

## Fast heavy ion induced VUV absorption in LiF crystals

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LiF crystals were irradiated with various heavy ions (Ni, Zn, Au, Pb and U) with a specific energy 2–11 MeV/*u* and a fluence between  $10^{10}$  and  $10^{12}$  ions/cm<sup>2</sup>. Spectroscopic absorption studies were performed in the wavelength range 100–700 nm. In all investigated crystals, the most dominant absorption bands correspond to *F*-centers (maximum at 248 nm) and *F*<sub>2</sub> centers (445 nm) and the complementary V<sub>3</sub>-hole center (114 nm). In crystals irradiated with the heaviest projectiles (Au, Pb, Bi and U ions), a new prominent absorption band appears at 121 nm. This peak is absent for irradiations with lighter ions and with Co-60 gamma-rays. Under optical bleaching in the *F*-center absorption region (~250 nm), *F*- and V<sub>3</sub>-centers are completely destroyed whereas the 121 nm absorption band is stable. This absorption band is thought to be directly linked to damage creation in the core of the track as evidenced earlier by chemical etching and small-angle X-ray scattering experiments. The damage in this core region is created only if the energy loss of the projectiles exceeds a critical value of 10 keV/nm. The nature of the 121 nm band is discussed.