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**Lattice-Boltzmann-based simulations of diffusiophoresis of colloids and cells** JOSHUA CASTIGLIEGO, JENNIFER KREFT PEARCE, Department of Physics, Roger Williams University — Increasing environmental degradation due to plastic pollutants requires innovative solutions that facilitate the extraction of pollutants without harming local biota. We present results from a lattice-Boltzmann-base Brownian Dynamics simulation on diffusiophoresis and the separation of particles within the system. A gradient in viscosity that simulates a concentration gradient in a dissolved polymer allows us to separate various types of particles based on their deformability. As seen in previous experiments, simulated particles that have a higher deformability react differently to the polymer matrix than those with a lower deformability. Therefore, the particles can be separated from each other. The system described above was simulated with various concentration gradients as well as various Soret coefficients in order to optimize the separation of the particles. This simulation, in particular, was intended to model an oceanic system where the particles of interest were motile and nonmotile plankton and microplastics. The separation of plankton from the microplastics was achieved.

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