

## Swelling effects in lithium fluoride induced by swift heavy ions

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*PHYSICAL REVIEW B* 62 (2000) 13-16

Using profilometry, large out-of-plane swelling was found when irradiating lithium fluoride with MeV to GeV heavy ions. The effect scales with the range of ions and is linked to the electronic energy loss. Above a critical energy loss of 4.2 keV/nm, ion-induced swelling increases by two to three orders of magnitude. The threshold is much lower than 10 keV/nm required for track etching, suggesting swelling measurements as a suitable technique for testing in particular nonamorphisable material sensitivity versus swift heavy-ion irradiation. A quantitative comparison with data available from x-ray and neutron irradiations indicates that swelling in LiF results from an intermediate defect zone in between the track halo (10–20 nm) consisting mainly of single color centers and the track core (1–2 nm) identified by small-angle x-ray scattering.