

Abstract Submitted
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Camphor swimmers LAURENT MAQUET, DOLACHAI BONIFACE, RONAN KERVIL, CÉCILE COTTIN-BIZONNE, CHRISTOPHE YBERT, Univ Lyon, Université Claude Bernard Lyon 1, CNRS, Institut Lumière Matière, Villeurbanne F-69622, France — Camphor swimmers have been studied for a long time. Still, not everything has been understood, especially for symmetrical swimmers. Here, we deepen the understanding of this specific type of swimmer. Our swimmers are made of a disc of agarose in which camphor is homogeneously precipitated. These swimmers are able to swim at a air-water interface by releasing camphor in the water, which produces a soluto-capillary Marangoni flow. The configuration of this flow is such that an immobile swimmer is unstable, and swimmers will always tend to swim. We observe that the speed of the swimmers decreases over time. This aging effect is explained through a model for the diffusion of the camphor in the agarose matrix of the disc. We also observe and characterize the effect of the meniscus on the edge of the water surface, and propose solutions to overcome the problem linked to this meniscus (i.e. the capture of the swimmers).

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