Electronic Supplementary Material (ESI) for RSC Advances.

Capillary Flow Control in Nanochannel via Hybrid Surface

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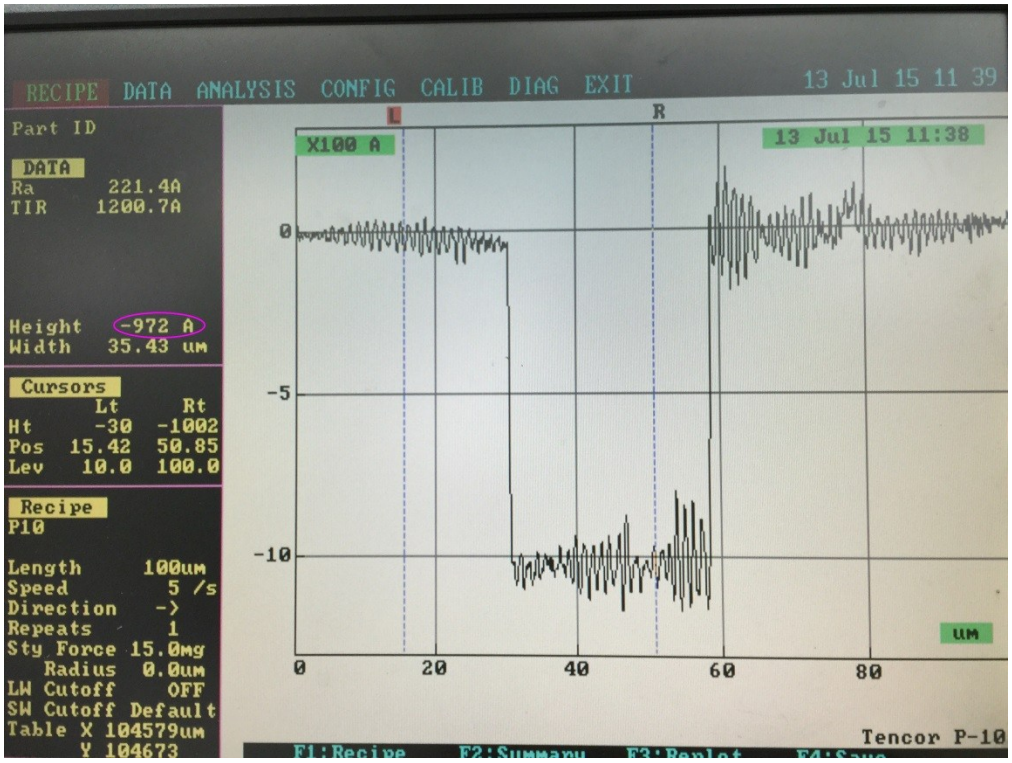

Figure S1: Depth profile of nanochannel measured by profilometer (depth was marked by red circle), dry-etched by DRIE machine (Surface Technology systems, Newport, United Kingdom)

The characterization of the hydrophobic/hydrophilic patterned surface:

A patterned silicon wafer was placed on a temperature-controlled stage and monitored by a microscope. Vapor condensation was conducted by decreasing the temperature to 13°C compared to 20°C environmental temperature, followed by observation of evaporation process at this fixed temperature. As the water on the wafer evaporated, the contact line of the water receded to the pattern boundaries, spontaneous dewetting of the hydrophobic domains and flow into the hydrophilic domains formed in geometries dictated by the underlying surface topography, as shown in Fig. S2, which clearly verified the hydrophobic and hydrophilic characteristics on the patterned silicon wafer.

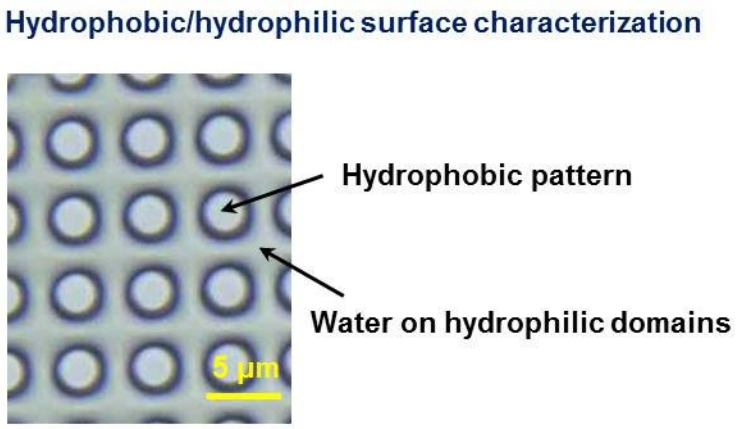

Figure S2: Hydrophobic/hydrophilic patterned surface characterization by vapor condensation and evaporation processes at 13°C