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Electrochemical Radiofrequency Scanning Tunneling Microscopy Measurements for Fingerprinting Single Electron Transfer Processes

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Abstract : Electron transfer is a crucial part of chemical reactions which drive everyday processes. With the help of an electrochemical radio frequency scanning tunneling microscopy (EC-RF-STM) setup, we are observing single electron mediated oxidation-reduction processes in molecules like ferrocene and transition metal corroles. Combining the techniques of scanning microwave microscopy and cyclic voltammetry allows us to monitor such processes with attoampere sensitivity. A systematic study of such phenomena would be critical to understanding the nano-scale behavior of catalysts, molecular sensors, and batteries relevant to the development of novel material and energy applications.

Keywords : radiofrequency, STM, cyclic voltammetry, ferrocene
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