

Scanning force microscopy of heavy-ion tracks in lithium fluoride

Müller A, Neumann R, Schwartz K, Trautmann C

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Single-crystal samples of lithium fluoride are irradiated normal to the (100) lattice plane with nickel, gold, bismuth, and uranium ions with kinetic energies of several tens of MeV to some GeV. The ion-induced damage on the surface is inspected by scanning force microscopy (SFM) under ambient conditions. SFM reveals circular damage zones, consisting of small hillocks.

The mean diameter of the track cross sections depends linearly on the ion-energy loss and increases from about 20 nm for Ni ions to almost 70 nm for U projectiles. The hillocks exhibit average heights of 0.5-2 nm.