

Abstract Submitted
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Compositional variation of the phonon dispersion curves of bcc Fe-Ga alloys J.L. ZARESTKY, Ames Laboratory and Department of Physics and Astronomy, Iowa State University, Ames, IA., V.O. GARLEA, T.A. LOGRASSO, D.L. SCHLAGEL, C. STASSIS — Inelastic neutron scattering techniques have been used to measure the phonon dispersion curves of bcc Fe-Ga alloys as a function of Ga concentration. We observed that the phonon frequencies of every branch decrease significantly with increasing Ga concentration with the softening being more pronounced for the $T_2[110]$ branch and for the L[111] in the vicinity of $\xi = (2/3, 2/3, 2/3)$. The slope of the $T_2[110]$ branch was found to decrease linearly with increasing Ga concentration and to extrapolate to zero at approximately 27 at.% in agreement with the results of sound velocity measurements. As the Ga concentration increases, a splitting of the $T_1[110]$ branch is observed, an effect characteristic of diatomic lattices.

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