

Technological parameters used for anisotropic Si etch and non-conformal deposition of PECVD SiO₂ layers

Table S1. Bosch etch parameters optimized for etching of high aspect ratio pillars with diameters in the range of 0.7 to 1.6 μm and diameter-to-height ratios of up to 1:25

	T	Time	Pressure	RF power	ICP Power	C₄F₈ flow rate	SF₆ flow rate
	° C	s	mTorr	W	W	sccm	sccm
Deposition cycle	15	4	20	10	1750	140	1
Etch cycle	15	5	20	30	1750	1	120

Table S2. PECVD parameters optimized for highly non-conformal deposition of SiO₂ on high aspect ratio pillars

Temperature	Pressure	High frequency RF power	SiH₄ (5%) / Ar flow rate	N₂O flow rate	Deposition rate
° C	mTorr	W	sccm	sccm	nm/min
250-350	1600-1800	50	170	710	100

Effect of camera exposure time on apparent broadening of sample plugs moving in a microfluidic channel

Figure S1 shows a series of seven Gaussian profiles with $\sigma = 200 \mu\text{m}$ (dashed lines) and maximum shift along x axis by $\Delta x = 150 \mu\text{m}$, *i.e.* the distance traveled by a sample plug in 90 ms at a linear velocity of approximately 1.7 mm s^{-1} . Analysis of the normalized superposition (solid blue line) of this series of curves yields $\sigma' = 206 \mu\text{m}$. Figure S2 shows the same shift of a series of Gaussian profiles with $\sigma = 50 \mu\text{m}$ (dashed lines) and their normalized superposition characterized by $\sigma' = 74 \mu\text{m}$ (solid green line). Figure S3 summarizes this dependency of apparent band broadening on the actual band dispersion, σ .

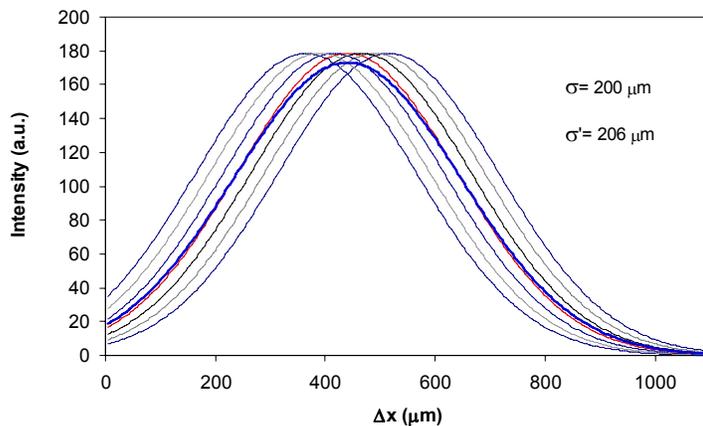


Figure S1. A series of Gaussian profiles with $\sigma = 200 \mu\text{m}$ (gray and red lines) and maximum shift along x axis by $\Delta x = 150 \mu\text{m}$. Analysis of their normalized superposition (blue line) yields $\sigma' = 206 \mu\text{m}$.

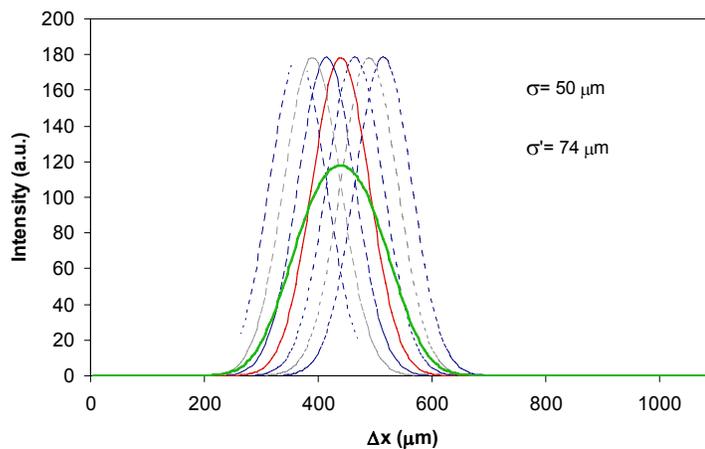


Figure S2. The same shift of a series of Gaussian profiles with $\sigma = 50 \mu\text{m}$ (dashed lines) yields a normalized superposition characterized by $\sigma' = 74 \mu\text{m}$ (solid green line).

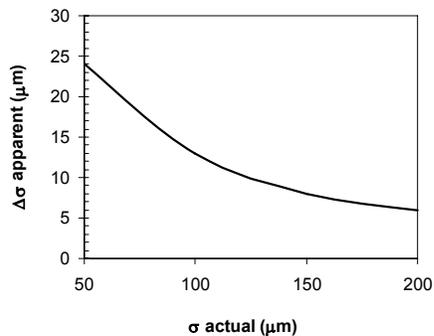


Figure S3. Dependency of apparent band broadening on the actual band dispersion, σ . The sample plug travel distance during the camera exposure time, $\Delta x = 150 \mu\text{m}$.