

Abstract Submitted
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Designing patterned microchannels to separate colloid-polymer suspensions¹ HASSAN MASOUD, ALEXANDER ALEXEEV, Georgia Institute of Technology — Using dissipative particle dynamics, we examine the flow of colloidal suspensions in microfluidic channels with patterned walls. The distribution of colloids in a channel is set by the competition between diffusion and hydrodynamic effects. We show that the distribution can be altered by introducing tilted nanoscopic posts protruding from internal walls of a microchannel. Specifically, we demonstrate that depending on the post orientation, the patterned walls can either hydrodynamically attract nanoscale objects suspended in the flowing fluid or prevent their depositions by repelling them away from solid walls. Furthermore, surfaces decorated with tilted posts can discriminate nanoscopic entities with regard to their shape and, thus, can be utilized for separating colloid-polymer mixtures.

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