

SFM study of ion-induced hillocks on LiF exposed to thermal and optical annealing

Müller C, Benyagoub A, Lang M, Neumann R, Schwartz K, Toulemonde M, Trautmann C
*NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH, SECTION B:
BEAM INTERACTIONS WITH MATERIALS AND ATOMS 209 (2003) 175-178*

Single crystals of LiF were irradiated at 10 different temperatures from room temperature to 780 K with Pb ions of 4.1 MeV/u. The irradiated surfaces were analyzed with scanning force microscopy, which revealed ion-induced hillocks with diameters of ~20 nm and with heights of a few nm. Above 450 K, the number of hillocks strongly decreased with irradiation temperature. No hillocks were created under irradiation at 780 K. In addition, LiF samples irradiated at room temperature with Ni (2.5 MeV/u) and U ions (11.1 MeV/u) were bleached with UV-light on part of the crystal surface. In the bleached area, the characteristic F- and F₂-centers disappeared, whereas the mean diameter and height of the hillocks did not show any significant change.