

X-ray surface diffraction on nanostructured metal surfaces

C. Boragno

Dipartimento di Fisica, Università di Genova, Genova, Italy

Metal surfaces can be easily nanostructured by using ion sputtering. The effect is due to the competition between surface erosion caused by the impinging energetic ions and diffusion processes of the created defects (adatoms, vacancies, clusters). Such nanostructured surfaces are interesting as not only morphology, but also physical properties can be tailored in a fast and inexpensive way.

X-ray diffraction can provide real-time unique information on their morphology evolution. In recent years, our group has carried out experiments at the ID3 beam line to study with X-ray surface diffraction this phenomenon. In this contribution, we review the results obtained on Ag(110), Cu(110), Rh(110) and Pt(110), and also on the Co/Cu(110) system. We demonstrate that X-ray surface diffraction is a powerful tool in the study of nonequilibrium surface phenomena and growth instabilities allowing for the critical exponent determination of both the periodicity and facets angles.