

CHIRAL STIMULI-RESPONSIVE METALLO-SUPRAMOLECULAR ASSEMBLY INDUCED BY CUII/CUI REDOX CHANGE

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Texte:

Metallo-supramolecular polymeric assemblies are a new class of materials that has emerged in the last few decades.¹ These materials have a large range of properties depending on the nature of the metal centers and their ditopic ligands. The reversibility of their linkages can be used to do a supramolecular chiral recognition between enantiomeric molecules. This ability can lead to self-discrimination or self-recognition and generate pairs of enantiomers that are homochiral or heterochiral complexes.²

Our recent advances in this field will be presented.³ We will describe how the Cu^I/Cu^{II} redox transition shows a chiral self-recognition or a self-discrimination through electrochemical studies. This phenomenon is also observed with the metallo-supramolecular copolymers, based on the ditopic version of these chiral ligands.

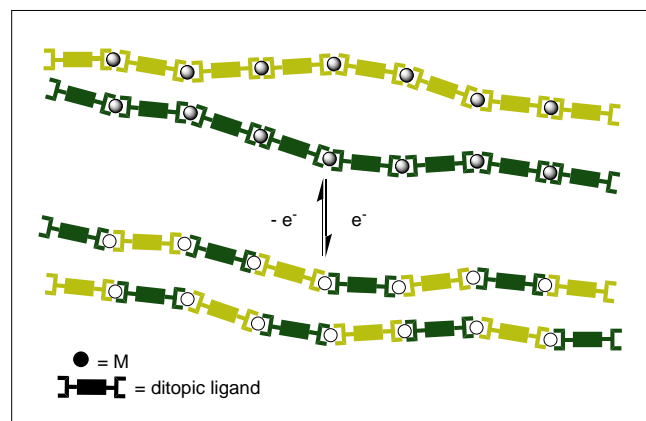


Figure 1 Principle of the electrochemically-induced control of the metallo-polymer arrangement: generation of block or alternating metallopolymers through the selective formation of homoleptic (top) or heteroleptic complexes (down).

References

1- a) Whittell G, Hager M, Schubert U, Manners I (2011) Nat. Mater. 10: 176-188

b) Wojtecki R, Meador M, Rowan S (2011) Nat. Mater. 10: 14-27

2- Yang Y, Liang J, Wei Z (2018) Nat. Commun. 9: 3808-3816

3- Marinova M, Bonnefont A, Achard T, Maise-François A, Bellemin-Laponnaz S (2020) Chem. Commun. 56: 8703-8706