

Scanning force microscopy of ion-irradiated organic single crystals of benzoyl glycine

Nagaraja HS, Ohnesorge F, Avasthi DK, Neumann R, Rao PM

APPLIED PHYSICS A- MATERIALS SCIENCE & PROCESSING 71 (2000) 337-341

Single crystals of the amino acid benzoyl glycine (hippuric acid) are irradiated normal to the as-grown surface by highly charged Bi ions with a kinetic energy of 2.38 GeV and a fluence of 1×10^{10} ions/cm². The projectiles create circular craters with a mean diameter of 40 (10) nm on the surface of the crystal as observed by scanning force microscopy (SFM). The mean depth amounts to 4 (1) nm, this value being considered as a lower limit due to the finite radius of curvature of the force cantilever tip. Thus, on the average, each single-ion projectile seems to eject about 10^4 molecules. On the surface of non-irradiated crystals, SFM reveals terraces of a few monolayers in height. In water, it was possible to visualize the lattice periodicity. Terraces were also observed on the irradiated crystal surface in the presence of the craters, indicating that the crystal is still intact at the given dose.