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Diffusion Of Lithium And Hydrogen In Nanotubes In Terms Of Fokker-Plank Equation JOHN ADAMS, RUSSELL SELVA, YURIY MALOZOVSKY, Southeastern Louisiana University — We present the theory of diffusion of atoms like Li and H and their diatomic molecules like Li₂ and H₂ in metallic nanotubes. We derived the Arrhenius type diffusion coefficient in terms of the kinetic Fokker-Plank equation. The diffusion coefficient was derived with the consideration both the motion of the particle in the cylindrical periodic potential of the nanotube and interaction of the diffuse particle with lattice vibrations of the tubule. We evaluated the activation energies of diffusion in terms of the pair interaction potential. We argue that there is an optimum diameter of the tubule below which the diffusion is significantly reduced.

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