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# All-graphene-based open fluidics for pumpless, small-scale fluid transport via laser-controlled wettability patterning

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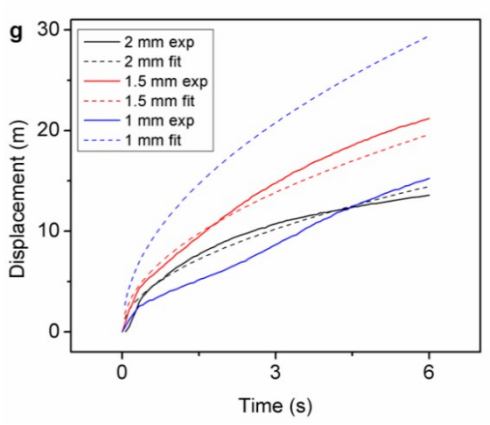


**Figure S1.** The displacement and fitting of water transport in flat surface with channel size ranging from 1 mm to 2 mm.

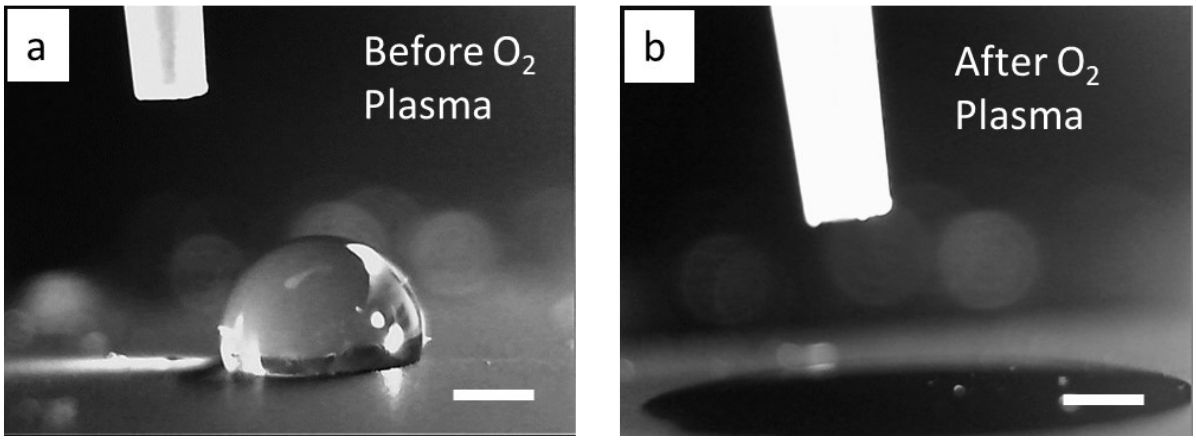


**Figure S2.** Optical images illustrating the wettability properties of spin coated graphene surface. A water droplet resting on top of the graphene surface before (a) oxygen plasma treatment and then instantly spreading on the surface after (b) oxygen plasma treatment. This demonstrates that the surface wettability of the graphene film changes from hydrophobic (a) to superhydrophilic (b). Scale bar is 1 mm and the drop volume is 3 µL.

**Supporting Videos**

Video S1: Pumpless fluid movement (red colored water) uphill over a 7º incline with the all-graphene open microfluidics. The fluid flow rate from the syringe pump was set to 0.25 mL/min.

Video S2: Progression of fluid flow (red colored water) on a tree pattern created with the all-graphene open microfluidics. The fluid flow rate from the syringe pump was set to 0.25 mL/min.

Video S3: Progression of fluid flow (red colored water) on a cross pattern with the all-graphene open microfluidics. The fluid flow rate from the syringe pump was set to 0.25 mL/min.

Video S4: Progression of a single droplet of fluid (red colored water) on an all-graphene open microfluidic wedge-shaped channel. The drop volume is 3 µL.