Damage creation in LiF and NaCl crystals irradiated with swift heavy ions at 8 and 300 K

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Single crystals of LiF and NaCl were irradiated at 8 and 300 K with different ions (^{12}C to ^{238}U) of MeV-GeV energy in the electronic stopping regime. The ion-induced damage was studied by optical absorption, thermo-stimulated luminescence, and scanning force microscopy. The concentration of the color centers depends on the energy loss of the ions. In both crystals, the irradiation with heavy ions (Au, Pb, U) results in a higher *F* center concentration at 8 K than at 300 K; for light ions (C, Ti, Ni) the opposite effect takes place. The observed results can be explained by ion induced local heating. Contrary to color-center creation, the formation of nano-sized surface hillocks does not depend on the irradiation temperature.