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Showcasing research from Professor Meenesh Singh's laboratory, University of Illinois Chicago, IL, USA, and Professor Joseph Gauthier's laboratory, Tech University, TX, USA.

High-pressure electrochemistry: a new frontier in decarbonization

High-pressure electrochemistry is an emerging area with significant promise for commercializing green chemicals. However, little is known about the underlying theories and practices in implementing high-pressure electrochemical reactors. Electrochemical synthesis at high pressures can increase the operating current density and reduce the cell potential, which would decrease the CapEx and OpEx costs, respectively, and thereby reduce barriers to industrial-scale deployment. In this perspective, we provide the fundamental theories of high-pressure electrochemistry and discuss how pressure affects the activity, selectivity, stability, and energy efficiency of reactions.

Image designed and illustrated by Crystal Price, Meenesh R Singh, and Joseph A. Gauthier

As featured in:



See Meenesh R. Singh, Joseph A. Gauthier *et al.*, *EES. Catal.*, 2024, 2, 507.