# Hybrid nano-helix: from the organic self-assembly to the design of chiral functional nanostructures

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In the field of functional nano-materials, the chiral structures like helices or twisted ribbons are of great interest because of their optical and mechanical properties. In the present work, functional hybrid nano-helices are synthesized by use of organic chiral self-assemblies forming very well defined helix or ribbon structures as templates. The mineralization of these self-assemblies allows creating silica nano-helices with very well controlled morphologies in term of diameter and pitches [1]. We also focused particularly on the formation of short helices (length control), individualized and well-dispersed in solution [2], and their hierarchical organization at a macrometric level.

These nanohelices are then used as functional materials for different applications currently developed in our lab as the conception of semiconductor helices for NanoElectroMechanical Systems (NEMS), the formation of nano-helices decorated with gold nanoparticles to create systems efficient for the Surface Enhanced Raman Spectroscopy (SERS) [3] or in the metamaterials field, or the creation of enatioselective catalylists.

**References**

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