

# Valence Band of Single-Crystalline Graphite studied by Two-dimensional Photoelectron Spectroscopy

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We report for the first time three-dimensional curved surfaces of valence band by using a display-type spherical mirror analyzer. These band dispersion “surfaces” contain fruitful information compared to the conventional band dispersion “curves” along a certain direction in  $k$  space. For instance, the angular dependence of the slope (the velocity) and the curvature (the mass) of local band structure can be derived instantly. The integrated band energy over entire Brillouin zone, which can be thought as the electronic part of condensation energy, is also obtained. Furthermore, the atomic orbitals composing each band are determined from two-dimensional photoelectron intensity distribution excited by a linearly polarized synchrotron radiation. Examples are shown for the  $\pi$  band of graphite.

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