

THE INFLUENCE OF HYDROGEN AND ITS
DIFFUSION ON FERROMAGNETISM OF
3d-METALS IN THE MODEL OF COVALENT
BONDS AND THEIR FLUCTUATIONS

A. I. Mitsek

Institute for Metal Physics, Nat. Acad. Sci. of Ukraine
(36, Academician Vernadsky Blvd.,
Kyiv 03142, Ukraine)

S u m m a r y

The equilibrium concentration of hydrogen in ferromagnetic (FM) metal (Me) is calculated by a variational method for covalent and band amplitudes of wave functions of $\text{Me}^{(+)}$ and $\text{H}^{(+)}$ ions. The band spectra and spectra of chemical (covalent) bond fluctuations (CBF) are splitted. It decreases a filling of the conduction band of a Me^-H -system. The spin and orbital polarizations of $\text{H}^{(+)}$ -ions change the mean spin, T_c , and FM anisotropy. The contribution of $\text{H}^{(+)}$ in FM anisotropy is large with regard for the spin-orbital bond with rare-earth ions. The contribution of covalent bonds in the diffusion coefficient is found from the motion equation for the complete wave function of an $\text{H}^{(+)}$ -ion. $\text{H}^{(+)}$ diffusion is important in the induction of FM anisotropy.