

Various structural and magnetic characterization techniques have been used to investigate Fe<sub>100-x</sub>Pd<sub>x</sub> (x=15, 20 and 36) thin films deposited onto silicon and glass substrates, by thermal evaporation technique. X-ray diffraction analysis shows the presence of supersaturated solid solution with bcc structure for Pd concentrations of 15% and 20%. However, for 36% of Pd, in addition to the supersaturated  $\alpha$ -FePd (bcc) phase, another disordered FePd<sub>3</sub> phase with fcc structure is present. At 20 at% Pd, the magnetic characterization shows a saturation of the bcc ( $\alpha$ -FePd) phase and the appearance of the fcc phase. The correlation between the structure and magnetic properties allows us to compare the two substrates effects on deposited thin films. As results, the measurements indicate that the grain size D, the thin film thickness and the d(110) spacing significantly affect the magnetic coercivity H<sub>C</sub>. The Fe-Pd alloys deposited on a monocrystalline Si (100) and glass substrate show that the coercivity H<sub>C</sub> is given by the random anisotropy model. & 2015.