A Molecular Mediator for Reductive Concerted Proton-Electron Transfers via Electrocatalysis

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Scientific Achievement

We develop a molecular mediator to deliver a proton and electron to a substrate in a concerted fashion.

Significance and Impact

Concerted delivery of proton and electrons, as opposed to stepwise delivery, requires significantly less energy input.

Technical Details

- Process is electrocatalytic
- Concerted proton-electron transfer is rate limiting
- Approach involves synthetic integration of a redox mediator and a Brønsted acid



proton-electron transfer

Cyclic voltammograms demonstrating increasing rate of reaction with increasing cobaltocene catalyst