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Contact Angle Behavior for Fullerene/Porphyrin Mixtures on Si surfaces[1] MIRIAM CEZZA, ROMAINE A. ISAACS, Department of Materials Science and Engineering, University of Maryland, MD, 20742, QIAN SHAO, Department of Chemistry and Biochemistry, University of Maryland, College Park, MD, 20742, SHY-HAUH GUO[2], LOURDES G. SALAMANCA-RIBA, Department of Materials Science and Engineering, University of Maryland, MD, 20742, JANICE REUTT-ROBEY, Department of Chemistry and Biochemistry, University of Maryland, College Park, MD, 20742, RAYMOND J. PHANEUF, Department of Materials Science and Engineering, University of Maryland, MD, 20742 — Fullerene/porphyrin mixtures are of great interest in bulk heterojunction organic solar cells. Here we study the morphology of the phase separation which occurs when [6,6]-phenyl-C_{61}-butyric acid methyl ester (PCBM) and tetranitro-zinc phthalocyanine (tn-ZnPc), are deposited onto silicon (111) substrates, including the individual domain length scales, shapes and wetting angles. tn-ZnPC forms small clusters on the Si surface with a contact angle of approximately 15 $^\circ$, while PCBM forms compact clusters on broad ($\sim$0.5 um diameter) "wetting-layer" disks, with the cluster contact angle of $\sim$19 $^\circ$. Interestingly, a 50% mixture shows topography qualitatively similar to that for PCBM, but with a larger contact angle of 22 $^\circ$, indicating that the mixture wets the interface less than either pure component alone.

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