

Physics Seminar – 2016/08/08

Phonon Dynamics in PbSc_{1/2}Ta_{1/2}O₃ Ceramics

MSc. Thesis Presentation

Stephen Spencer
Department of Physics and Physical Oceanography
Memorial University

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Abstract:

Brillouin light scattering experiments were performed on lead scandium tantalate ceramics using a 180 backscattering geometry. Spectral peaks due to transverse and longitudinal bulk acoustic modes were observed and their frequencies were used to determine the corresponding phonon velocities and elastic constants c_{11} , c_{44} , and c_{12} . Experiments performed on a sample of lead scandium tantalate ceramic coated with a thin film of aluminum failed to yield Brillouin peaks due to surface acoustic modes. Complementary Raman scattering experiments were performed on lead scandium tantalate room temperature and high temperatures ranging from 557°C to 1200°C. Four Raman peaks were found at room temperature, the strongest of which being the F2g mode. Peaks recorded in high temperature spectra were characterized with increasing temperature, with special attention on the F2g mode.

ALL ARE WELCOME!