

Abstract Submitted
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Deuteration effect in RSOXS by using polystyrene side-chains¹

XIAODAN GU, University of Southern Mississippi, TADANORI KUROSAWA, Stanford university, HONGPING YAN, Stanford Synchrotron Radiation Lightsource, CHENG WANG, Advanced Light Source, LBNL, MICHAEL TONEY, Stanford Synchrotron Radiation Lightsource, ZHENAN BAO, Stanford university, ADVANCED LIGHT SOURCE TEAM, STANFORD SYNCHROTRON RADIATION LIGHTSOURCE TEAM, STANFORD UNIVERSITY TEAM, UNIVERSITY OF SOUTHERN MISSISSIPPI TEAM — Deuteration of hydrogen atoms for polymer has been widely used in neutron scattering community to tune the contrast (a.k.a neutron scattering length) of a given material. Different polymers were synthesized with targeted contrast to cater different morphology characterization requirements. Here we present a similar "deuteration effect" for conjugated polymers using a PS side-chain for resonant soft X-ray scattering (RSOXS). By incorporating different amount of polystyrene side-chains to conjugated polymer, the scattering contrast between two-conjugated polymers could be easily enhanced or reduced, in a similar way that deuteration effect in neutron scattering. With only 10% of polystyrene side-chain attached to a polymer backbone, the scattering contrast between conjugated polymer blends is improved by 170 times. This methodology could provide new way to consider when characterizing inherent low contrast between conjugated polymers blends.

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