

Various behavior of the ferromagnetic resonance in epitaxially grown $\text{Co}_2\text{Fe}_{0.4}\text{Mn}_{0.6}\text{Si}$ Heusler alloys thin films

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Magnetic properties and ferromagnetic resonance of the two series of epitaxially grown $\text{Co}_2\text{Fe}_{0.4}\text{Mn}_{0.6}\text{Si}$ (CFMS) Heusler alloys thin films, *i.e.* $\text{MgO}/\text{Cr}/\text{CFMS}/\text{Au}$ and $\text{MgO}/\text{Cr}/\text{Ag}/\text{CFMS}/\text{Au}$ of different thicknesses of the magnetic layer were investigated. In the case of 30 nm magnetic layer deposited on additional silver buffer layer two resonances were observed in the external magnetic field near the perpendicular to the sample surface angle, suggesting heterogeneous structure of the magnetic layer. One of these resonances has a spectacular fine structure consisting of over a dozen of lines, which can be related to the spin wave resonance. The most interesting observation features are superposition of two resonances in strictly perpendicular external magnetic field position and surprising angle dependence of multilinear effect.