

**The Effect of Chamber Pressure and Nitrogen Flow Rate on Deposition
Characteristics of $(\text{Ni}_{0.8}\text{Fe}_{0.2})_{20}\text{Ag}_{80}$ Thin Films.**

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We have investigated the deposition characteristics of $(\text{Ni}_{0.8}\text{Fe}_{0.2})_{20}\text{Ag}_{80}$ thin films as a function of chamber pressure and nitrogen flow rate with scanning electron microscopy (SEM), atomic force microscopy (AFM), XRD and α -step. The deposition rate of these film is decreased with increasing the chamber pressure and the nitrogen flow rate. With raising the chamber pressure, the growth mode of thin films is changed from island growth to columnar one, which is probably due to energy of atom. Contrary, the nitrogen flow rate is raised, growth mode is changed from columnar to island one. According to the XRD patterns, the preferred orientation is inhibited as the nitrogen flow rate is kept above 10 sccm, but that is nearly independent on the chamber pressure. When the chamber pressure decrease or the nitrogen flow rate increase, phase separation into permoally and silver is occurred.

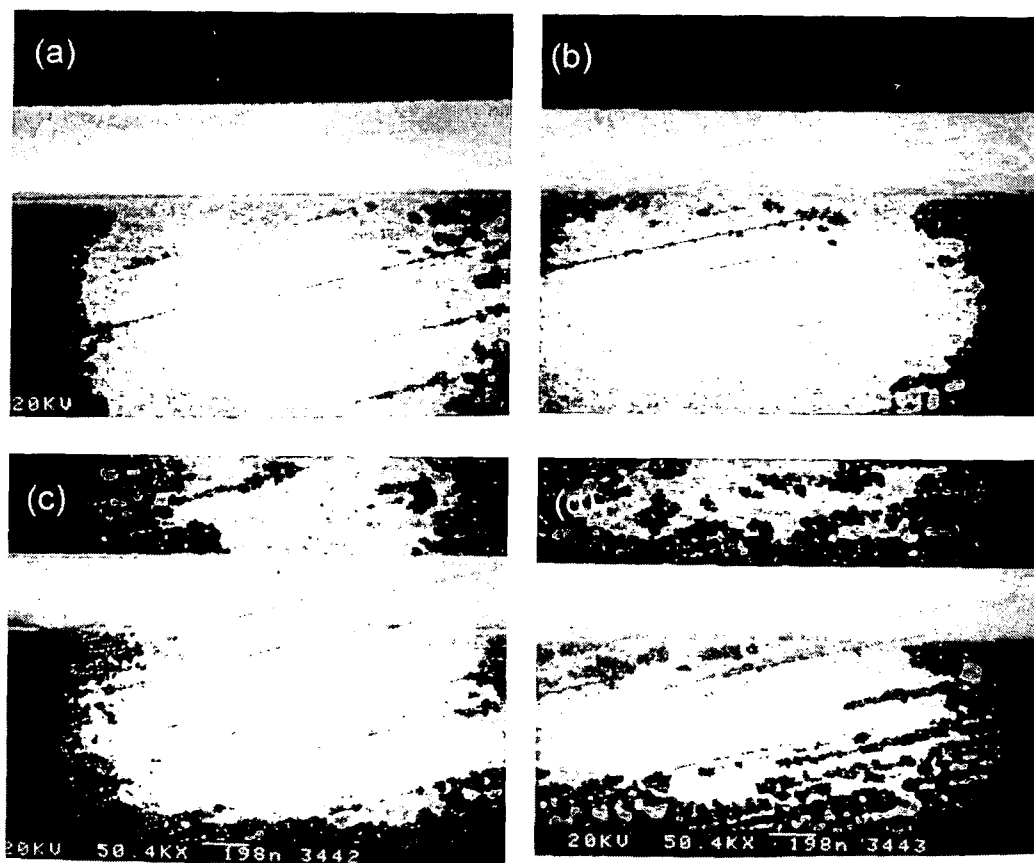


Fig. Cross-sectional SEM Images of $(\text{Ni}_{0.8}\text{Fe}_{0.2})_{20}\text{Ag}_{80}$ as a function of N_2 flow Rate. (a) 0, (b) 5, (c) 15 and (d) 20 sccm, respectively.

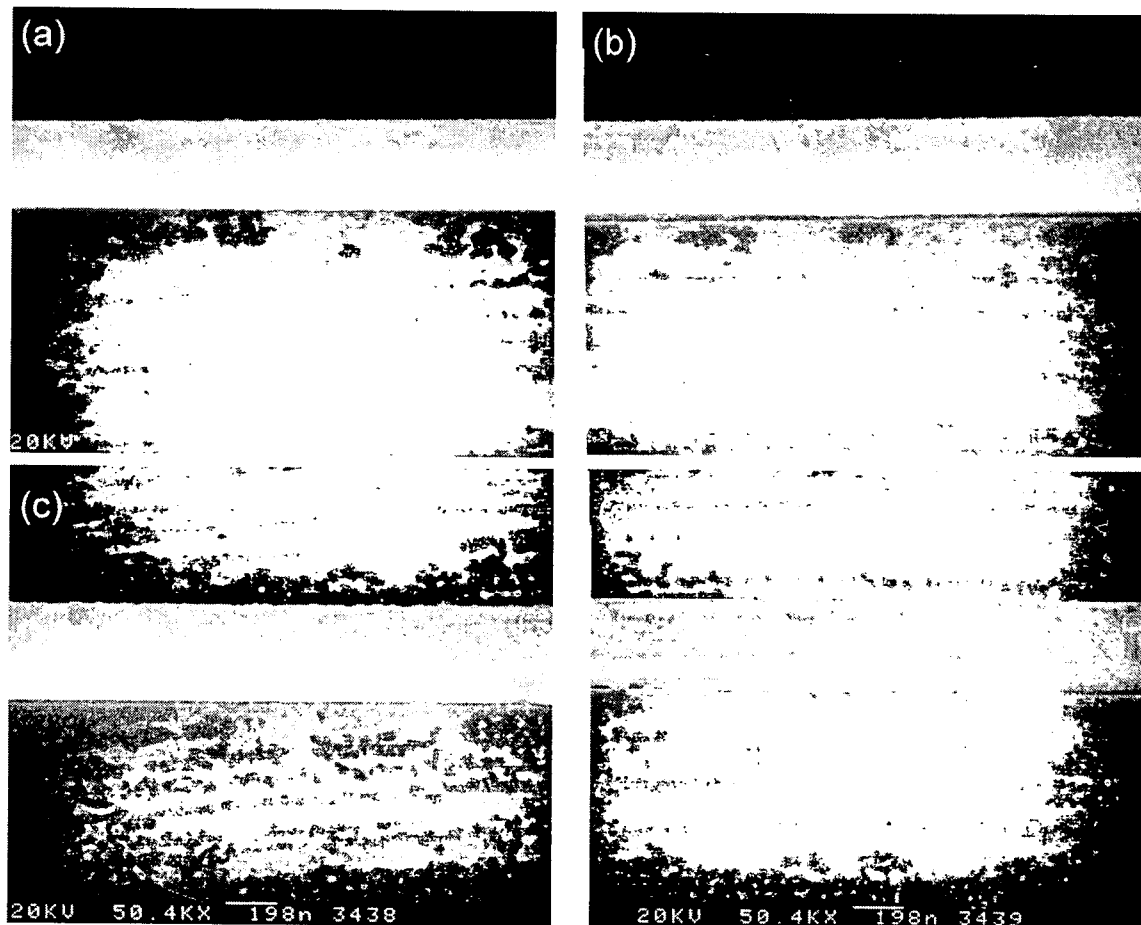


Fig. Cross-sectional SEM Images of $(\text{Ni}_{0.8}\text{Fe}_{0.2})_{20}\text{Ag}_{80}$ as a function of Chamber Pressure. (a) 4, (b) 5 (c) 6 and (d) 7 mtorr, respectively.

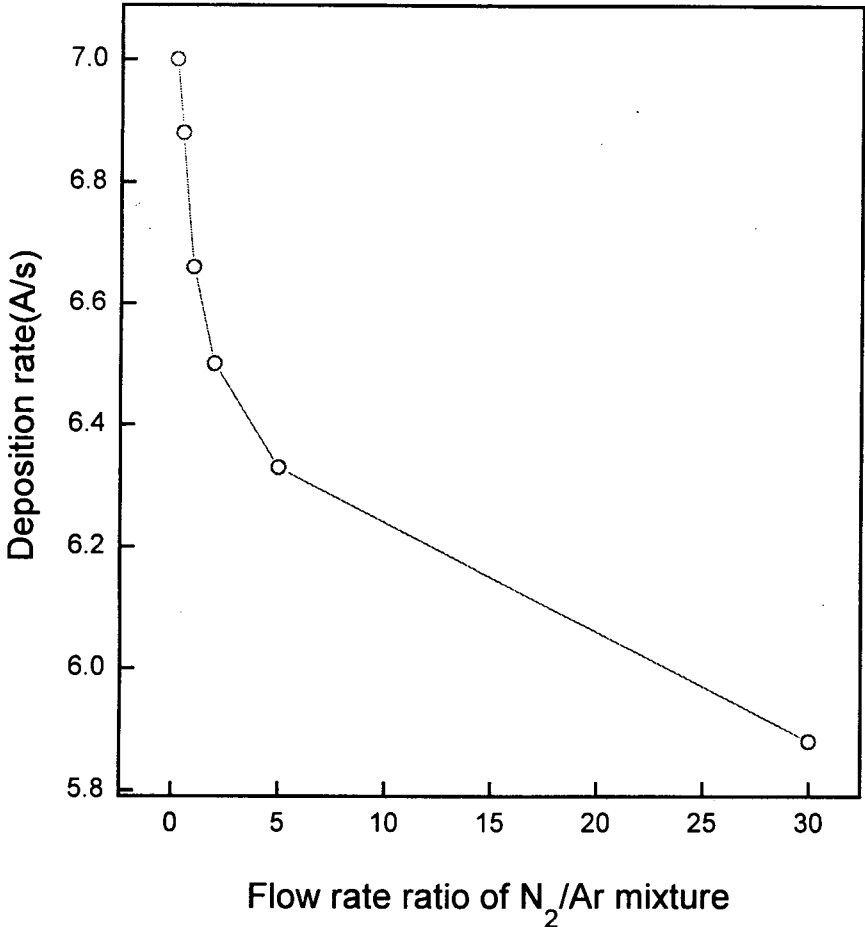


Fig. Dependence of deposition rate of $(\text{Ni}_{80}\text{Fe}_{20})_{20}\text{Ag}_{80}$ alloy on flow rate ratio of N_2/Ar gas mixtures.

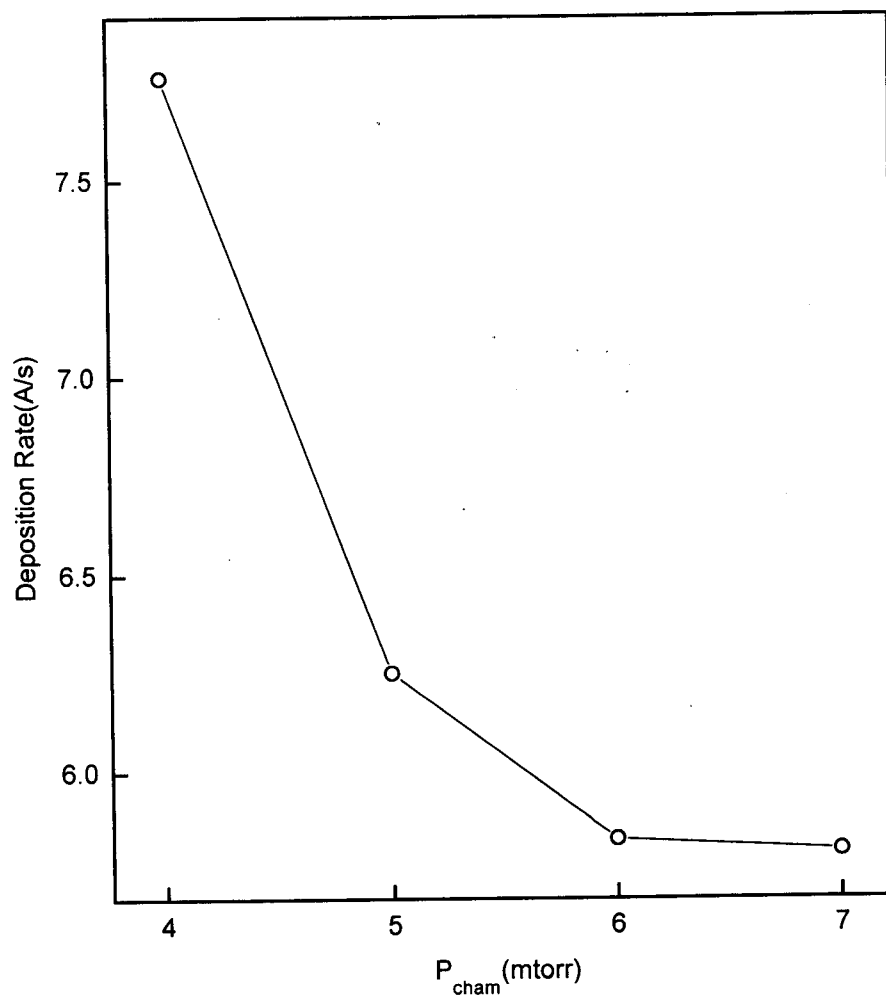


Fig. Dependence of deposition rate of $(\text{Ni}_{80}\text{Fe}_{20})_{20}\text{Ag}_{80}$ alloy on chamber pressure.

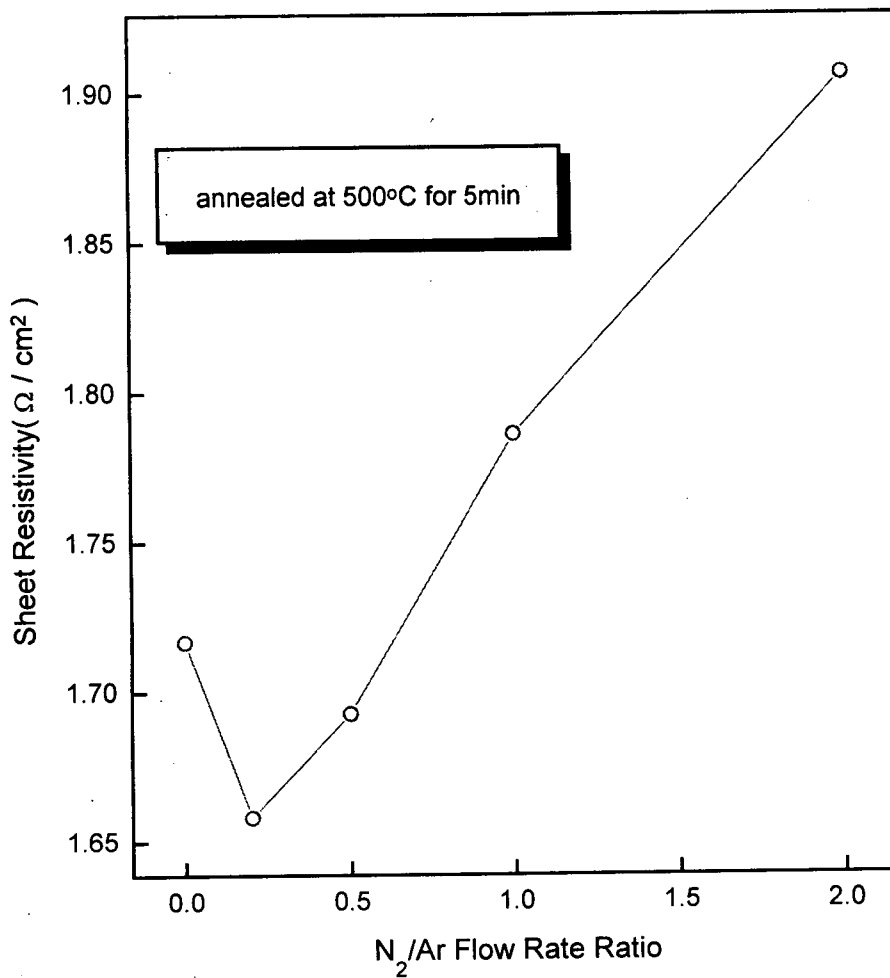


Fig. Dependence of Sheet Resistivity of $(\text{Ni}_{0.8}\text{Fe}_{0.2})_{20}\text{Ag}_{80}$ on N_2/Ar Flow Rate Ratio.