Laboratoire PPSM – UMR CNRS 8531

Photochimie et Photophysique Supramoléculaires et Macromoléculaires

Séminaire PPSM

Lundi 18 Septembre 2017 - 10h30

Auditorium D. Chemla - Bâtiment IDA

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Invité par : Pierre Audebert

«Light-driven color and mechanical functions from photoresponsive cholesteric liquid crystals»

Liquid crystal (LC) provides a suitable platform to utilize structural motions of molecules in acondensed phase, and the amplification of those structural changes enables various optical and molecular motor applications. For a macroscopic self-organization control of the LC system, photochemical molecular switches have attracted much attention by offering the advantage of using light as an external stimulus. Especially, a photoresponsive chiral dopant in liquid crystal can act not only as a chiral agent to induce a helical superstructure so-called chiral nematic(cholesteric) phase, but also as a trigger to reversibly tune its helical pitch through photoisomerization. In this study, novel chiral molecular switches were synthesized based on photoisomerizable azobenzene or helical naphthopyran which could successfully attain cholesteric superstructure actuatio nupon irradiation with UV and visible light. Herein, photoresponsive CLCs exhibiting exceptionally large photoinduced helical twisting power switching will be introduced which resulted in a reversible modulation of RGB reflection colors and a dynamic unidirectional multi-cycle rotational motion of micro-sized objects on the surface of LC film.

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