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Neutron Scattering Study of Low Energy Phonons and Spin Waves in Multiferroic BiFeO3 ZHIJUN XU, UC Berkeley, GUANGYONG XU, JOHN SHNEELOCK, Brookhaven National Lab, JINSHENG WEN, Nanjing University, PETER GEHRING, NIST, CHRIS STOCK, The University of Edinburgh, BARRY WINN, MASAAKI MATSUDA, MA JIE, Oak Ridge National Lab, GENDA GU, Brookhaven National Lab, TOSHIMITSU ITO, AIST, STEPHEN SHAPIRO, Brookhaven National Lab, ROBERT BIRGENEAU, UC Berkeley —
We have performed inelastic neutron scattering studies of the low-energy phonon and spin-wave modes in the multiferroic BiFeO3. The low-energy phonon and spin wave dispersion relations along different directions have been mapped out over a broad temperature range from 100K to 750K. The temperature dependence of the intensities, dispersion relations, and lifetimes (inverse energy width) of these phonon and spin wave modes will be presented. Possible interactions between the lattice and spin dynamics will also be discussed. This work is supported by the Office of Basic Energy Sciences, DOE.

Zhijun Xu
UC Berkeley

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