

Abstract Submitted
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Investigation of fullerene concentration profile in polymer based solar cell by using magnetic contrast neutron reflectivity WENLUAN ZHANG, Department of Materials Science and Engineering, University of Delaware, BRIAN KIRBY, National Institute of Standards and Technology Center for Neutron Scattering, MICHAEL MACKAY, Department of Materials Science and Engineering, University of Delaware, DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING, UNIVERSITY OF DELAWARE COLLABORATION, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY CENTER FOR NEUTRON SCATTERING COLLABORATION — Poly(2,5-bis(3-tetradecylthiophen-2-yl)thieno[3,2-b] thiophene) (pBTTT) has recently caused great interest as the electron donor in organic photovoltaics. It was demonstrated that fullerene molecules intercalate between side-chains of this semiconducting polymer creating a stable crystalline structure, so, a large concentration of fullerene must be used relative to the polymer to promote phase separated electron conductive pathways. We used state-of-the-art neutron reflectivity methods, with the application of magnetic contrast variation, to investigate the concentration profile of [6,6]-phenyl-C₇₁-butyric acid methyl ester(PC₇₁BM) in order to understand the internal structure within the active layer. The PC₇₁BM concentration profile greatly depends on the weight ratio of polymer to fullerene. XRD and other data are also used to show the morphology change of active layer.

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