The metallophilic interaction between cyclometalated complexes: photobiological applications

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LIST OF PUBLICATIONS

Published:

1. **Xue-Quan Zhou**, M. Xiao, V. Ramu, J. Hilgendorf, X. Li, P. Papadopoulou, M. A Siegler, A. Kros, Wen Sun*, Sylvestre Bonnet*, "The self-assembly of a cyclometalated palladium photosensitizer into proteins-stabilized nanorods triggered drug uptake *in vitro* and *in vivo*." ***J. Am. Chem. Soc.*** 142.23 (2020): 10383–10399. (***Front cover***)
2. **Xue-Quan Zhou**, A. Busemann, M. S Meijer, M. A Siegler, Sylvestre Bonnet*, "The two isomers of a cyclometalated palladium sensitizer show different photodynamic properties in cancer cells." ***Chem. Comm.*** 55.32 (2019): 4695-4698.
3. **Xue-Quan Zhou**, Y. Li, D.-Y. Zhang, Y. Nie, Z.-J. Li, W. Gu, X. Liu, Jin-Lei Tian*, S.-P. Yan, "Copper complexes based on chiral Schiff-base ligands: DNA/BSA binding ability, DNA cleavage activity, cytotoxicity and mechanism of apoptosis." ***Eur. J. Med. Chem.*** 114 (2016): 244-256.
4. **Xue-Quan Zhou**, Q. Sun, J.-L. Tian, S.-P. Yan, "The synthesis and application of mononuclear copper complexes." P.R. China, Patent, CN103788118A, 2016. (in Chinese)
5. **Xue-Quan Zhou,** Q. Sun, L. Jiang, S.-T. Li, W. Gu, Jin-Lei Tian*, X. Liu, S.-P. Yan, "Synthesis, characterization, DNA/BSA interactions and anticancer activity of achiral and chiral copper complexes." ***Dalton Trans.*** 44.20 (2015): 9516-9527.
6. Yue Liu, **Xue-Quan Zhou***, J. Lu, S.-T. Li, Y. Nie, Jin-Lei Tian*, X. Liu, S.-P. Yan, "Biological evaluation of rare earth complexes bearing 1H-imidazo [4,5-f]-1,10-phenanthroline moiety as promising anticancer chemotherapeutics." ***Appl. Organomet. Chem.*** 32.12 (2018): e4617.
7. Anja Busemann, C. Araman, I. Flaspohler, A. Pratesi, **Xue-Quan Zhou**, V. HS van Rixel, M. A Siegler, L. Messori, S. I van Kasteren, S. Bonnet*, "Alkyne functionalization of a photoactivated ruthenium polypyridyl complex for click-enabled serum albumin interaction studies." ***Inorg. Chem.*** 59.11 (2020): 7710–7720.
8. Quanchi Chen, V. Ramu, Y. Aydar, A. Groenewoud, **Xue-Quan Zhou**, M. J Jager, H. Cole, C. G Cameron, Sherri A McFarland*, Sylvestre Bonnet*, B Ewa Snaar-Jagalska*, "TLD1433 photosensitizer inhibits conjunctival melanoma cells in zebrafish ectopic and orthotopic tumour models." ***Cancers***, *12*.3 (2020): 587.

Under review:

1. **Xue-Quan Zhou**, I. Carbó-Bagué, M. A. Siegler, J. Hilgendorf, U. Basu, I. Ott, R. Liu, L. Zhang, V. Ramu, A. P. IJzerman, Sylvestre Bonnet*, "Rollover cyclometalation *vs*. nitrogen coordination in tetrapyridyl anticancer gold(III) complexes: effect on protein interaction and toxicity." ***JACS Au***.
2. **Xue-Quan Zhou**, M. Mytiliniou, J. Hilgendorf, Y. Zeng, P. Papadopoulou, Y. Shao, E. Bos, M. A. Siegler, F. Buda, A. Kros, R. I. Koning, D. Heinrich, Sylvestre Bonnet,* "Intracellular dynamic assembly of deep-red emitting supramolecular nanostructures based on the Pt…Pt metallophilic interaction", ***Advanced Materials***.

Manuscript in preparation:

1. **Xue-Quan Zhou**, Wen Sun*, P. Wang, V. Ramu, S. Jiang, S. Abyar, P. Papadopoulou, Y. Shao, M. A Siegler, F. Buda, A. Kros, Sylvestre Bonnet*, "Self-assembling cyclopalladated photosensitizers for photodynamic therapy: aggregation, tumor accumulation, and anti-tumor activity in a skin melanoma xenograft".
2. **Xue-Quan Zhou**, I. Carbó-Bagué, M. A. Siegler, G. Bigliardi, O. King, U. Basu, I. Ott, R. Liu, A. P. IJzerman, Sylvestre Bonnet*, "Thiol-activated anticancer tetrapyridyl gold(III) complexes for lysosome imaging and protein regulation".
3. **Xue-Quan Zhou**, M. A. Siegler, Sylvestre Bonnet*, "Tuning emission spectra of biscyclometalated platinum complexes by changing the position of metal-carbon bond".
4. **Xue-Quan Zhou**, L. Roeleveld, M. A. Siegler, Sylvestre Bonnet*, "The anticancer activity and mechanism of tetrapyridyl palladium complexes".

CURRICULUM VITAE

Xuequan Zhou was born in Xianning, Hubei Province, China on 11th February 1992. However, the registered birthday is 1st February 1990 for a historical reason. In 2009, he graduated from Xianning High School and was admitted to Nankai University located at Tianjin. He received his Bachelor (2013) and Master (2016) degree in Chemistry from Nankai University. His master thesis was entitled: "Studies on the synthesis and anticancer ability of metal complexes with Schiff-base and acylhydrazone ligands". During his MSc studies, he obtained the awards of "Excellent Graduate in Nankai University", "Excellent Thesis in Nankai University" and "China National Scholarship for Postgraduate".

With a scholarship from the Chinese Scholarship Council (CSC), he started his PhD studies in September 2016, under the supervision of Prof. Sylvestre Bonnet and Prof. Elisabeth Bouwman in the group of Metals in Catalysis, Biomimetics & Inorganic Materials (MCBIM) at the Leiden Institute of Chemistry, Leiden University. During his PhD studies, he collaborated with Dr. Wen Sun (Dalian University of Technology), Dr. Maxime A. Siegler (Johns Hopkins University), Prof. Ingo Ott (Technische Universität Braunschweig), Prof. Alexander Kros (Leiden Institute of Chemistry), Dr. Roman I. Koning (Leiden University Medical Center), Prof. Doris Heinrich (Fraunhofer Institute for Silicate Research ISC) and Prof. Adriaan P. IJzerman (Leiden Academic Centre for Drug Research). In total, he supervised three MSc and two BSc students and one first-year chemistry lab course. During his PhD research, he followed the two courses "HRSMC Physical Methods in Inorganic Chemistry" and "Graduate School Course of Leiden University: Scientific Conduct", as well as the autumn school on "HRSMC Advanced Metal-Organic Chemistry and Catalysis".

He presented parts of the research described in this PhD thesis at the following conferences:

Poster presentations

- Chemistry as Innovating Science (CHAINS), 2016, Veldhoven, The Netherlands
- Chemistry as Innovating Science (CHAINS), 2017, Veldhoven, The Netherlands
- Holland Research School of Molecular Chemistry (HRSMC) Symposium, 2018, Leiden, The Netherlands
- Reedijk Symposium, 2018, Leiden, The Netherlands

Oral presentations

- 25th Anniversary Symposium of the Holland Research School of Molecular Chemistry (HRSMC), 2019, Amsterdam, The Netherlands

- 8th International Meeting of the Institute of Metal in Biology of Grenoble, 2019, Grenoble, France
- 2020 Chemistry as Innovating Science online conference (CHAINS), The Netherlands

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