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Structure and magnetic properties of magnetron-sputtered FePt/Au superlattice films YONGSHENG YU, University of Nebraska, HAIBO LI, Jilin Normal University, XINGZHONG LI, LANPING YUE, University of Nebraska, WEILI LI, Harbin Institute of Technology, MEI LIU, YUMEI ZHANG, Jilin Normal University, WEIDONG FEI, Harbin Institute of Technology, DAVID J. SELLMYER, University of Nebraska — FePt/Au multilayer films were prepared with sputtering and the effects of Au thickness and annealing temperature on the structure and magnetic properties were investigated. Superlattice structure was induced by thicker Au layer. The interatomic spacing $d(220)$ in the fcc FePt lattice increases with increasing Au thickness, indicating increasing strain energy in fcc FePt lattice. After annealing at 300°C, FePt films with Au layer of 3.5nm became ordered and the multilayer structure were retained. The strain energy in fcc FePt lattice appears to be responsible for lowering the ordering temperature of the FePt phase. For films annealed at higher temperatures, thicker Au layer restrained the ordering of FePt phase, which led to a decrease of coercivities. – This research is supported by DOE and NCMN.

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