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Effect of Ag content on magnetic properties of (FePt)-Ag sputtered thin films

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Ordered FePt thin films deserved particular attention owing to their very large magnetocrystalline anisotropy making them attractive in high-density magnetic recording. The addition of an immiscible element such Ag promotes the formation of a granular FePt phase displaying a significant magnetoresistance effect (MR). Selected $(\text{Fe}_{53}\text{Pt}_{47})_{100-x}\text{Ag}_x$ multilayers ($x = 0, 41, 54, 59, 70$ at %) were prepared by rf sputtering on a MgO(100) substrate. AFM/MFM imaging was exploited to study the topography and the magnetic structure of the samples. Room-temperature magnetization measurements were performed by an AGFM. A variety of magnetic phases characterised by different values of perpendicular anisotropy constant have been obtained by varying the Ag content. All multilayers containing Ag display a negative magnetoresistance effect at 300 K. The effect of Ag addition on the morphological and magnetic properties of the starting $\text{Fe}_{53}\text{Pt}_{47}$ system will be clarified.