

Ion track diameters in mica studied with scanning force microscopy

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NUCL. INSTRUM. & METHODS IN PHYSICS RESEARCH SECT. B 107 (1996) 181-184

Aiming at a detailed study of morphology and size of heavy-ion tracks in mica, thin samples were irradiated with several heavy-ion species at the universal linear accelerator UNILAC of GSI. The latent ion tracks were investigated in air with a scanning force microscope (SFM) operated in the lateral-force mode. The track cross sections appear as areas of increased friction. The diameters of individual latent tracks were extracted by registering lateral-force line profiles of the amorphous track cross sections embedded in the undisturbed crystalline mica lattice. Averaged track-diameter values were determined by fitting the diameter distributions with Gaussian curves. We observed an increase of the track diameters with increasing electronic energy loss. The results are compared with earlier data from small-angle scattering and from topographic SFM measurements.