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Control of local wetting by microscopic particles

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Graphical abstract

The interaction of liquid with an array of objects produces successive accelerations of the MCL. The velocity gains V_{max}/V_0 produced by the second and third particles are significantly larger than that produced by the first particle. The velocity of the MCL decreases quickly after reaching the maximum velocity. If the inter-particle distance is small, the MCL accelerated by a particle would reach the next particle at a large speed and the MCL could be accelerated to a large velocity. Besides the successive accelerations, an array of micro-objects can be used for guiding liquid along the array. This may be used to realize a directional liquid transport.

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