# BEAMLINE 3.2 - FIRST RESULTS WITH VERY HIGH RESOLUTION AND FLUX II

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The chief characteristics of the VUV beamline are high resolution and high flux, and the potential for new experiments will be illustrated with examples of recent work.

The high flux makes possible the measurement of spectra under low signal conditions, e.g. in dilute systems or when the cross-section is low. We have measured angle-resolved spectra of O/Rh(100) at the Cooper minimum of the Rh 4d bands (~130eV), where the atomic cross-section of the d band is about two orders of magnitude lower than the maximum, while the cross-section of oxygen is only one order of magnitude lower. The result is that oxygen-induced states are enhanced relative to the underlying d states. With the high flux available, many spectra can be taken in a short time and the surface band structure mapped.

At higher photon energy, the Surface Core Level Shifts (SCLS) of the clean and adsorbate covered surface have been measured. The flux and resolution are sufficient to determine the intrinsic line shape of the core level, and the clean surface peak of RH(100) is found to be broader than the bulk peak. This is assigned to an electronic effect causing reduced lifetime to the surface hole. The SCLS due to oxygen, hydrogen, CO and NO have been measured as well.

Finally, the Resonant Auger Raman effect is a subject of great interest at the moment. The energy shifts observed in the gas phase are generally not seen for adsorbates. Instead a change of Auger or autoionisation spectral shape occurs as the photon energy is changed by a small increment under resonance conditions. We have observed this effect in the case of NO adsorbed on Rh.