Electronic Supplementary Material (ESI) for Lab on a Chip

Title: A novel microfluidic co-culture system for investigation of bacterial cancer targeting

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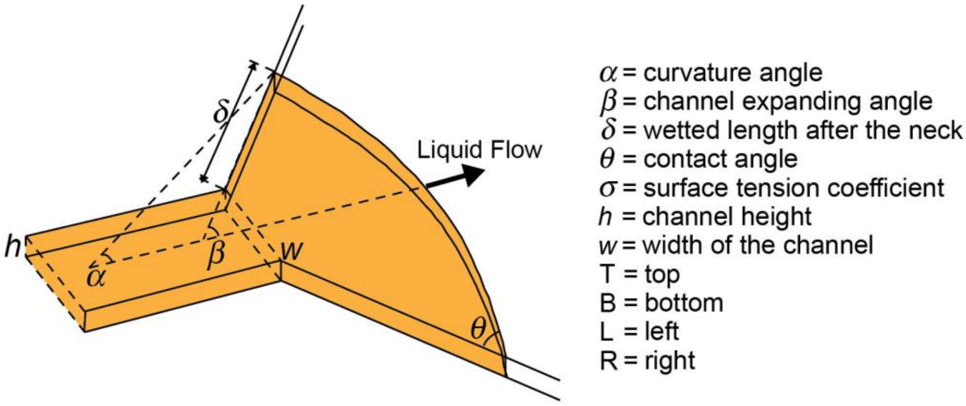
[Supplementary Fig. S-1]



Capillary pressure at δ

$$P(\delta) = \sigma\left(\frac{\sin\alpha}{\alpha}\right)\left(\frac{\cos\theta_T + \cos\theta_B}{h} + \frac{\cos(\theta_L+\beta)+\cos(\theta_R+\beta)}{w+2\sin\beta\delta}\right)$$

Curvature angle

$$\alpha = \theta + \beta - \frac{\pi}{2}$$

At channel neck (δ=0)

$$P_n = \lim_{\delta\to 0} P(\delta) = \sigma\left(\frac{\sin\alpha}{\alpha}\right)\left(\frac{\cos\theta_T + \cos\theta_B}{h} + \frac{\cos(\theta_L+\beta)+\cos(\theta_R+\beta)}{w}\right)$$

Capillary pressure at δ

$$P_n = \lim_{\delta\to 0} P(\delta) = \sigma\left(\frac{\sin\alpha}{\alpha}\right)\left(\frac{\cos\theta + \cos\theta_B}{h} + \frac{2\cos(\theta+\beta)}{w}\right)$$

Supplementary Fig. S-1 A schematic illustration of flow at an expending channel. Passive stop valve was designed by theoretical equation (Chung et al. Analyst, 2007) for capillary pressure at an expanding channel. As shown above, the capillary pressure P_n is highly dependent on the expanding angle β. When P_n is negative flow stops and flow continues when P_n is positive. The expanding angle of the stop valve was designed to be 110° with the channel height of 100 m to achieve negative P_n.