

## Supplementary material

### Robotized algal cells and their multiple functions

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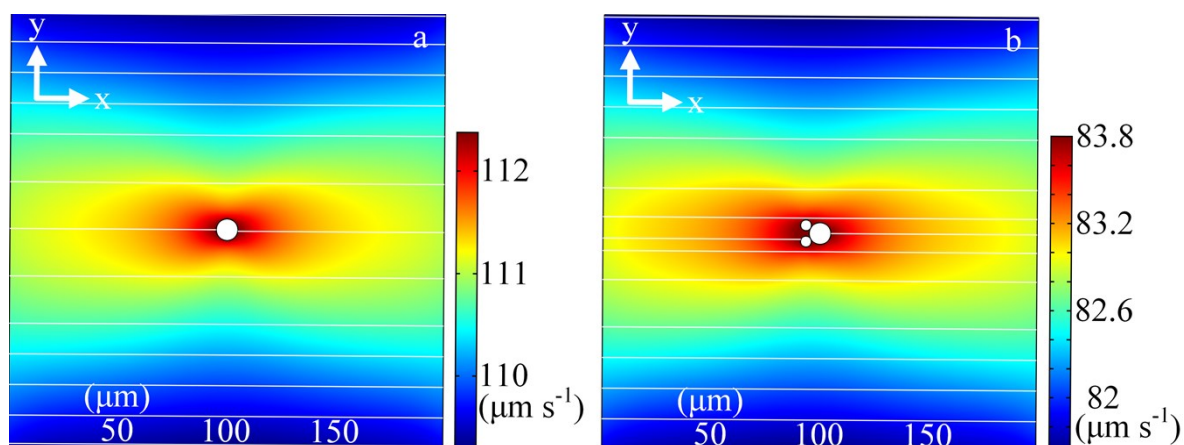
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**Movie S1** A swarm of *C. reinhardtii* cells swimming back and forth within the microfluidic channel.

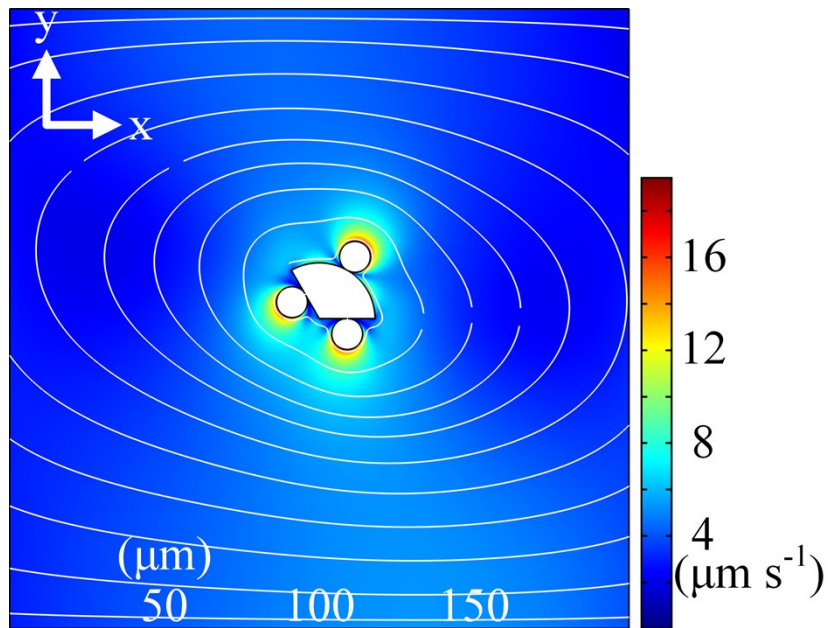
**Movie S2** A single *C. reinhardtii* cell with two PS beads attached swimming back and forth within the microfluidic channel.

**Movie S3** The photochemical release of a PS microbead from *C. reinhardtii* cell.

**Movie S4** Falciform microstructure rotating clockwise, cooperatively driven by two *C. reinhardtii* cells and three *C. reinhardtii* cells.



**Fig. S1** (a) The simulation result of a *C. reinhardtii* cell swimming at  $112.38 \mu\text{m s}^{-1}$ . (b) The simulation result of a *C. reinhardtii* cell carrying two PS microbeads swimming at  $83.8 \mu\text{m s}^{-1}$ . White horizontal lines represent the streamlines. The color map shows the flow velocity distribution.



**Fig. S2** The simulation result of the integrated structure spinning at  $2.1 \text{ rad s}^{-1}$ . White circles represent the streamlines. The color map shows the flow velocity distribution.