

Modeling the carbon dioxide electrocatalysis system

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Propositions

accompanying the dissertation

Modeling the Carbon Dioxide Electrocatalysis System

by

Divya Bohra

1. Surface adsorbed hydrogen is key to controlling selectivity of carbon dioxide reduction electrochemistry. (*chapter 4*)
2. Discrepancies between modeling results and experimental observations are more valuable than agreements.
3. The electrical double layer is an essential feature of the CO₂ electrocatalysis reaction interface. (*chapter 5*)
4. "Local pH", in CO₂ electrocatalysis, is an inadequately defined term.
5. Rate of CO₂ transport to the catalyst surface will be determined by the properties of the electrical double layer. (*chapter 5*)
6. Porous catalyst layers with similar surface areas can have very different selectivity within gas diffusion electrode-based flow cells. (*chapter 6*)
7. Benchmarking of experimental and modeling results is important for the progress of CO₂ electrocatalysis.
8. Uncertainty quantification is essential to all modeling efforts.
9. PhD is a job.
10. To be collaborative as a scientist is more important than to be independent.

These propositions are regarded as opposable and defensible, and have been approved as such by promotor Dr. W. A. Smith and promotor Prof. dr. E. A. Pidko.