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Low T magnons condensation in FePd and FePt nano-particulate films R. A. LUKASZEW, K. YANG, J. R. SKUZA, C. CLAVERO, The College of William and Mary, VA — Recently there have been interesting reports on experimental deviations from the Bloch $T^{3/2}$ law at low temperature in magnetic nanostructures. Specifically it has been reported an "upturn" of the $T^{3/2}$ law in the magnetization in some nanomagnetic materials. [1] This behavior has been attributed to a Bose-Einstein Condensation of magnons in the nanostructured materials due to more disorder in the spins leading to finite entropy as opposed to the case of crystalline bulk ferromagnets where it can be assumed that all the spins are in the direction of a saturating magnetic field and hence perfectly ordered. In order to further test these ideas, we have carried out systematic low temperature magnetization studies (SQUID) on FePd and FePt nano-particulate thin films. The microstructure and morphology of the thin films have also been extensively characterized with X-Rays, TEM and AFM/MFM. We will show our experimental data and point out significant differences and also similarities in the analyzed samples. [1]. Extension of the Bloch $T^{3/2}$ Law to Magnetic Nanostructures: Bose-Einstein Condensation, E. Della Torre, L. H. Bennett and R. E. Watson, *Phys. Rev. Lett.* **94**, 147210 (2005)

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