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Helical Inorganic Nano-Platform for Chiral Induction, Reaction and Recognition of functional molecules and nanoparticles

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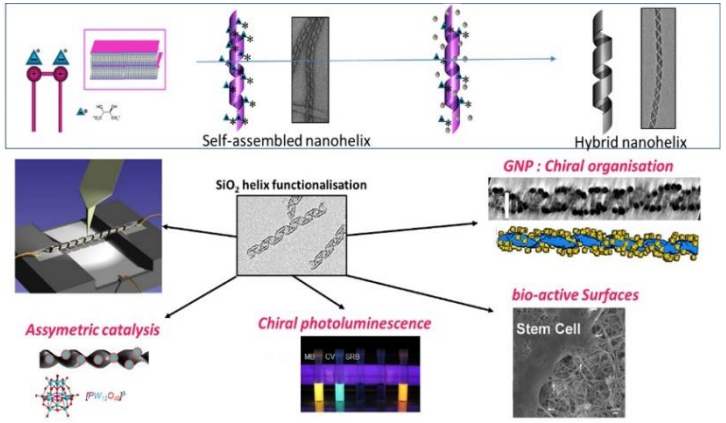
ABSTRACT: Nanometric helices with controllable pitches are attractive not only to mimic nature, but also for the wide range of applications in materials sciences, chemical and biomaterial sensing, and enantioselective catalysis. We have reported that chiral supramolecular assembly system can be achieved from non-chiral cationic surfactants with chiral counterions[1]. In this talk, I discuss how such structures can then be used as scaffold to obtain hybrid organic/inorganic nanohelices,[2] which can then be used as chiral platform to 1) organize chirally achiral nanoparticles or dyes[3] or to 2) perform *in-situ* synthesis of nanometric helical metals/quantumdots/cyristals and induce chiroptical signals from them.[4] Finally, such functionalized chiral nano structures show interaction with Intrinsically chiral or pro-chiral molecules, possibly giving access to enantioselective sensors.



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Short BIO: **Prof. Oda research work focuses in the field of multiscale design, synthesis and application of nanometric molecular self-assemblies, the understanding of their formation mechanisms and the control of their morphology and dynamics at different levels (molecular, mesoscopic up to macroscopic scale). She has investigated the effect of counterions on the assembly properties which lead to original assemblies and made a breakthrough for the development of chiral nanoobjects induced by chiral counterions, quite unique in the community. In parallel, she also developed the synthesis of hybrid chiral organic-inorganic nanostructures with well controlled morphologies based on sol-gel chemistry using these organic assemblies as templates. These nanostructures are developed further in order to develop nanomaterials with optical, mechanical and biological application in view. She has been independently leading her own group since 1998 and directed 18 PhD. Ongoing projects are funded by various agencies such as Europe (FET-OPEN), ANR, ANR-Internationals, CNRS, JSPS, IdEx, CSC, Regional counsel, University of Bordeaux, etc….She is author of 100 peer-reviewed publications, 6 book chapters, recently chaired the international Symposium on Chirality (July 2019, 340 participants.). She is directing International laboratory between Bordeaux, Kumamoto and Kyoto University, she is a director of a newly created Fédération de la recherche Chirality in Nouvelle Aquitaine (c-NOA) and is a governing board member of the new Grand Research program of University of Bordeaux, LIGHT**

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