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Ferroelectric phase transition in EBTO thin films using second harmonic generation GUERAU CABRERA, SAM MATHERS, West Virginia University, WEIWEI LI, HAO YANG, Soochow University China, MIKEL HOLCOMB, West Virginia University — Europium Barium Titanate ($Eu_{0.5}Ba_{0.5}TiO_3$) or EBTO in bulk form is a novel single-phase multiferoic material that exhibits ferroelectric (Curie temp $\sim$ 213K) and G-type antiferromagnetic (Neel temp $\sim$ 1.9K) properties. Oxygen vacancies have been shown to play a role in room temperature ferromagnetism (HfO_2, ZnO, TiO_2) and have been reported to increase the Curie temperature of EuO films. EBTO films were grown on $SrTiO_3$ (STO) substrates by pulsed laser deposition (PLD). We performed a temperature dependence study using second harmonic generation (SHG) and found the SHG signal to change as a function of temperature indicating a phase tranistion from paraelectric to ferroelectric in these EBTO films.

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