

Rate of the exciton self-trapping in KI and RbI at different temperatures

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There is an important dependence between the rate of exciton's self-trapping and distribution of annihilation channels of excitons in AHC. Rate of exciton's self-trapping is defined by inversely time. In RbI measured a growth time of luminescence to be 200 ps. From this growth time we deduced an exciton self-trapping time of 20 ns. In KI, the rise time of luminescence was measured as 100 ps, and analyses according to the same model as above yielded a self-trapping time of 160 ps. These times are specifically for self-trapping from the free exciton's state. We measured the length of free run of exciton in KI - 17 Å, in RbI - 8 Å. At low temperatures exciton tunnels through self-trapping barrier and a process of thermal activation is deduced by high temperatures. We calculate a rate of exciton self-trapping in KI and RbI by different temperatures according to Arrhenius' law. ¹

¹K.Song, R.Williams. Self-Trapped Excitons, Springer series in Solid-State Sciences. 404 (1993).