

Active Brownian motion of microparticles in a DC glow discharge during by laser radiation

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The active Brownian motion of single dust particles in a three-dimensional electrostatic DC discharge trap under the action of laser radiation was experimentally studied. The experiment used spherical particles of melamine formaldehyde (MF), part of the surface of which had a copper coating (Janus particle). A comparison of two-dimensional and three-dimensional analysis methods for root-mean-square displacements was carried out. The average kinetic energy of motion of dust particles at different laser irradiation intensities was determined.

Keywords: dusty plasma, gas discharge, stratum, active particle, laser radiation, thermophoresis, energy balance, forward motion, rotation.

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