

## Manipulation of chiral droplets by chiral light in fluidic environment

A. Aleksanyan<sup>1</sup>, J. Leng<sup>2</sup> & E. Brasselet<sup>1</sup>

<sup>1</sup> *Laboratoire Ondes et Matière d'Aquitaine, CNRS UMR 5798, University of Bordeaux, Talence, France*

<sup>2</sup> *Laboratory of Future, CNRS-Solvay UMR 5258, University of Bordeaux, Pessac, France*

It is well known that change of linear momentum of light as it interact with matter produces force, hence possible displacement, while change of angular momentum produces torque, hence possible rotational motion. Recently, it has been shown that crossed effect can also occur, namely light-matter angular momentum exchanges can control translational motion of chiral media, in a selective manner regarding the interplay between the chirality of light and that of matter<sup>1</sup>. The demonstration consisted to the optical displacement of chiral liquid crystal droplets and has led to the development of an optical sorting of chiral micro-objects by chiral light<sup>2</sup>, which was restricted so far to single particle. Here we report on our recent development of optical sorting of monodisperse mixtures of chiral liquid crystal droplets created via the elaboration of a microfluidic chip.

---

1. Tkachenko G., Brasselet E., *Spin Controlled Optical Radiation Pressure*, Phys. Rev. Lett. **111**, 033605 (2013)

2. Tkachenko G., Brasselet E., *Optofluidic sorting of material chirality by chiral light*, Nature Commun. **5**, 3577 (2014)