

Propositions

accompanying the dissertation

Electrical Intensification of CO₂ Reduction Electrolysis

by

Mark Sassenburg

1. Pursuing a PhD is like surfing. Planning, timing and intensity are essential.
2. University level research of CO₂ electrolysis needs to move beyond mechanistic studies and towards realistic conditions in order to have greater impact on the energy transition.
(Chapter 3)
3. An ‘ideal’ catalyst only exists under its own unique conditions. Transferability of catalysts to different systems requires reconsideration of the catalyst.
(Chapter 3)
4. The success of CO₂ electrolysis depends on the durability of the system. Unwanted side reactions and limited CO₂ utilisation are key bottlenecks.
(Chapter 4)
5. Empirical research will make a resurgence due to the ramping up demand of deployable systems.
(Chapter 3 and 5)
6. Through clever engineering, limitations like carbonate formation can be turned into new possibilities.
7. The present is an undervalued gift. We use the past to reflect what went right or wrong, and try to safeguard a better future with this knowledge. But the only moment we have to make any changes is the present.
8. Human kindness can suffer greatly from pragmatism. Vice versa, getting a job done can be hard when one is overly considerate. Being goal-driven gets results, but often becomes unsustainable towards the environment.
9. Animated movies and cartoons, in science and entertainment alike, contain powerful messages adults do not appreciate enough.
10. The coffee break is a vital part of the creative development process. Covering science only through strict schedules can become tedious and numbing.

These propositions are regarded as opposable and defensible, and have been approved as such by the promotor Dr. W.A. Smith, Dr. ir. Johan Padding, and the co-promoter Dr. T.E. Burdyny.