Doniach and Wohlfarth  $^4$  evaluate the saturation moment  $\mu$  per Fe atom at zero temperature in a dilute ferromagnetic alloy of Fe in Pd. They show that the giant moment  $\mu$  is

$$\mu = \mu_{O}(1+J\chi) , \qquad (1)$$

where J is a normalized exchange interaction parameter and X is the atomic susceptibility of the Pd matrix. Thus the volume derivative of  $\mu$  is

$$\frac{\partial \ln \mu}{\partial \ln V} = \frac{J}{1+J} \left( \frac{\partial \ln J}{\partial \ln V} + \frac{\partial \ln X}{\partial \ln V} \right), \tag{2}$$

since the moment  $\boldsymbol{\mu}_O$  on the Fe atom is assumed to be independent of volume.

The magnetostriction <u>quadratic</u> in field associated with the <u>paramagnetism</u> of pure Pd provides an estimate of  $\frac{\partial \ln \chi}{\partial \ln V}$ . The volume magnetostriction <u>linear</u> in field of the <u>ferromagnetic</u> PdFe alloys provides an estimate of  $\frac{\partial \ln \mu}{\partial \ln V}$  through the thermodynamic relation,

$$\frac{1}{2} \frac{\partial H}{\partial V} = -\frac{1}{2} \frac{\partial F}{\partial \mu} = +\frac{C}{\kappa \mu} \frac{\partial \ln V}{\partial \ln V}, \qquad (3)$$

where  $\Omega_{\rm c}$  in the volume per Fe atom and  $\kappa$  is the compressibility, which we assume equal to that of pure Pd (5.24×10<sup>-4</sup> bar<sup>-1</sup>). The ratio JX/(1+JX) may be estimated from measurements of the saturation magnetization of the PdFe alloy and we obtain a value of  $\partial \ln J/\partial \ln V$  by substitution in Eq. (2).