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Title:	Mueller Polarimetry of Chiral Supramolecular Assembly
Authors:	George, J. (/jspui/browse?type=author&value=George%2C+J.)
Keywords:	Animal bioreactor In vivo gene delivery Mammary gland specific expression Therapeutic protein
Issue Date:	2018
Publisher:	American Chemical Society
Citation:	Journal of Physical Chemistry C, 122(25), pp. 14205–14212
Abstract:	Supramolecular organizations of achiral molecules are known to undergo spontaneous mirror symmetry breaking, materializing chiral macroscopic structures with enantiomeric excess. Using Mueller polarimetry, we show that the hierarchy at play in the self-assembly of an achiral amphiphilic cyanine molecule, C8O3, can be encoded in a hierarchical evolution of the states of polarization of a light beam interacting with the self-assembly. We propose a methodology to monitor the formation, growth and bundling of supramolecular assemblies in solution by tracing, at each stage of assembly, the circular and linear dichroisms together with degree of depolarization. This systematic polarization monitoring of the self-assembly allows us to investigate the various stages of the chiral nucleation process. In particular, we reveal that mirror symmetry breaking is driven, at the earliest stage of the self-assembly, by hydrophobic forces. Chiral excitons are then formed in tubular J-aggregates by a secondary nucleation, before an amplification of the chiral signal is observed in the final stage of assembly, corresponding to exciton coupling aided by the bundling of the tubular aggregates.
Description:	Only IISERM authors are available in the record.
URI:	<a href="https://pubs.acs.org/doi/10.1021/acs.jpcc.8b01867">https://pubs.acs.org/doi/10.1021/acs.jpcc.8b01867</a> ( <a href="https://pubs.acs.org/doi/10.1021/acs.jpcc.8b01867">https://pubs.acs.org/doi/10.1021/acs.jpcc.8b01867</a> ) <a href="http://hdl.handle.net/123456789/1989">http://hdl.handle.net/123456789/1989</a> ( <a href="http://hdl.handle.net/123456789/1989">http://hdl.handle.net/123456789/1989</a> )
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