【VP-01】

Creation of a high concentration of atomic hydrogen in impurity-helium solids

C. Y. Lee
Department of Physics, Hannam University

Investigations of Impurity- Helium (Im-He) solids have been performed with electron spin resonance (ESR) and nuclear magnetic resonance (NMR) techniques. Structural changes in porous Im-He solids have been observed for D_2 impurities as samples were heated above T_λ. Tunneling exchange chemical reactions were studied in Im-He solids containing D, H, D_2, H_2 and HD impurities.

The D and H concentrations varied with time as determined by ESR measurements on the atomic H and D free radicals. Satellite ESR lines associated with dipolar coupling of H or D atoms to the nuclear moments of hydrogen nuclei found in neighboring molecules have been observed. The forbidden transition involving the mutual spin flips of electrons and protons in hydrogen atoms has also been studied.