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Ferroelectric domain states of a T-BiFeO3 thin film investigated by second harmonic generation microscopy CHANG JAE ROH, SUN YOUNG HAMH, Gwangju Institute of Science and Technology, CHANG SU WOO, KWANG EUN KIM, CHAN HO YANG, Korea Advanced Institute of Science and Technology, JONG SEOK LEE[1], Gwangju Institute of Science and Technology — We investigate a ferroelectric domain state of a multiferroic tetragonal(T)-BiFeO3 thin film by using second harmonic generation (SHG) microscopy. We illuminate the sample with a femtosecond laser with a center wavelength of 800 nm, and monitor the SHG response with full variations of input and output polarizations of light. By scanning the sample with a beam size reduced down to 1 μm, we could observe clear signatures of nano- and micro-sized domains and their inhomogeneous distributions. Also, we observed a clear signature of temperature-dependent phase transition in the muli-ferroelectric state which is possibly attributable to the rotation of the polarization axis by 45 degrees

[1]Corresponding author

Chang Jae Roh
Gwangju Institute of Science and Technology

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