Modeling of primary defect aggregation in tracks of swift heavy ions in LiF

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To simulate aggregation of primary *F* centers created along the path of swift heavy ions in LiF, Monte Carlo simulations were developed. Parameters relevant for defect aggregation as a result of their random hopping, such as the migration energy, temperature in the track, initial defect concentration, and diffusion time, were estimated from available experimental data. It is estimated that in the electronically excited state and under temperature locally increased up to 1200 K *F* centers are mobile enough to make several tens of hops. Most of the *F* aggregates formed are extremely small and consist only of two or three *F* centers. The fraction of larger *F* clusters (with more than 10 defects) is negligibly small, at least for defect concentrations reasonable for ion tracks. Even at the largest initial defect densities, the aggregates are isolated from each other and do not form a percolating trail of defects. Such a track morphology is in good agreement with various experimental results.