Magnetic and electrical properties on possible room temperature hybrid multiferroic BaTiO$_3$/La$_{2/3}$Sr$_{1/3}$MnO$_3$\textsuperscript{1} JOHN EDWARD ORDOÑEZ, MARÍA ELENA GÓMEZ, WILSON LOPERA MUÑOZ, Universidad del Valle, Cali, Colombia, PEDRO ANTONIO PRIETO, Center of Excellence on Novel Materials - CENM, Cali, Colombia, THIN FILM GROUP TEAM, CENTER OF EXCELLENCE ON NOVEL MATERIALS - CENM, CALI, COLOMBIA TEAM — We addressed to deposit the ferromagnetic phase of the La$_{1-x}$Sr$_x$MnO$_3$ and the ferroelectric BaTiO$_3$ for possible hybrid multiferroic heterostructure. We have optimized the growth parameters for depositing BaTiO$_3$(BTO) / La$_{2/3}$Ca$_{1/3}$MnO$_3$(LCMO) / (001) SrTiO$_3$ by sputtering RF and DC, respectively, in pure oxygen atmosphere and a substrate temperature of 830°C. Keeping fixed the magnetic layer thickness ($t$$_{LSMO} = 40$ nm) and varying the thickness of the ferroelectric layer ($t$$_{BTO} = 20$, 40, 80, 100 nm). We want to point out the influence of the thicknesses ratio ($t$$_{BTO}$/t$_{LSMO}$) on electrical and magnetic properties. From x-ray diffraction (XRD) analysis, we found the bragg peaks for LSMO maintain its position but BTO peak shift to lower Bragg angle indicating a strained BTO film. Magnetization and polarization measurements indicate a possible multiferroic behavior in the bilayers. Hysteresis loop measurements of bilayers show ferromagnetic behavior.

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