

Séminaire - CEISAM - UMR CNRS 6230

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Salle Marie Curie

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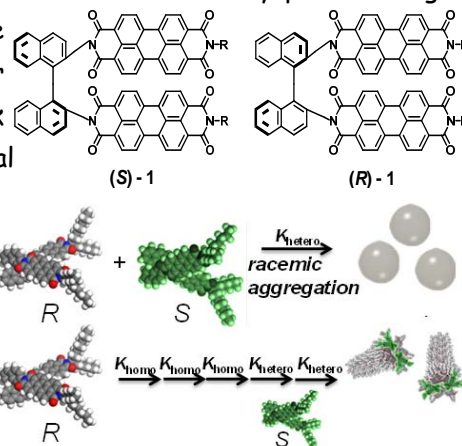
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Circularly Polarized Luminescence of Molecular-based Nanofibers and Their Specific Chiral Recognition

Circularly polarized luminescence, CPL, is dissymmetric emission of circularly polarized light from chiral molecules. Prof. Kawai and his coworkers have recently studied systematic enhancement of CPL in molecular aggregates because of condensed exciton couplings. He will talk here about his recent progress on supramolecular helical aggregates with unique chiral recognition and CPL switching nature.

Compound **1** shows CPL in clear solution and further enhancement in aggregated colloidal solution. Nano-aggregates with spherical shape are obtained with 1:1 racemic mixtures while helical nanowires from homochiral solution are formed. The length of the nanowires is systematically controlled thanks to the racemic composition of **1** solution. Fluorescence and CPL of (*R*)-**1** showed enantioselective light harvesting behavior towards self-assembled chiral naphthalenediimide nanofibers.



[1] *Enantioselective Light Harvesting with Perylenediimide Guests on Self-Assembled Chiral Naphthalenediimide Nanofibers*, R. Sethy, J. Kumar, R. Métivier, M. Louis, K. Nakatani, N. M. T. Mecheri, A. Subhakumari, K. G. Thomas, T. Kawai, T. Nakashima, *Angew. Chem. Int. Ed.*, **2017**, 56, 10.1002/ange.201707160.

[2] *Bis(dipyrrinato)zinc(II) Complex Chiroptical Wires: Exfoliation into Single Strands and Intensification of Circularly Polarized Luminescence*, R. Aoki, R. Toyoda, J. F. Kögel, R. Sakamoto, J. Kumar, Y. Kitagawa, K. Harano, T. Kawai, H. Nishihara, *J. Amer. Chem. Soc.*, **2017**, 10.1021/jacs.7b07077.

[3] *Self-Discriminating Termination of Chiral Supramolecular Polymerization: Tuning the Length of Nanofibers*, J. Kumar, H. Tsumatori, J. Yuasa, T. Kawai, *Angew. Chem., Int. Ed.*, **2015**, 54, 5943-5947.