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Synthesis and characterization of thin film $\text{Ni}_3\text{V}_2\text{O}_8$ G. LAWES, C. SUDAKAR, P. KHAREL, R. NAIK, Wayne State University — We have prepared thin films of multiferroic $\text{Ni}_3\text{V}_2\text{O}_8$ using sputter deposition and spin coating techniques. Raman spectroscopy and XRD confirm that the as-deposited films are amorphous, single-phase $\text{Ni}_3\text{V}_2\text{O}_8$. These films develop increasing crystalline order on annealing at 900 °C, although they remain polycrystalline. These thin film $\text{Ni}_3\text{V}_2\text{O}_8$ samples develop a net magnetization below $T=4$ K; this temperature is consistent with the transition to a canted antiferromagnetic state in bulk samples. We observe an anomaly in the dielectric constant coincident with this magnetic transition. Despite being able to apply an electric field of over 6 MV/m to these samples, we are unable to observe any voltage-induced shift in this anomaly. We will discuss the implications of these results for future studies on thin film multiferroics.

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