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Osmotic motor under fixed flux conditions UBALDO CORDOVA-FIGUEROA, University of Puerto Rico, JOHN BRADY, California Institute of Technology, SERGEY SHKLYAEV, University of Puerto Rico — We consider an osmotic motor that emits product particles from half of its surface. This asymmetry produces a difference of the product concentration, and hence of the osmotic pressure, between the active and passive surfaces, resulting in motion of the motor. Hydrodynamic interactions between the motor and the small product particles are included in the analysis following the theory developed by Brady (JFM, 2011). Limiting cases of slow and fast motion of the motor are considered analytically; otherwise the velocity of self-propulsion is determined numerically. Brownian Dynamic simulations are in a good agreement with the theoretical predictions. The analysis is also generalized to a reactive patch, which is smaller or larger than a hemisphere; in either case this diminishes the motor velocity.

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