The values of critical exponents are all between mean-field values and three-dimensional (3D)-Ising model values.

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## BS13

# Characteristics of $La_{0.67}Sr_{0.33}MnO_3$ Layer Under W-C-N Buffer Layer Instead of $SiO_2$ on Si Substrate

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Recently, the GMR, CMR and TMR films have been successfully deposited on several single crystal substrates, these technology must be deposited by viable buffer layer on Si substrate for future semiconductor applications. So we suggest W-C-N buffer layer instead of $SiO_2$ buffer layer used traditionally on Si substrate. We studies application W-C-N diffusion barrier for La-Sr-MnO magnetic device at nitrogen gas flow 0 to 2 sccm. To deposit the La-Sr-MnO(LSMO) layers, we have used acetic acid, ethanol and distilled water as a solvent to synthesize LSMO precursor. LSMO layers have grown on W-C-N/Si multi layer by a sol-gel spinning process. After the deposition of LSMO on W-C-N thin films, the films were annealed for 3 hours at 800°C in oxygen ambient. We studied the comparison with W-C-N and $SiO_2$ buffer layer effect on Si substrate for LSMO Manganese oxide layer. We also examine the resistances and the crystalline structures of the as-deposited W-C-N thin films were determined by using β-ray, four-point probe, and X-ray diffraction (XRD), respectively. The thermal stability of W-C-N ternary component thin films on Si for various nitrogen content at as deposition state and 800°C. The interface effects between LSMO layer and W-C-N diffusion barrier were determined by using a XRD, VSM, and Grain Size (used X-ray diffraction).

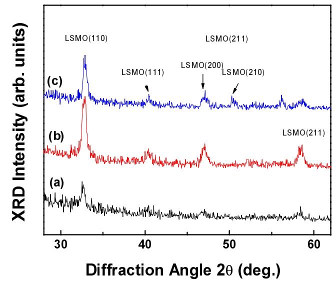


**Fig. 1.** Comparison of XRD peaks of LSMO/W-C-N/Si thin films of $N_2$ flow (a) 0 sccm, (b) 1 sccm, and (c) 2 sccm after annealed for 3 hours at 800°C in oxygen ambient.

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