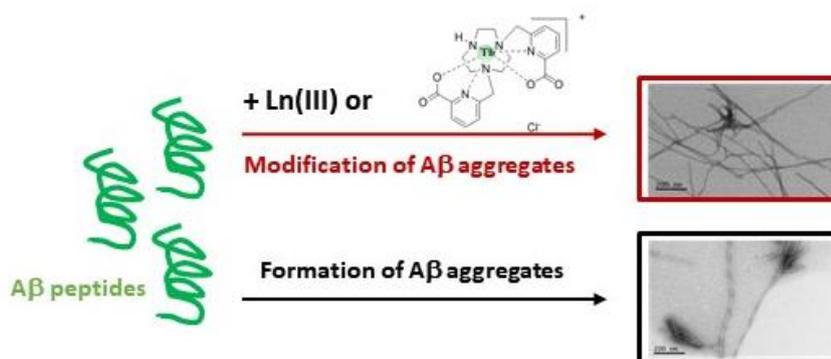


## Deciphering Ln – peptides interactions & applications in biology

Ln ions are widely used as the central elements of imaging agents.[1] Beyond their importance for diagnostic purpose, their role in biology as endogenous elements has been revealed with the recent discovery of some enzyme working with a lanthanide cofactor.[2]

In the "Alzheimer, amyloid and Bio-Inorganic Chemistry" group of the Laboratoire de Chimie de Coordination, we are interested in the study of peptides – ions interactions since they are at the core of pathological processes involved in many amyloid-related diseases, such as Alzheimer's disease (AD). In particular, metal ion modify the self-assembly of the amyloid- $\beta$  (A $\beta$ ) peptide, a key, early and deleterious process involved in the etiology of AD.[3] The role of trivalent lanthanide ions on the self-assembly of alpha-synuclein, the protein involved in Parkinson disease, was recently reported.[4] In the present project, we thus propose to investigate Ln – A $\beta$  peptides interactions by a set of complementary and advanced techniques and determine how Ln ions affect the self-assembly of the A $\beta$  peptides. This will increase our understanding of the fundamental parameters governing A $\beta$  peptide-metal ion interactions and further A $\beta$  self-assembly. It will also lead to the evaluation of a possible role of Ln ions, as self-assembly modulators for further therapeutic purposes. Technical and scientific environment of the host team are of high quality. The student will be trained on advanced spectroscopic techniques such as paramagnetic NMR, steady-state and time-resolved emission spectroscopies, Circular dichroism, kinetic monitoring of the aggregation process using multiplate fluorimeters, and imaging of the peptide assemblies by Transmission Electron Microscopy (TEM) or Atomic Force Microscopy (AFM).



### References :

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