

Abstract Submitted
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Drying-mediated Formation of “Coffee Rings” of Regioregular Conjugated Polymers MYUNGHWAN BYUN, SUCK WON HONG, ZHIQUN LIN, Materials Science and Engineering, Iowa State University, MYUNGHWAN BYUN, SUCK WON HONG, AND ZHIQUN LIN TEAM — A drop of semicrystalline conjugated polymer, regioregular poly(3-hexylthiophene) (*rr* P3HT) toluene solution was allowed to evaporate from a confined geometry consisting of either a spherical lens or a cylindrical lens on a Si substrate (i.e., sphere-on-Si or cylinder-on-Si geometry). As toluene evaporated, mesoscale concentric “coffee rings” and fingerings of P3HT were formed as a result of controlled, repetitive “stick” and “slip” motions of the contact line. By tuning the interfacial interaction between P3HT and the Si substrate, different surface morphologies were obtained as revealed by AFM measurements. The P3HT patterns formed on native silicon oxide surface exhibited nearly amorphous morphology, while nanorod-like structures were emerged on either HMDS treated or HF treated Si substrate.

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