



南京大学高济宇有机化学前沿讲座

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题目: **Solution studies of hydroxamic siderophores: from actinides' chelation to the development of promising nuclear imaging agents**

Dr Michel Meyer

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地点: 仙林化学楼H201

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Scientific Career:

Michel Meyer graduated from the Ecole Européenne des Hautes Etudes des Industries Chimiques de Strasbourg in 1990 and earned in 1995 his PhD under the supervision of Dr A.-M. Albrecht-Gary at the Université Louis Pasteur in Strasbourg. After post-doctoral research at U. C. Berkeley with Prof. K. N. Raymond (1995–1997), he was appointed by the CNRS as Chargé de Recherche at the Université de Bourgogne in Dijon. His current interests span from physico-chemical solution studies of polyazamacrocycles to actinide coordination chemistry.

Lecture abstract:

As the concentration of siderophores in soils is typically in the $\mu\text{g}/\text{kg}$ range, these ubiquitous microbial high-affinity iron(III) chelators might significantly increase the solubility, migration rate, and bioavailability of highly toxic metals in case of environmental contamination. In relation to the management and remediation of contaminated fields or the disposal of nuclear wastes in geological repositories, it is of outmost importance to gain a deeper understanding of the coordination chemistry of actinides by siderophores. The speciation of desferrioxamine B (DFB) and model compounds with UO_2^{2+} will be discussed on light of potentiometric, capillary zone electrophoretic, and spectroscopic data (UV-vis, luminescence, IR, Raman, X-ray absorption, mass, ^{17}O NMR). Uranium and plutonium dissolution tests performed on naturally (pitchblende) or artificially contaminated soils will be presented too. Finally, the development of a new β^+ radiotracer for position emission tomography (PET) will be reported. Currently, DFB is the most common chelator to label antibodies with ^{89}Zr for immuno PET. In vitro and in vivo data of our novel ligand, which allows octacoordination of the radionuclide, show markedly improved stability over the "gold standard" DFB, suggesting that the corresponding bioconjugates are highly promising candidates to become the new clinically used standard for ^{89}Zr immunoPET.

Selected publications:

1. Jewula, P. et al. *RSC Adv.* **2014**, 4, 22743–22754.
2. Jewula, P. et al. *Eur. J. Inorg. Chem.* **2015**, 1529–1541.
3. Brandès, S. et al. *J. Inorg. Biochem.* **2015**, 151, 164–175.
4. Sornosa-Ten, A. et al. *New J. Chem.* **2018**, 42, 7765–7779.
5. Terencio, T. et al. *Inorg. Chem.* **2018**, 57, 1125–1135.

欢迎参加!

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