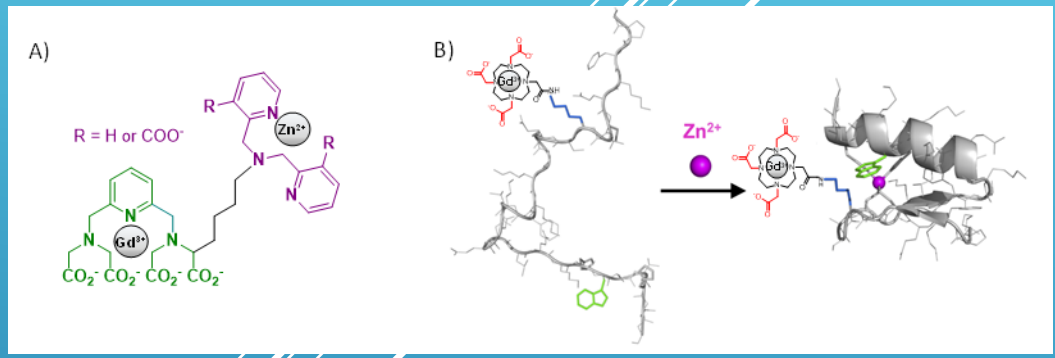
Appl. Chem. Department seminar, The 79th CMS International Seminar

The 12th Excited-state Functional Chemistry Seminar

Dr. Célia Bonnet (Webpage)

Centre de Biophysique Moléculaire, UPR 4301 CNRS, France

"Gadolinium complexes for zinc detection by Magnetic Resonance Imaging: from rational design to in vivo applications"



Date: November 24st (Fri) 2023, 16:00~ (JST)
Place: West 4-314, Ito Campus

Abstract: Magnetic Resonance Imaging (MRI) has been devoted for a long time to obtaining anatomical and functional images. Recently emerging applications in molecular imaging seek information at the molecular level, looking at the biochemical or physiological abnormalities underlying the disease. Unlike anatomic imaging, molecular imaging always requires an imaging probe that is selectively responsive to the parameter to detect. Gd^{3+}-based contrast agents are particularly well-adapted for this purpose and most often the changes on the efficacy (relaxivity) are based on changes of the hydration number and/or rotational dynamics of the complexes; these two parameters being the easiest to be tailored by the chemist. We will present the rational development of small molecular zinc responsive contrast agents based on a pyridine unit already used for Gd^{3+} complexation, to which a zinc complexing unit has been added through a linker, as well as bioinspired systems based on the zinc finger peptide. Challenges in terms of selectivity, and quantification will be discussed, as well as our last in vivo results.

Contact: Department of Applied Chemistry, Kyushu University, Nobuhiro Yanai (yanai@mail.cstm.kyushu-u.ac.jp, 2836)
Admission: free