

Fig. 4. A plot of  $\Delta\Phi_s/\Phi_s$  for Fe and Ni as a function of pressure at four temperatures reproduced from reference (14).

The difference between  $\Delta\Phi'_s/\Phi'_s$  in the present paper and  $\Delta\Phi_s/\Phi_s$  in this figure is noted in the text.

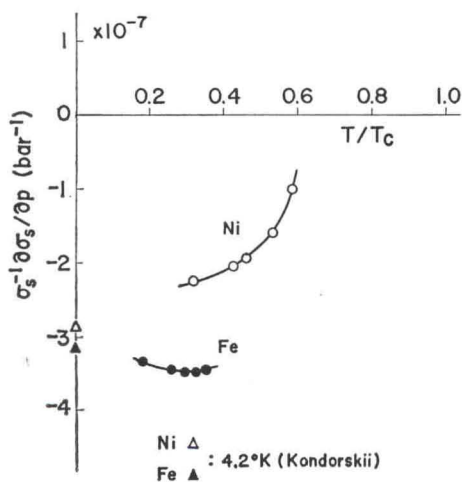


Fig. 5. A plot of  $\sigma_s^{-1}(\partial\sigma_s/\partial p)$  as a function of reduced temperature  $T/T_c$  for Fe and Ni reproduced from reference (2).

In the results for Cu-Ni<sup>15)</sup> and Pd-Ni<sup>16)</sup> alloys, the correction described in section 2 has already been made.

From the value of  $\partial\sigma_s/\partial p$  thus obtained over a wide temperature range, that of  $\partial\sigma_{so}/\partial p$  has been estimated from thermodynamical consideration,<sup>2)</sup> and the detailed procedures and discussion have been reported.<sup>3)</sup> The pressure effect on  $\sigma_{so}$  would essentially provide a knowledge of the exchange interaction responsible for ferromagnetism together with the pressure effect on  $T_c$ . Moreover, the pressure effect on  $\sigma_s$  at a temperature provides a direct contribution to the

analysis of some magnetic properties of ferromagnetic metals and alloys. In the present paper, two examples will briefly be discussed. (i) Forced volume magnetostriction: The pressure effect on  $\sigma_s$  is combined with the forced volume magnetostriction  $\partial\omega/\partial H$  in the following relation

$$\partial\omega/\partial H = -D\partial\sigma_s/\partial p. \quad (10)$$

Apart from the detailed analysis and discussion on the forced volume magnetostriction, the relation (10) has been used as a quantitative check of the pressure effect on  $\sigma_s$ , and vice versa. Precise measurements of the forced

volume magnetostriction over a wide temperature range have recently been made by Tange et al.<sup>20)</sup> for Ni, and their results are in fair agreement with those obtained from the pressure effect on  $\sigma_s$  obtained from Eq. (7) by the present authors. (ii) Linear compressibility: The linear compressibility, which appeared in Eq. (3) or Eq. (7), is one of the valuable quantities which reflects the exchange interaction, as clearly pointed out by Ishida.<sup>21)</sup> The value of  $\partial\sigma_s/\partial p$  is necessitated for the theoretical estimation of the linear compressibility based on a molecular field theory made by Ishida. The agreement between the calculated and observed values of the linear compressibility was fairly good for Cu-Ni<sup>21)</sup> and Ni-Pd alloys.<sup>22)</sup>

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