

Hardening and long-range stress formation in lithium fluoride induced by energetic ions

Manika I, Maniks J, Schwartz K, Toulemonde M, Trautmann C
*NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION B-
BEAM INTERACTIONS WITH MATERIALS AND ATOMS 209 (2003) 93-97*

LiF crystals were irradiated with Au, Pb, Bi and S ions in the energy range 400-2300 MeV and studied by means of Vickers microindentation. Remarkable hardening effects are observed which depend on the applied fluence and ion species, and correlate with the ion energy loss along the ion path. Structural investigations reveal irradiation-induced stress extending deep into the adjacent non-irradiated crystal and leading to the formation of dislocations. X-ray diffraction measurements of the irradiated crystals show a decrease of the lattice constant indicating the presence of internal stress.