Doctoral Thesis Project:

Synthesis of Light-Driven Fiber Motors

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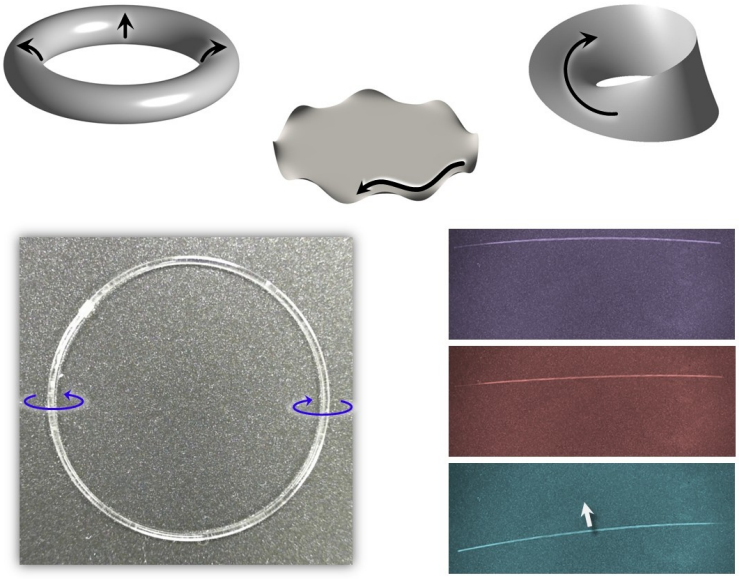

In our lab, the ICS, we have recently invented and created the first prototypes of novel, ultra-light, miniature motors consisting of only a single polymer fiber. The idea behind our invention is to prestrain a fiber, generate an embedded zero energy mode within the material and drive it as an internal wheel and active motor. Based on this "wheel within" principle we can now transform virtually any polymer fiber (from fishing line nylon to spaghetti) into a rotary motor and self-propelled engine.

The goal of this doctoral thesis will be to re-synthesize a novel version of the fiber motor that will be driven by light, electric fields and other non-thermal stimuli. Under the guidance of a dynamic, interdisciplinary team of a physicist and a chemist, in the course of this thesis the student will synthesize a responsive material that after being exposed to the right physical conditions will become the world's fastest and simplest soft machine motor.

We are looking for a dynamic out-of-the-box-thinker, with interest and knowledge in synthesis and physical chemistry. He/she should be equipped with curiosity, courage, persistence and focus to make new, surprising things become reality.

For more details , don't hesitate, contact us.

Reference:

A. Baumann, A.Sánchez-Ferrer, L.Jacomine, P.Martinoty, V.Le Houerou, F.Ziebert and I.M. Kulić , Motorizing fibres with geometric zero energy modes , ***Nature Materials***, *in press (2018)*