

東京理科大学 総合研究院

ウォーターフロンティア研究センター

Water Frontier Research Center (WaTUS), Research Institute for Science and Technology (RIST),
Tokyo University of Science (TUS)



特別セミナー

2023 年 10 月 2 日 (月) 10:30~11:30

葛飾キャンパス 講義棟 309教室

Special Seminar

Date: 10:30-11:30, 2nd October 2022

Venue: Room 309, Lecture Hall Building, Katsushika Campus

Speaker : Prof. Mathilde Reyssat

Affiliation : ESPCI Paris (France)

Title : Swimming droplets under confinement



Abstract

Artificial micro-swimmers have recently become a central field of research in soft-matter. A very promising and original type of swimmer developed in our team, consists in pure water droplet swimming in an oil phase containing micelles of surfactant. The droplet's activity comes from the formation of swollen micelles at its interface which induces Marangoni stresses and then motion of the droplets.

We investigate experimentally the behavior of such self-propelled water-in-oil droplets, confined in capillaries of different square and circular cross-sections. Stretched circular capillaries have been used to explore even stronger confinement. Within the most constricted regions, droplets elongate very strongly. These extremely long droplets reveal unexpected behaviors during their motion, in particular regarding their stability.

We build up on the Bretherton formalism to rationalize this new kind of self-motion of confined droplets in a tube, not anymore driven by pressure or flow rate but rather by locally-induced interfacial stresses.

参加方法：直接会場にお越しください (参加無料)

共催：理工学科, 界面科学研究部門

世話人：住野 豊 (先進工学部 理工学科)

