

Abstract Submitted  
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**Atomic short-range order effects on magnetostriction in Fe-rich Fe-Ga** YEVGENIY PUZYREV, G. E. ICE, G. M. STOCKS, Oak Ridge National Laboratory, R. MCQUEENEY, Ames National Laboratory, YINGZHOU DU, Iowa State University — We have measured diffuse x-ray scattering from an Fe-rich Fe-Ga BCC single crystal. Measurements were made on beamline 33-ID at the Advanced Photon Source using a wavelength dispersive spectrometer to suppress Compton, Fluorescence and Resonant Raman backgrounds. Data was collected over a large volume in reciprocal space and measurements were made at two energies to maximize and minimize the x-ray scattering contrast between Fe and Ga. We recovered short-range order (SRO) parameters for the crystal. Using these SRO parameters we use KKR-CPA and locally self-consistent multiple scattering (LSMS) calculations to study the effects of local atomic environment on electronic and magnetic structure of the alloy Research sponsored by the Division of Materials Sciences and Engineering. Research in part performed on Beamline 33-ID at the Advanced Photon Source which is sponsored by the U.S. Department of Energy, Office of Basic Energy Sciences

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