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## Redox interconversion between metal thiolate and disulfide compounds

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# Propositions (Stellingen)

Accompanying the thesis

## Redox interconversion between metal thiolate and disulfide compounds

1. It is remarkable that a Cu(II) thiolate compound is isolated from an acetonitrile solution in a quite high yield, whereas the authors state that a Cu(I) disulfide compound is present as the main species in this solvent.  
*A. M. Thomas et al. J. Am. Chem. Soc. 135(2013), 18912-18919*
2. Reports describing diamond type  $[\text{Cu}^{\text{II}}_2\text{S}_2]$  compounds should also consider the possibility of formation of Cu(I) disulfide compounds.  
*P. Houser et al. J. Am. Chem. Soc., 118 (1996) 2101-2102.*
3. It is not possible to predict the position of the redox interconversion between cobalt(III) thiolate and cobalt(II) disulfide compounds triggered by chloride anions, as different ligand systems yield different results.  
*M. Gennari et al. Angew. Chem. Int. Ed., 53 (2014) 5318-5321; This thesis, Chapter 2.*
4. The redox interconversion reactions of copper(II) thiolate compounds, are dictated by other physical properties than those of cobalt(III) thiolate compounds.  
*A. M. Thomas et al. J. Am. Chem. Soc. 135(2013), 18912-18919; E.C.M. Ordning-Wenker et al. Inorg. Chem., 53 (2014) 8494-8504; This thesis, Chapter 3*
5. Although the redox interconversion reactions have successfully been extended to cobalt and iron compounds, the mechanism of these reactions still needs to be clarified.  
*L. Wang, Chem. Eur. J., 24 (2018), 11973-11982; This thesis, Chapters 2 and 3*
6. It is challenging to predict the final oxidation products of metal disulfide compounds.  
*This thesis, Chapter 4*
7. Color is not a good indicator to distinguish cobalt(III) thiolate from cobalt(II) disulfide compounds.  
*This thesis, Chapter 3*

8. One should be aware of the potential decomposition of the tetrafluoroborate anion when using it in the synthesis of coordination compounds.  
*This thesis, Chapter 5*
9. Great patience is required to grow single crystals.
10. Many things seem impossible until it is done.

Feng Jiang

*Leiden, December 7, 2018*