Interfacial Charge Transfer in (Photo)electrocatalytic Reactions

Light-absorbing semiconductor electrodes decorated with electrocatalysts are key components of photoelectrochemical energy conversion and storage systems. Efforts to optimize these systems have been slowed by an inadequate understanding of the interface between semiconductor and electrocatalyst. Experiments to directly measure the interface behavior are challenging because conventional photoelectrochemical techniques do not measure the electrocatalyst potential during operation. The work on dual working electrode (DWE) photoelectrochemistry to address this limitation will be introduced in this talk. A second electrode made of a gold thin film is attached to the catalyst layer to control and probe current/voltage independent from that of the semiconductor.

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