

Morphology changes of organic solar cells introduced via aging

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Organic solar cells emerge as a promising energy resource due to its advantages and its developing efficiency, which have reached more than 10% in lab scale. However, there is still a big challenge to increase the solar cell lifetimes. Several mechanisms such as chemical and physical alteration have been proposed, but still there is a lack of understanding on morphology changes introduced by aging. This understanding is important because the morphology plays a crucial role at the photon to charge transformation mechanisms. In order to understand these mechanisms, we prepared the active layers of organic solar cells made from annealed poly(3-hexylthiophene-2,5-dyl) (P3HT) : phenyl-C61-butyric acid methyl ester (PCBM). These active layers are illuminated by different time under UV light in a UV oven. The morphology changes have been studied by using grazing incidence small angle X-ray scattering (GISAXS) and the absorption behavior has been studied by UV-VIS spectroscopy.

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