

Integrated microfluidic platform for instantaneous flow and temperature control

C. Fang, D. Lee, B. Stober, G.G. Fuller, A.Q. Shen, (2015) *RSC Advances*, **5**, 85620-85629.

We developed an integrated microfluidic platform for instantaneous flow and localized temperature control. An active feedback controller of pressure and temperature was used to trap the droplet and to manipulate the temperature at the cross-junction. Our integrated platform offers the capability of manipulating non-contact, instantaneous flow with localized temperature control, which provides valuable tools for studying transient interfacial dynamics and various biological and industrial processes.

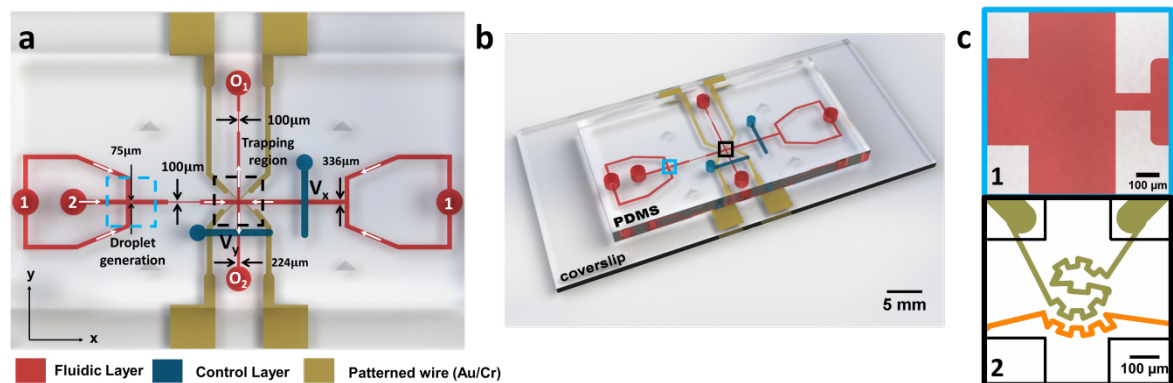


Figure 1: Integrated microfluidic platform: (a) plane view of the microfluidic device, (b) 3D rendering illustration of the microfluidic device, showing the glass slide etched with gold wires, double-layered PDMS with microchannels in a fluidic layer, and the control layer for pressure manipulation, (c-1) flow-focusing region, and (c-2) microheater and temperature sensor at the cross-slot junction.