



MRSEC researchers have used geometric boundaries to steer self-propelled Janus micromotors. The rotational diffusion of Janus micromotors around an axis perpendicular to the boundary is quenched by hydrodynamic interactions, which constrain a particle to move long distances along the boundary. The team has also for the first time measured the surface charge on these motors and quantified the electrostatic effects that govern their motion. Autonomous directed propulsion in the face of Brownian randomization makes possible applications of autonomous motors for cargo transport, drug delivery, sensing, environmental remediation, and micro-surgery that targets individual cells.

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