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Influence of intermolecular H-bonding on the acid-base interfacial properties of -COOH and ferrocene terminated SAM

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Abstract

We have explored the intermolecular interactions within a two-component self-assembled monolayer, a model system to develop our understanding of interfacial chemistry in molecular level. The redox signal of 11-ferrocenyl-1-undecanethiol (FcC11) reversibly responded to the formation of intermolecular H-bonding: The intermolecular H-bonding between the terminal carboxyl groups of MSA promoted the formation of MSA assemblies, which increased the influence of MSA on the neighboring molecules (FcC11). Meanwhile, the disordered FcC11 appeared within the locally ordered FcC11 patches, resulting in the presence of a new couple of redox peaks