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Reactivity of cobalt(II)-dichalcogenide complexes: correlation between redox conversion and ligand-field strength

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Curriculum Vitae

Christian Marvelous was born in Malang, East Java, Indonesia, on the 9th of March 1994. In August 2012, he moved to Bandung, West Java, to pursue a BSc in chemistry at Institut Teknologi Bandung (ITB). During his studies, he was involved in several extracurricular activities such as the chemistry student association ‘HMK ‘AMISCA’ ITB’, as well as being a leader of the chemistry class of 2012. In July 2016 he obtained a BSc degree *cum laude* with a thesis entitled “Novel Cobalt(II)-Mannich Base Compound as A New Potent Anticancer” under the supervision of Dr. Irma Mulyani and Dr. Deana Wahyuningrum. After finishing his BSc, he started fast-track MSc studies in Inorganic Chemistry at the same university. In January 2017, he started his research internship at University of Groningen, The Netherlands, under the supervision of Dr. Bart Crielgaard with the thesis entitled “Synthesis, Characterization, and Cellular Interactions of Iron Oxide Nanoparticles and Gold-Coated Iron Oxide Nanoparticles”. In October 2017, he graduated *cum laude* and received the best poster award for the final thesis from Chemistry Department Institut Teknologi Bandung.

On the 11th of April 2018, he started his PhD in the Metals in Catalysis, Biomimetics, and Inorganic Materials group at Leiden University under supervision of Prof. Dr. Elisabeth Bouwman and Prof. Dr. Célia Fonseca Guerra. During his PhD studies, he supervised several practical courses, six *Leren Onderzoeken 1* students, two BSc students, and one MSc student. He followed a number of courses offered by the Holland Research School of Molecular Chemistry (HRSMC) as well as the Graduate School of Leiden University, including “Scientific Conduct”, “Anxiety, Stress, and Courage”, “Physical Methods in Inorganic Chemistry”, “Molecular Modelling”, and “High Impact Writing”.

The results reported in this thesis were presented at several conferences as listed below:

Poster Presentation Netherlands’ Chemistry and Catalysis Conferences (NCCC) XX – XXI, 2019–2020, Noordwijkerhout, The Netherlands

Poster Presentation HRSMC Symposium, 2019, Amsterdam, The Netherlands

Poster Presentation NWO CHAINS Conference 2019, Veldhoven, The Netherlands

Oral Presentation NWO CHAINS Conference 2021, Online, The Netherlands

Oral Presentation HRSMC Symposium, 2022, De Duif, Amsterdam, The Netherlands

Oral Presentation Netherlands' Chemistry and Catalysis Conference XXIII, 2022, Noordwijkerhout, The Netherlands

List of Publications

“Cobalt(II)-disulfide compounds with the unusual PF_2O_2^- anion. Ligand-dependent redox conversion to a cobalt(III)-thiolate complex”

F. Jiang[#], C. Marvelous[#], A.C. Verschuur, M.A. Siegler, S.J. Teat, and E. Bouwman, *Inorganica Chimica Acta*, 2022, **535**, 120880.

[#]Equal contributions

Chapter 2

“Probing The Redox Interconversion of Co(II)-disulfide / Co(III)-thiolate Complexes: The Effect of Ligand Field Strength”

C. Marvelous, L. de Azevedo Santos, M.A. Siegler, C. Fonseca Guerra, and E. Bouwman, *Dalton Transactions*, 2022, **51**, 8046-8055

Chapter 3

“Cleaner and Stronger: How 8-quinolinolate Facilitates Formation of Co(III)-thiolate from Co(II)-disulfide Complexes”

C. Marvelous, L. de Azevedo Santos, M.A. Siegler, C. Fonseca Guerra, and E. Bouwman, *submitted*.

Chapter 4

“Redox-conversion Reactivity of The Chalcogen Family: Selenium vs Sulfur”

C. Marvelous, M.A. Siegler, C. Fonseca Guerra, and E. Bouwman, *manuscript in preparation*.

Chapter 5

“Structural Investigations and Reactivity of Cobalt(II)-Disulfide Complexes”

C. Marvelous, M.A. Siegler, and E. Bouwman, *manuscript in preparation*.

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Christian Marvelous