

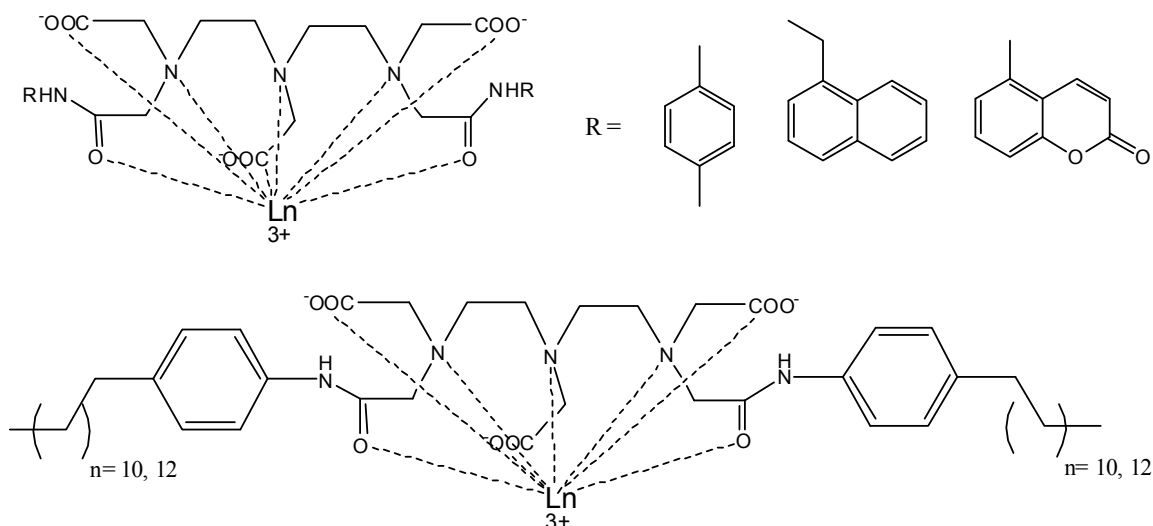
Bimodal (MRI/optical) DTPA Bisamide Complexes and their Self-assembly to Micelles

Elke Debroye, Svetlana V. Eliseeva, Luce Vander Elst, Sophie Laurent, Robert N. Muller, Sneha Bajpe, Christine Kirschhock, Koen Binnemans and Tatjana N. Parac-Vogt*

KU Leuven, Laboratory of Coordination Chemistry, Celestijnenlaan 200F, 3001 Heverlee, Belgium

**tatjana.vogt@chem.kuleuven.be*

Magnetic resonance imaging (MRI) is an essential diagnostic tool in various medical procedures. The gadolinium(III) complex of diethylene triamine pentaacetic acid (DTPA) and its derivatives are currently used as *in vivo* MRI contrast agents. In recent years there is much effort done in order to design contrast agents with improved efficiency and relaxivity, especially at higher magnetic fields. The use of slowly rotating macromolecular complexes causes the relaxivity to increase significantly.^{1,2} Bimodal contrast agents are gaining increased interest because they can combine the high resolution of MRI with the high sensitivity of optical imaging.^{3,4} The purpose of the project is to develop luminescent MRI contrast agents which are efficient at strong magnetic fields. DTPA bisamide derivatives containing absorbing aromatic units and C12 or C14 alkyl chains were synthesized and complexes of various trivalent lanthanide ions ($Ln = Eu, Tb, Gd, Dy$) were formed (see figure). The amphiphilic complexes were incorporated into mixed micelles and their characterization by photon correlation spectroscopy indicated that they were monodisperse and had mean sizes within the same range. The compounds with luminescent lanthanide ions showed very clear emission transitions. The proton longitudinal as well as transverse relaxivities were determined and very favorable parameters were obtained.



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