Ruthenium– and cobalt–based artificial metalloenzymes for photocatalytic water oxidation in artificial photosynthesis

Polanco Rivas, E.A.

List of publications

Maaskant, R. V.; Polanco, E. A.; van Lier, R. C.W.; Roelfes, G. "Cationic iron porphyrins with sodium dodecyl sulphate for micellar catalysis of cyclopropanation reactions". **Org. Biomol. Chem. 2020**,**18**, 638-641

Opdam, L. V.; Polanco, E. A.; Regt, B. de, Lambertina, N.; Bakker, C.; Bonnet, S. A.; and Pandit, A.; "A screening method for binding synthetic metallo-complexes to haem proteins". *Analytical Biochemistry*. **2022**, 653, 114788.

Polanco, E. A.; Opdam, L. V.; Passerini, L.; Huber, M.; Bonnet, S.A.; Pandit, A. An artificial metalloenzyme that can oxidize water photocatalytically: design, synthesis, and characterization (*submitted*)

Polanco, E. A.; Opdam, L. V. Hakkennes, M.; ; Stringer, L.; Pandit, A.; Bonnet, S.A. An artificial carbonic anhydrase-ruthenium metalloenzyme for water oxidation (*In preparation*)

Polanco, E. A.; Opdam, L. V.; Stringer, L.; Pandit, A.; Bonnet, S.A. Protein-protein interaction for photocatalytic water oxidation (*In preparation*)

Zhang, Liyan; Wang, Peiyuan; Zhou, Xue-quan; Bretin, Ludovic; Zeng, Xiaolong; Husiev, Yurii; Polanco, Ehider; Wijaya, Lukas; Biver, Tarita; Le Dévédec, Sylvia; Sun, Wen; Bonnet, Sylvestre. Cyclic ruthenium-peptide conjugates as integrin-targeted photoactivated chemotherapy prodrugs for the treatment of brain tumors (*In preparation*)

Curriculum Vitae

Ehider Polanco was born in Ciudad Bolívar, Bolívar state, Venezuela, on May 18th, 1990. At the age of 16 he started his Bachelor in Chemistry at Universidad Simón Bolívar, in Miranda, Venezuela. During his Bachelor, he focused his studies in organic chemistry, in the area of medicinal chemistry where he performed his thesis on the development fluorine-based benzoyl indoles as microtubulin polymerization inhibitor compounds. Afterwards, his academic life continued in France. On August 24th, 2016, he arrived in Paris to start his master degree at "Paris Descartes Université". During his master, he was granted an Erasmus scholarship in 2017 to go to The Netherlands, where he did an internship at Groningen University, in the Stratingh Institute of Chemistry in the group of Prof. dr. Gerard Roelfes. From this work, he got his first published publication named "Cationic iron porphyrins with sodium dodecyl sulphate for micellar catalysis of cyclopropanation reactions" in Organic & Biomolecular Chemistry. After this, he went back to Paris to finish his master. In his second year, he got the opportunity to work with Prof.dr Hamid Dhimane on the synthesis of new azobenzenes for the development of photosensitive hydrogels towards extracellular matrix mimetics with tunable mechanical properties. On June 30th, 2018, he finished his Master degree in chemistry and life science "*Chimie moleculaire dirigée vers le vivant*". In July 9th, 2018, he started his PhD at Leiden University within the Metals in catalysis, biomimetics and materials research group (MCBIM), under the supervision of Prof. dr. Sylvestre Bonnet and Dr. Anjali Pandit. During his PhD, he supervised four *Practicum Basisvaardigheden* (PBV-MST), twelve (12) *Leren Onderzoeken 2* students, one bachelor student, and one master student. He followed HRSMC courses on Molecular modeling (MM), Physical methods in inorganic chemistry (PMIC), Photophysics, photochemistry and photobiology (PPP), the HRSMC doctorate school Advanced metal-organic chemistry and catalysis (AMOCC), and several other courses.

During his PhD, he presented his results in several national and international conferences:

- Netherlands Chemistry and Catalysis Conferences (NCCC XXI, XXIII, XXIV) 2020, 2022 and 2023, Noordwijkerhout, The Netherlands (**Poster presentation**)
- Chemistry As Innovating Science (NWO CHAINS): 2019 and 2022, Veldhoven, The Netherlands. (**Poster presentation**)
- HRSMC Symposium 2022, Amsterdam, The Netherlands (**Poster presentation**).
- HRSMC/ 6th EPA Advanced Summer School on Photochemistry, Noordwijk, The Netherlands (**Poster presentation**).
- 28th PhotoIUPAC, 2022, Amsterdam, The Netherlands (**Oral presentation**)

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