

Abstract Submitted
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Soft X-Ray Emission and Absorption study of the Electronic Structure of the Organic Semiconductor Titanyl Phthalocyanine (TiO-Pc)¹ Y. ZHANG, S. WANG, A. DEMASI, L.F.J. PIPER, K.E. SMITH, Boston University, J. DOWNES, Macquarie University, A. MATSUURA, In-Q-Tel — The electronic structure of thin films of the organic semiconductor titanyl phthalocyanine (TiO-Pc) has been investigated using synchrotron radiation-excited x-ray emission and absorption spectroscopies. The films were grown *in-situ*, using organic molecular beam deposition. The C and N *K*-edge spectra display similarities with those from other metal-Pcs, while the O *K*-edge and Ti *L*-edge spectra support the premise that the titanyl species are spatially isolated. Good agreement is found between a calculation of the partial density of states and the measured spectra. The Ti *L*-edge spectra display marked differences with previous reports. Two energy-loss features are reported from resonant x-ray inelastic scattering of the Ti *L*-edge associated with Ti $3d^*-O\ 2p$ and Ti $3d^*-N\ 2p$ charge transfer transitions. Our measurements will be discussed in the context of earlier soft x-ray studies of TiO-Pc, with particular attention paid to issues of contamination and beam damage.

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