Experimental Characterization of Dye-sensitized Solar Cells

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This talk will give a survey of experimental methods that are currently used in our laboratory to investigate the properties of dye-sensitized solar cells. The interpretation of the data obtained will be discussed and related to models of charge transport and interfacial electron transfer.

1. **Steady state methods**
   - IPCE measurements: effects of chopping, bias illumination.
   - IV measurements: determination of internal Fermi level using ‘top electrode’

2. **Non steady state methods**
   - IMPS and IMVS and time resolved equivalents
   - Impedance
   - Modulated infrared transmittance
   - Photoinduced absorption spectroscopy
   - Photovoltage decay
   - Charge extraction method
   - Infrared decay
   - Photovoltage risetime
   - Galvanostatic measurements

3. **The multiple trapping model**
   - Quasi-static approximation
   - Determining the electron diffusion length
   - Deviations from ideality

**References**