IN-PLANE MAGNETIC ANISOTROPY IN Fe/Si TRILAYERS

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9.7 cm

The in-plane magnetic anisotropy has been investigated in the Fe/Si trilayers performed by DC magnetron sputtering on the GaAs (001) substrates. The measurements have been made by means of ferromagnetic resonance (FMR) method as a function of temperature (from liquid helium up to room temperature). The samples are covered with thin cap layers of Si (or Ge). In thin Fe films only uniaxial anisotropy has been observed. It has been shown that this anisotropy has magnetoelastic origin and different directions of easy axes in both layers. Moreover, the anisotropy constants in both layers have individual temperature dependencies related to the differences in thermal expansion coefficients between Fe, Si and GaAs. With increasing thickness of Fe layers crossover from uniaxial to cubic anisotropy has been observed. The mechanisms responsible for this crossover are discussed.

13.4 cm

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