The fundamental steps of electrochemistry occur at the nanoscale, and therefore through studying nanoelectrochemistry we can further our knowledge of electrochemical processes. Trying to expand our insight of these steps presents significant challenges, but new approaches and technologies mean our understanding has expanded greatly in recent years.

This Faraday Discussion focuses on recent advances in nanoelectrochemistry, in which individual, transient intermediates and fast charge transfer at the nanointerface can be probed, enabling a comprehensive understanding of electrochemistry at any scale, from single entity to ensemble.

This includes approaches combining nanoelectrochemistry with other techniques, new spectroscopic tools to investigate nanoelectrochemical processes, and new theoretical models being developed to understand the dynamic and stochastic processes during nanopore electrochemical confinement.

This discussion will focus on the following four themes:

- Confined nanopore electrochemistry
- Scanning electrochemical probe microscopy
- Spectroelectrochemistry and light active processes at the nanointerface
- Systems nanoelectrochemistry: From single-entity to ensemble

Front cover image:
An atomic force microscopy cantilever modified with hemispherical platinum-black micro- or nanoelectrodes for local detection of light-driven hydrogen evolution

Faraday Discussions

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