

Abstract Submitted
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Ferroelectric BaTiO₃ thin film synthesis on Ni substrates by pulsed laser deposition with varying oxygen atmosphere conditions E. SILVA, J. LIU, M. LIU, G. COLLINS, C.L. CHEN, The University of Texas at San Antonio — A KrF excimer laser of 248nm wavelength was used to fabricate ferroelectric Barium Titanate (BaTiO₃) on nickel substrates. A high vacuum chamber base pressure of $\sim 3.0 \times 10^{-7}$ Torr was obtained for each sample and a laser repetition rate of 10Hz with an energy of 600mJ was used. The first film was synthesized by depositing BTO for 60min at 850 °C under HV; prior to annealing the oxygen atmosphere was set to 250mTorr. The second film was deposited at 850°C under HV for 1 min followed by an increase in oxygen atmosphere to 250mTorr, resuming deposition for 59min. The third film was deposited under HV at 200°C for 1min, the oxygen atmosphere and temperature were then set to 250mTorr and 850°C followed by film deposition for an additional 59min. All three samples were annealed at 840°C for 15 min and lowered to 20°C at a rate of 3°C per min. Hysteresis measurements were obtained for the samples with a Radiant Technologies inc. RT6000HVS system. It was observed that both the first and second films had a hysteresis loop in close resemblance to paraelectric materials while the third film showed an improved square shape hysteresis loop, indicative of ferroelectric properties.

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