In general, atoms and molecules diffuse thermally in solid with rate which has Arrhenius-type temperature dependence. On the other hand, it is known that diffusion rate at low temperature sometimes shows non-Arrhenius behavior, which is called quantum diffusion. We have studied hydrogen fluoride (HF) in solid parahydrogen ($p$-$H_2$) by FTIR absorption spectroscopy and found that HF diffuses in solid $p$-$H_2$ even at 3.6 K. In this study, dependence of the rate on temperature, HF concentration and IR irradiation was investigated. Assuming Arrhenius-type dependence, activation energy of the diffusion is less than a few Kelvin, which suggests that the diffusion has the quantum nature. Recent experimental results and a possible mechanism of the diffusion will be discussed.

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