Abstract Submitted
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Partial Phonon Densities of States at the Fe-Sites in several Fe-Sn Intermetallic Compounds under Pressure[1] HUBERTUS GIEFERS, HiPSEC, Department of Physics, University of Nevada Las Vegas, Las Vegas, NV 89154-4002, MICHAEL PRAVICA, HiPSEC, Department of Physics, University of Nevada Las Vegas, Las Vegas, NV 89154-4002, MICHAEL HU, HP-CAT and Carnegie Institute of Washington, Argonne, IL 60439, MALCOLM NICOL, HiPSEC, Department of Physics, University of Nevada Las Vegas, Las Vegas NV 89154-4002 — We studied the nuclear resonant inelastic x-ray scattering (NRIXS) of Fe-57 in several Fe-Sn intermetallic compounds up to 30 GPa. The samples ($FeSn_2$, FeSn, Fe_5Sn_3, and Fe_3Sn) were prepared in the HiPSEC laboratory with 95% enriched Fe-57 and 93% enriched Sn-119. NRIXS spectra were collected at HPCAT beamline 16-ID-D at the Advanced Photon Source. High-pressure experiments were conducted using a Paderborn-type DAC [1]. The pressure dependence of the partial phonon DOS spectra will be discussed in terms of elastic and thermodynamic parameters, such as the Lamb-Mössbauer factor, mean force constant, free energy, and Grüneisen parameters, using results from recent x-ray powder diffraction experiments of the Fe-Sn intermetallics under pressure. [1] H. Giefers et al., High Pressure Research 22 (2002) 501. [2] H. Giefers et al., J. Alloys Compd. accepted.

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