



Supplementary Figure 1. Fabrication process of the microchannel device by using the top-down approach. (a) Shipley 1805 was coated on a glass wafer. (b) Microchannels were patterned using photolithography. (c) Using the resist as an etching mask, a resist pattern was transferred to a glass substrate using CF_4 plasma etching at a depth of 500 nm. (d) The resist layer was removed. (e) A cover glass with reservoir holes created using a sand blaster was prepared. (f) A cover glass was thermally bonded to the patterned wafer to seal the entire microchannel. The plastic reservoirs were glued to the hole as reservoirs. (g) Schematic diagram of the top view of the microchannel device. The width of the microchannel at the detection spot, where the channel is tapered from the larger microchannel connected to the reservoirs, is $2\ \mu\text{m}$. The length of this tapered region is 50-500 μm . (h) A photograph image of a wafer with 20 microchannels and 40 plastic reservoirs. (i) Scanning electron microscope (SEM) image of a microchannel at the detection spot.