

## Metal-Organic Frameworks for the CO<sub>2</sub> Reduction Reaction A Selectivity Study

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# Propositions

accompanying the dissertation

## Metal-Organic Frameworks for the CO<sub>2</sub> Reduction Reaction A Selectivity Study

by

**Khatereh ROOHI**

1. Metal-organic frameworks are underutilized in electrocatalysis, even though their tunability enables precise control over each step of complex reactions. (*This proposition pertains to this dissertation.*)
2. The performance of a catalyst should not be limited to its activity. The reaction should dictate the metrics of the catalyst performance. (*This proposition pertains to this dissertation.*)
3. Operando spectroscopic techniques complement DFT by bridging the gap between idealized models and realistic operating conditions, balancing computational analysis with experimentally observed catalyst behavior for mechanism-driven design. (*This proposition pertains to this dissertation.*)
4. An intrinsic descriptor for selectivity of the catalyst in CO<sub>2</sub>RR needs to go beyond the binding energy of the intermediates. (*This proposition pertains to this dissertation.*)
5. Physicists receive less criticism when their mathematical model is impractical for industry, while chemists face much scepticism if their experiments seem disconnected from industrial needs.
6. A deeper understanding of the scientific method should lead to greater humbleness in general attitude.
7. Scientists that cannot craft captivating, informative content should expect and accept obscurity, concentrating their efforts on fundamental work for a limited readership.
8. Restricting academic opportunities based on arbitrary factors like place of birth, ultimately, hurts academia the most.
9. More power necessitates more empathy; without it, a button replaces a conscience.

10. Art gives people a break from science.

These propositions are regarded as opposable and defensible, and have been approved as such by the promoters dr. P. Taheri and prof. dr. ir. A. Mol.