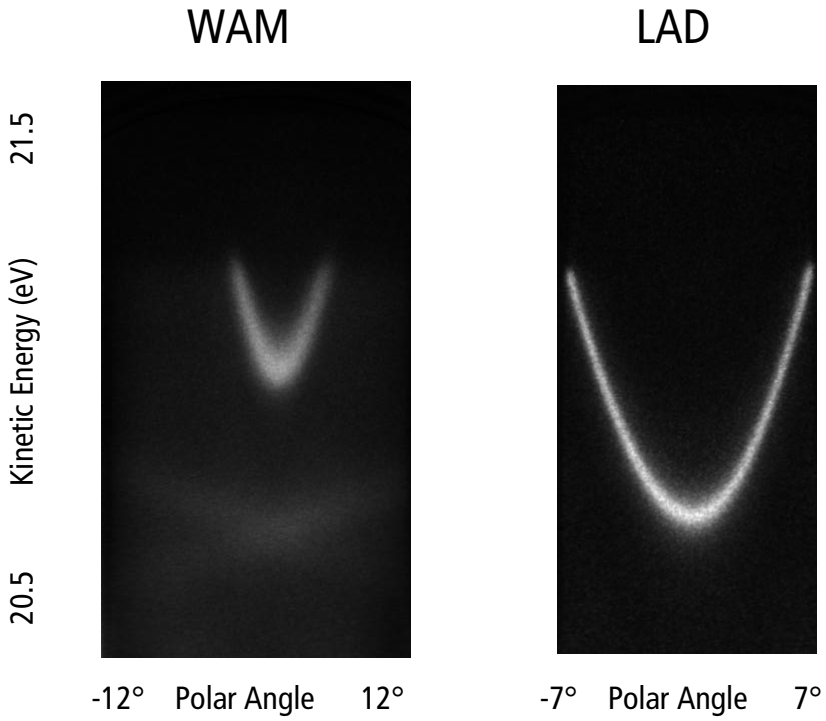
Measurements of the Surface State of Cu (111)

Application Notes

The band structure of the (111) surface of Cu was measured by high-resolution angle-resolved photoelectron spectroscopy. The experiments were performed using a VG UV source, which has an energy resolution of about 2 meV and a spot size of about 1.5 mm diameter. The photon energy for all measurements was 21.23 eV (He I).



Dispersion of the Cu(111) surface state. The analyzer entrance slit size used was 0.5 mm wide. The angular mode used, Wide Angle Mode (Low Angular Dispersion), allows one to simultaneously measure an angular range of ±13° (±7°). The sample was cooled with liquid He. The acquisition time for these images was 50 s.

The images showing the photoemission signal of the Cu(111) surface state at about 25 K for the different angular resolved lens modes of the PHOIBOS analyzer at 5 eV pass energy. The surface has been analyzed using a PHOIBOS 100 analyzer with the 2D CCD Detector. Data courtesy M. Sing, J. Schäfer and R. Claessen (University Würzburg, Germany).

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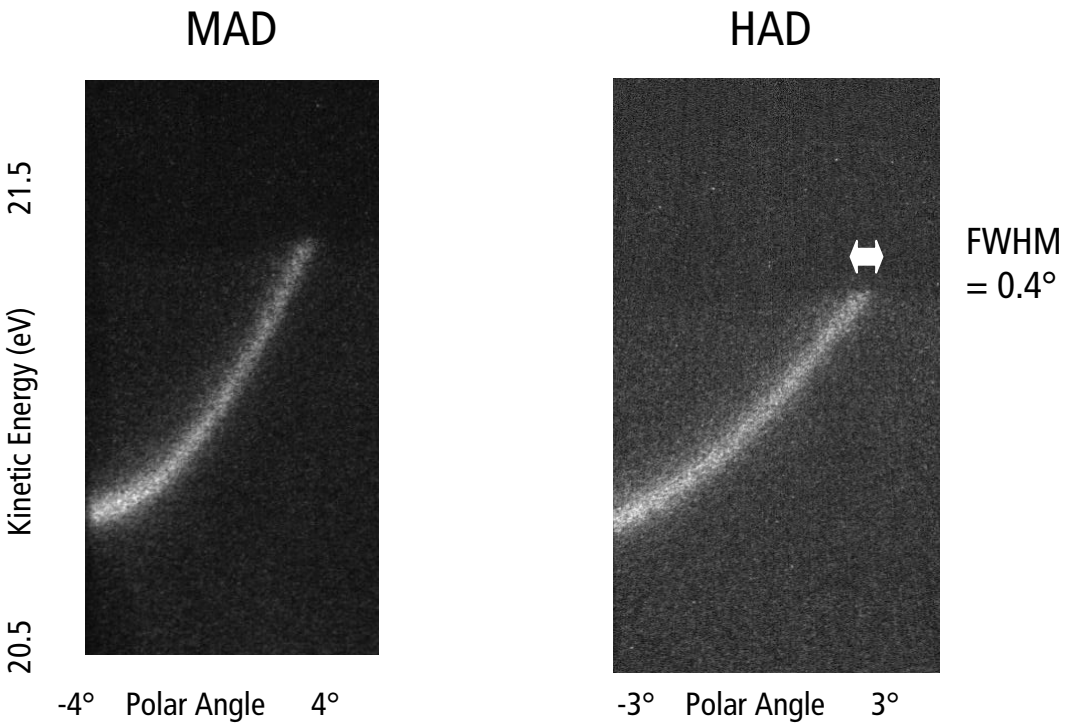

The figures above depict results from Medium and High Angular Dispersion modes (MAD/HAD). The analyzer entrance slit size used was 0.2 mm wide. The angular mode used, MAD (HAD), allows one to simultaneously measure an angular range of ±4° (±3°). The sample was cooled with liquid He. The acquisition time for these images was 50 s.

Mode	D	Acceptance Angle
High Angular Dispersion	3.2 mm/°	± 3°
Medium Angular Dispersion	2.2 mm/°	± 4.5°
Low Angular Dispersion	1.2 mm/°	± 7°
Wide Angle Mode	0.5 mm/°	± 13°

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