Biomimetic models of [NiFe] hydrogenase for electrocatalytic hydrogen evolution

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Propositions (Stellingen)

Accompanying the thesis

Biomimetic Models of [NiFe] Hydrogenase for Electrocatalytic Hydrogen Evolution

1. Altering the backbone spacer of chelating ligands changes the electrocatalytic properties of the corresponding metal complexes.
   This thesis, Chapter 2

2. Unexpected results can give a new perspective and lead to the investigation of a different research subject.
   This thesis, Chapter 4

3. The different physical properties of sulfur and selenium do not have a significant effect on the electrochemical properties of the complexes with ligands that only differ in these donor atoms.
   This thesis, Chapter 3 and 5

4. Irreversibility of reduction processes makes the understanding of electrocatalytic reactions difficult.
   This thesis, Chapter 3 and 5

5. A difference of nearly 1 V between the reduction potentials of the thiolate and selenolate analogues of the complexes with a propyl spacer is not expected if the reduction potentials of the thiolate and selenolate analogues of the complexes with a xylyl spacer are the same.
   Weber et al., Eur. J. Inorg. Chem. ***2014****, 148-155; This thesis, Chapter 2*

6. One cannot state that a compound is active in electrocatalytic proton reduction without reporting the results of the appropriate blank experiments.
   Wombwell et al., Chem. Eur. J. ***2015****, 21, 1-10 and Weber et al., J. Am. Chem. Soc.* ***2012****, 134, 20745-20755*

7. Although cyclic voltammetry can be a very important tool to check the electrochemical activity of a compound, reporting a complex to be an excellent catalyst without any quantification of the results is not useful.
   Yang et al., Eur. J. Inorg. Chem. ***2015****, 2965-2973*

8. As nickel-ruthenium complexes generally are more stable than the corresponding nickel-iron complexes, they should be considered as alternatives in the design of new electrocatalysts for dihydrogen production.
   Canaguier et al., Chem. Eur. J. ***2009****, 15, 9350-9364; This thesis Chapter 5*

9. Time flies when you are in the lab but it stops when you are writing.

10. Preparing a suitable and reliable setup for GC measurements is more difficult than synthesizing a new catalyst.

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