

Surface Structure analysis of solid liquid interfaces

Masashi Nakamura, Osamu Endou, Ohta Toshiaki
and Masatoki Ito *

Faculty of Science and Technology, Keio University
Graduate School of Science, Tokyo University

As the first trial at BL09XU beamline with the newly constructed four-circle diffractometer, we studied a iodine coated Au(111) or Pt(111) sample. Those samples are stable in an atmospheric conditions because adsorbed iodine atoms keep the surface structures, $\sqrt{3} \times \sqrt{7}$ (Au(111)) and $\sqrt{7} \times \sqrt{7}$ (Pt(111)), even in an air. The Au(111) and Pt(111) crystals showed remarkably large mosaic spreads. The halfwidths of the integer rods are in the range of 0.5 - 0.7 degree. The two kinds of measurements, in-plane geometry and normal symmetrical setting of four-circle mode, have been made to observe the surface diffraction. The single crystals (2mm by 10mm diameter) was sealed using a 4m-thick Prolene X-ray window.

Wavelength 1.30Å was used.

Fig. 1 shows the result for the low ordered diffraction peak for a $\sqrt{7} \times \sqrt{7}$ -Pt(111)-I structure. The result can be compared with that reported by B. Ocko at NSLS. The intensity in the present result is much smaller than that of Ocko et al. by 5 - 10 factors. Considering that X-ray source intensity is comparable at NSLS and Spring-8, much improvements are necessary in experimental set up.

