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Movement of liquid droplets containing polymers on substrate GUOHUI HU, HENG WANG, Shanghai Institute of Applied Mathematics and Mechanics, Shanghai University — It is of both fundamental and practical interests to study the flow physics in the manipulation of droplets. As a microreactor, the macromolecules or particles inside the droplets might have significant influences on their movement. In the present study, the many-body dissipative particle dynamics (MDPD) is utilized to investigate the translocation of droplets containing polymer on a substrate driven by the wettability gradient, where the polymer is modelled as worm-like chain (WLC). The internal flows of the droplets are analyzed, as well as the comparison to the polymer-free moving droplets. The effects of physical parameters, such as the interaction potential between liquid particle and polymer beads, the mass of the beads, on the translocation speed are also addressed in the present study. These results might be helpful to the optimization in design of the microfluidic systems.

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