

Effect of intrinsic luminescence of alkali halide amplification by low temperature deformation

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The influence of low temperature (100K) on elastic uniaxial deformation on self-trapped excitons (STE) luminescence intensity strengthening and on STE configuration at the time of irradiative relaxation in alkali halide crystals (AHC) using luminescence spectroscopy method is determined by the authors. The face-centred AHC experiences luminescence intensity's re-distribution from asymmetric STE configuration to symmetric one (III \rightarrow II \rightarrow I-types); and in body-centred AHC, vice versa, to the favour of asymmetric (polarized) STE configuration (I \rightarrow II-types). The effect of luminescence's amplification of self-trapped excitons with symmetric configuration is explained by the compression of self-trapped exciton along its length, and the luminescence's amplification with asymmetric configuration - by self-trapped exciton stretching at the influence of low temperature uniaxial elastic deformation.