Abstract

In most experimental studies, active drops propel in a liquid bulk due to self-generated interfacial stresses of solutal origin. Here, we demonstrate the self-propulsion of a volatile drop on the surface of a liquid bath due to stresses of thermal origin. Evaporative heat pumping is converted into directed motion through thermocapillary stresses, which emerge on the drop surface as a result of a symmetry breaking of the drop temperature field. The dependence of the drop speed on the activity source, i.e. the evaporation flux, is derived with scaling arguments and captures the experimental data.