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**Mixing fluid by self-propelled objects** MAXIM BELKIN, Illinois Institute of Technology / Argonne National Lab, ALEXEY SNEZHKO, IGOR ARANSON, WAI-KWONG KWOK, Argonne National Lab — Magnetic microparticles suspended at the water-air interface and subjected to an ac external driving self-assemble into dynamic structures (magnetic snakes). The snakes are accompanied by four large hydrodynamic vortices. At high enough frequencies and amplitudes of driving the snakes transform into self-propelled swimmers. Moving erratically, these swimmers mix the surface of fluid at a very high rate. We performed detailed experimental studies of these self-organized mixing. We studied space and time correlation and diffusion process in such systems.

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