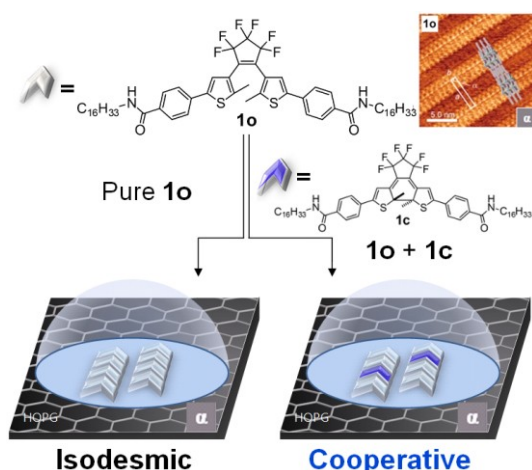


Diarylethene Self-Assembled Monolayers: Cocrystallization and "Mixing-Induced Cooperativity" Highlighted by Scanning Tunneling Microscopy at the Liquid/Solid Interface

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The control over 2-D multi-component molecular orderings on surfaces is a key technology to realize advanced materials with stimuli-responsive properties. The fractional coverage (θ) at a given concentration can be determined from two parameters: the equilibrium constant (K_e) and the degree of cooperativity (σ). The parameters for the formation of self-assembled monolayer of pure diarylethene isomers were obtained by STM measurements on HOPG. These mono-component parameters were used as references to highlight a cocrystallization process between the open- and closed-ring isomers. Moreover it was observed that the presence of the closed-ring isomer induces cooperativity in the formation of the molecular ordering of the open-ring isomer. The quantitative analysis of the ordering formation process by using a model simulation presented in this work provides a better understanding of mixing of components in a molecular ordering and photoinduced interchanges at the liquid/solid interface.