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Polarized micro Raman spectroscopy of multiferroic BiFeO₃ single crystals C. BEEKMAN, University of Toronto, SANG-WOOK CHEONG, Rutgers University, KENNETH BURCH, University of Toronto — In Bismuth ferrite (BiFeO₃) antiferromagnetic and ferroelectric order parameters coexist at room temperature, making this material an excellent candidate for new functionalities, such as electrical control of ferromagnetism. Despite extensive reports on Raman scattering experiments on single crystals and thin films, controversy still remains in the observation and assignment of the phonon modes. However, proper Raman mode assignment to describe the phonons critical for the multiferroic behavior is necessary. We present polarized micro Raman spectroscopy of single crystals with uniform ferroelectric polarization. Careful examination of the Raman spectra upon crystal rotation enables us to unambiguously assign several (A_1 , E_x and E_y) modes.

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