Réunions scientifiques

Séminaires

Séminaire SOLEIL

"Vertical phase separation in organic solar cell blends by high kinetic energy photoelectron spectroscopy"

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Invitée par Amina TALEB

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Grand Amphi SOLEIL

The morphology of polymer : fullerene blends is a determining parameter for the performance of solar cells. Efficient charge separation and a continuous high-mobility path for the photo-generated charges to the electrodes are desired for optimal charge generation and transport. While the in-plane morphology of polymer : fullerene blends has been widely studied, the depth profile of the composition is more difficult to assess. In this talk I report on a vertical structure of polymer : fullerene blends as evidenced by depth profiling the film using high-kinetic energy X-ray photoelectron spectroscopy at different photon energies. Vertical phase separation [1] was found for polyfluorene copolymer : PCBM (C_{60} derivative) bulk heterojunctions, where the PCBM enriched phase lies below a polymer layer with a thickness of $6 < x \leq 20$ nm. Low band gap polymers currently employed to extend the solar cell response towards the near infrared [2] are instead found to blend uniformly with fullerene derivatives.

[1] M. P. Felicissimo, D. M. Jarzab, M. Gorgoi, M. Foster, U. Scherf, M. Scharber, S. Mattila, S. Svensson, P. Rudolf, M.A. Loi, (**2009**) "*Vertical phase separation in polyfluorene : C_{60}-derivative blend*", Journal of Materials Chemistry 19, 4899 - 4901.

[2] J. Peet, J. Y. Kim, N. E. Coates, W. L. Ma, D. Moses, A. J. Heeger, G. C. Bazan, (**2007**) "*Efficiency enhancement in low-bandgap polymer solar cells by processing with alkane dithiols*", Nature Materials 6, 497-500.

Formalités d'entrée *: accès libre dans l'amphi du Pavillon d'Accueil. Si la manifestation a lieu dans le Grand Amphi Soleil du Bâtiment Central, merci de vous munir d'une pièce d'identité (à échanger à l'accueil contre un badge d'accès).*

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