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Quantitative Femtosecond Charge Transfer Dynamics at Organic/Electrode Interfaces Studied by Core-Hole Clock Spectroscopy

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Organic semiconductors have important applications in organic electronics and other novel hybrid devices. In these devices, the transport of charge carriers across the interfaces between organic molecules and electrodes plays an important role in determining the device performance. Charge transfer dynamics at these interfaces usually occurs at the several femtoseconds timescale which presents tremendous challenges to conventional pumb-probe based time-resolved techniques. In this talk, I will introduce our recent work in the application of synchrotron-based core-hole clock (CHC) spectroscopy on the quantitative characterisation of charge transfer dynamics in several model organic/electrode systems. The CHC technique allows us to quantify the interfacial charge transfer times with element and site/orbital specificity. Combined with other soft x-ray spectroscopies, it enables us to identify a few critical factors affecting the charge transfer dynamics at organic/electrode interfaces.

Reference

L. Cao, X.-Y. Gao, A. T. S. Wee, and D.-C. Qi, *Adv. Mater.* **26**, 7880 (2014).

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