

## Phonon Density of States in L1<sub>0</sub>-type PtFe thin films

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L1<sub>0</sub>-type PtFe thin films are considered to be an excellent candidate for ultra-high density magnetic recording media because of their distinctive features such as a large magnetic anisotropy energy, large saturation magnetization and high Curie temperature. To study characteristic feature of the thin films, phonon density of states of the L1<sub>0</sub>-type PtFe alloy thin films was studied using nuclear resonance inelastic scattering method and the results were compared with those for a bulk single crystal and disordered powder samples. Phonons of the thin films are softer than those of bulk sample by about 15 % and atomic order parameter of the PtFe thin films prepared by the present method show smaller value than that of the furnace cooled bulk sample. The Debye temperature of Fe atom in the PtFe alloy is estimated to be about 110 K. Phonons of PtFe alloy seem to have nothing to do with the anomalous lattice contraction of the c-axis at high temperature.