Supporting Information

Flow control in a laminate capillary-driven microfluidic device

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SI 1. Device geometry



Figure S1. Geometries of each layer for (a) y-shape device and (b) valve device. All layers are shown from left to right in laminating order, and the white area indicates the area cut by the laser cutting.

SI 2. Color analysis

To measure the concentration field in the main channel, we analyzed the hue values of the solution. Since the hue value is not changed linearly with respect to the mixing ratio of blue and yellow dyes, we determined the calibration curve between hue and blue volume fraction. Figure S2 shows the result of the hue variation experiment. We injected five different concentrations of mixing solutions into the laminate capillary-driven channel that has the same height as the main channel in the y-shape device. The hue values were measured by averaging the rectangle area in the middle of the channel. The case of 0 and 1 blue volume fraction indicated the hue value of 0.1566 and 0.5693, respectively. Measured hue values were normalized based on the hue value of 0 and 1 blue volume fraction and plotted as shown in Figure S2. As a result, the blue volume fraction can be calculated using hue values with the calibration equation indicated in the plot.



Figure S2. (a) Straight channel device and enlarged images of the channel area, that contains five different concentrations of mixing solutions. (b) Calibration curve of the normalized hue with respect to the blue volume fraction.