

Multiple actuation microvalves in wax microfluidics

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Electronic Supporting Information (ESI)

Supplementary Materials Contents:

Figure S1. Wax valve structures.

Table S1. Heater designs for valve actuation.

Table S2. Optimized valve actuator parameters.

Additional Supplementary Material:

Movie S1. Reversible actuation of the wax valve in air.

Movie S2. Reversible actuation of the wax valve in water.

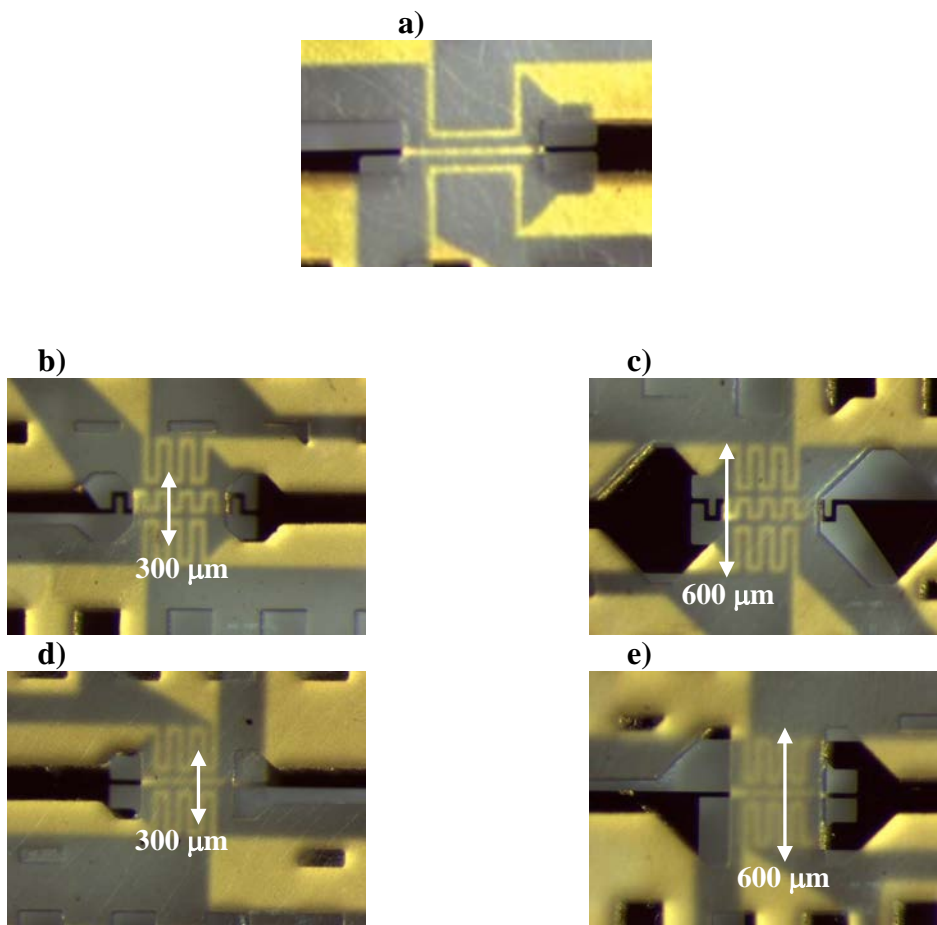
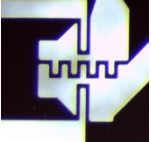
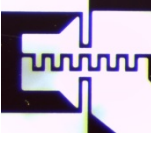


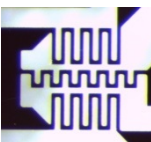






Figure S1. Wax valve structures. Wax barrier length is 400 μm and channel width 150 μm in all designs. a) Without chambers, b) small octagonal chambers, c) large octagonal chambers, d) small trapezoid chambers, e) large trapezoid chambers.

Table S1. Heater designs for valve actuation.

Heater Design ^{1,2}	Opening heater			Closing heater		
	Length (μm)	Width (μm)	Resistance ³ (Ω)	Length (μm)	Width(μm)	Resistance ⁴ (Ω)
V1 	475	100	120±5	75	200	67±8
V2 	675	100	132±9	75	200	
V3 	675	100		175	200	75±5
V4 	675	100		275	200	82±8
V5 	675	100		375	200	105±4
V6 	875	100	154±15	375	200	
V7 	675	100	132±9	175	100	60±5
V8 	675	25	114±7	275	200	76±9
V9 	675	25				127±9

¹Heater tracks are 25 μm wide; ²Tracks in the serpentine heaters are separated 25 μm; ³Heater electrical resistance is given as average ± SD (n=10), and includes the resistance of the connection tracks. ⁴Electrical resistance of both heaters in parallel.

