

Swelling and creation of color centers in MgF₂ single crystals irradiated with energetic heavy ions

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Single crystals of MgF₂ were irradiated with different ions of specific energy between 1.4 and 11.1 MeV/u. Using UV-Vis absorption spectroscopy, the creation of color centers was analysed as a function of the ion fluence and energy loss. The concentration of single F- and F₂-centers versus fluence exhibits a nonlinear evolution similar as in LiF. The creation efficiency of color centers and their thermal stability deduced from isochronal annealing experiments are discussed in terms of aggregation as well as recombination of electron and hole centers. In addition, profilometry measurements were performed quantifying ion-induced volume changes as a function of the beam parameters.