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Evidence of magneto-electric coupling on YMnO_3 thin films capacitors¹ JACKELINE NARVAEZ, JUAN RAMIREZ, MARIA GOMEZ, Thin Film Group, Universidad del Valle A.A.25360, Cali, Colombia — We report synthesis of phase pure multiferroic YMnO_3 thin films. Films were prepared by using rf magnetron sputtering technique using ultra high purity Argon gas at 0.07mbar at substrate temperature around 850°C over Pt/TiO₂/SiO₂/Si substrates. Films were characterized by x-ray diffraction (XRD), Scanning electron microscopy (SEM), temperature-dependent magnetization curves by using a Vibrating sample magnetometer (VSM), Atomic force microscopy (AFM) and temperature-dependent polarization measurements of Au/ YMnO_3 /Pt capacitor heterostructures. Temperature dependence capacitance measurements show an anomaly close to the Néel temperature (70K) which is corroborated by electrical polarization hysteresis loops. We found a effect on the ferroelectric properties (saturation polarization and coercitive electric field) only explained by the antiferromagnetic phase of YMnO_3 . We model the ferroelectric hysteresis loops by using a series of resistance-capacitor elements.

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