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Spin Wave Resonance and Exchange Parameters in fcc Fe-Ni Alloys*

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Abstract

Spin wave resonance for a series of fcc Fe-Ni alloys has been measured in order to study the exchange stiffness constant D . In general the resonance field vs the square of the spin wave mode number (n) curve is linear for high values of n , whereas some amount of deviation from linearity occurs for low values of n . This is considered to be due to the inhomogeneous demagnetizing field of the sample. We can determine the value of D from the linear part of the curve, provided we have a sufficient number of observed modes. As a supplementary means, we have also made low temperature magnetization measurements from which the value of D was derived. Consistency between these two kinds of measurements is ascertained. The composition dependence of D is not quite coincident with that derived from the neutron small angle scattering experiments by Hatherly *et al.* The data are discussed both from the standpoint of localized electron model and collective electron model.

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