

## **Chirality amplification in spherically confined chromonics**

Maria Penelope DE SANTO - *The Mediterranean University of Reggio Calabria*

Induced or spontaneous chirality in natural systems is an intriguing issue. In recent years, a lot of attention has been focused on chirality of chromonic liquid crystals, a class of materials that is able to self-assemble in columnar structures, one typical example is DNA. The reflection symmetry breaking observed in chromonic liquid crystals confined in curved geometries, like tactoids, microspheres or capillaries, has been the focus of constant investigations. This spontaneous twist may be enhanced by doping nematic chromonics with L and D peptides. However, the mechanism involved in the arising of chirality, that starts at the molecular level and controls the supramolecular structure, is poorly understood.

Here, we report on the possibility to obtain, in microspheres of chiral induced chromonics embedded in a polymeric matrix, well-defined optical textures indistinguishable from the ones obtained in chiral thermotropic liquid crystals [Pellegrino C, De Santo MP, Spina L, Ciuchi F. Induced Chiral Chromonics Confined in Micrometric Droplets. *Advanced Functional Materials* 31, 2010394 (2021)]. This result is not obvious since we are dealing with three components systems whose time stability is a delicate thermodynamic balance.

Atomic Force Microscopy and X-ray diffraction investigations have helped in understanding the peculiar chromonic packing. An application as biocompatible time temperature indicators is proposed.