

Elastic atomic displacements and color center creation in LiF crystals irradiated with 3-, 9- and 12-MeV Au ions

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Creation of color centers in LiF under irradiation with 3–12-MeV Au ions was studied. Comparison of experimental data of color center creation with computer simulation of the energy deposition and elastic atomic displacements reveals the role of elastic collisions in defect creation by these ions, which have comparable magnitudes of electronic and elastic stopping. The experimentally measured efficiency of color center creation and that predicted by the simulation of elastic displacements have a similar dependence on the projectile energy. Thus, the color center creation is mainly associated with the elastic collisions, despite the relatively large values of the electronic stopping power for these ions.