

Evolution of monolayer active Brownian system suspended in radio-frequency discharge

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Systems of active Brownian particles are of basic interest due to their ability to self-organize and evolve when the entropy flow changes [1]. In this work, we present experimental study of the evolution of a monolayer system of active Brownian particles suspended in a radio-frequency discharge. The polymer particles with heterogeneous metal coating we used can convert energy of laser radiation into their own propulsion motion caused by photophoretic force. In the present experiment, which lasted for two hours, the particles continuously lost their active properties due to surface modification. The evolution of the dynamic and structural properties of the system was studied by analyzing the radial distribution functions, mean square displacement of the particles and van Hove functions. The work was supported by the Russian Science Foundation (project No. 20-12-00372).

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