

Abstract Submitted  
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**Angle resolved photoemission study of rubrene single crystal**  
YONGLI GAO, HUANJUN DING, IRFAN IRFAN, University of Rochester, COLIN REESE REESE, Stanford University, ANTTI MAKINEN, Naval Research Laboratory, ZHENAN BAO, Stanford University — We report the direct experimental observation of the band structure of a bulk organic single crystal. The electronic structure of rubrene single crystal grown by physical vapor transport method was studied with angle-resolved photoemission spectroscopy. Highly reproducible dispersive features were observed with nice symmetry about the Brillouin zone center and boundaries, representing the band structure measured for a bulk organic single crystal. The high quality of the surface was confirmed with scanning tunneling microscopy. The energy dispersion of the highest occupied molecular orbitals derived bands showed strong anisotropic behavior in the a-b plane of the unit cell. The measured band structure, however, differs unexpectedly from theoretical calculations in terms of the amount of the dispersion and the separation of the bands.

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