

Abstract Submitted
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3D-PTV measurement of the phototactic movement of algae in shear flow TATSUYUKI MAEDA, TAKUJI ISHIKAWA, University of Tohoku, Department of Bioengineering and Robotics, HIRONORI UENO, KEIKO NUMAYAMA-TSURUTA, University of Tohoku, Department of Biomedical engineering, YOSUKE IMAI, University of Tohoku, Department of Bioengineering and Robotics, TAKAMI YAMAGUCHI, University of Tohoku, Department of Biomedical engineering — Recently, swimming motion of algae cells is researched actively, because algae fuel is one of the hottest topic in engineering. It is known that algae swim toward the light for photosynthesis however, the effect of a background flow on the unidirectional swimming is unclear. In this study, we used *Volvox* as a model alga and placed them in a simple shear flow with or without light stimulus. The shear flow was generated by moving two flat sheets in the opposite direction tangentially. A red LED light (wave length 660 nm) was used as an observation light source, and a white LED light was used to stimulate cells for the phototaxis. The trajectories of individual cells were measured by a 3D-PTV system, consists of a pair of high-speed camera with macro lenses. The results were analyzed to understand the effect of the background shear flow on the phototaxis of cells.

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