

単一分子メモリを目指した動的酸化還元系の開発 金表面分子膜形成能とSTMによるレドックス変換

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Organic Molecular Layer with High Electrochemical Bistability: Synthesis, Structure, and Properties of a Dynamic Redox System with Lipoate Units for Binding to Au(111)

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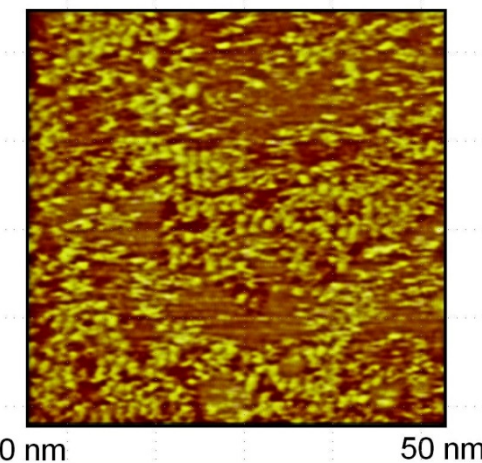
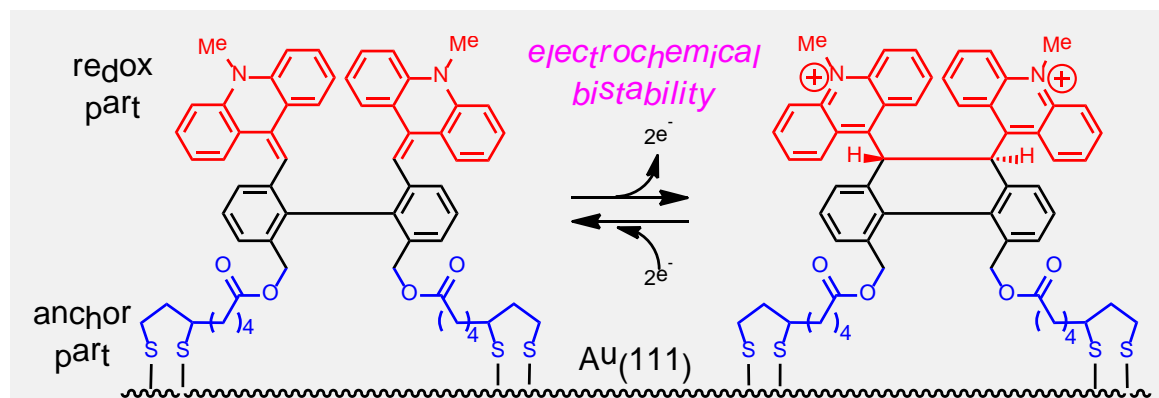


Figure1. In situ STM image of a molecular layer

レドックス型単一分子メモリの実現に向けて、電気化学的安定性の高い動的酸化還元系を利用した分子系の設計/合成を行い、金(111)表面での分子膜の形成とSTM観測、及びSTMによる電気化学的相互変換を実現した。An electrochemically bistable redox species bound to the surface would be advantageous for the realization of a molecular-based data storage element since mutual electron exchange between neighboring molecules with different redox states would be suppressed. The dynamic redox pair with a functional group for binding to a surface was first synthesized, whose redox conversion can be accomplished on a Au(111) surface.