明治大学先端数理科学インスティテュート

MIMS現象数理カフェセミナー

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Characteristic motion of deformable Belousov-Zhabotinsky droplets

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Abstract: Self-propelled droplet systems are widely studied in the research field of active matter. In this study, the Belousov-Zhabotinsky (BZ) reaction, which is an oscillating chemical reaction, was introduced into the system to observe the self-propulsion and deformation of BZ droplets.

The BZ droplet in an oil phase exhibited an amoeba-like motion depending on the spatio-temporal patterns inside the droplet. The directions of motion of the BZ droplet were determined by the directions of propagating chemical waves. Also, the directions of chemical waves were changed by the motion or deformation of the BZ droplet, and as a result, a reciprocating motion was observed.

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