

Thermally activated intermixture in organic heterostructures and conformational control over organic thin films

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It is presented that the molecular intermixture of the organic semiconductors pentacene (C₂₂H₁₄) and perfluoropentacene (C₂₂F₁₄) exhibits significantly enhanced thermal stability compared to the single compounds. This stabilization is utilized to compare the blending behavior in different preparation methods of this heterostructure, showing that even subsequent deposition of both compounds may in some cases result in efficient intermixture. Regarding these differences, the structure, morphology and optical properties of the different blends are discussed. In order to obtain highly reliable spectroscopic data with polarization-resolution to enlighten the interplay between structural properties and coupling mechanisms, precise control over organic thin films is required. Different approaches to achieve this control are presented and the resulting vibrational and optical spectra are discussed.