Supplementary Information

Asymmetric Traps Array for Particle Transport

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S1. The shift of line of capturing

The size of the trapping gap between the trapping block and the barrier is greater than s when horizontal center of the trapping block locates outside of barrier region (Fig. S1).
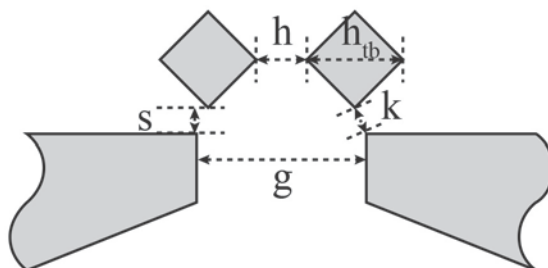

Fig S1. The increase of the size of the trapping gap

By Pythagorean theorem, k is given as below.

$$k = \left\{ s^2 + \left(\frac{g - h - h_{tb}}{2} \right)^2 \right\}^{1/2}$$

(S1)

The normalized trapping gap size (k/h) is given as below.

$$\frac{d}{h} = \frac{k}{h} = \left\{ \left(\frac{s}{h} \right)^2 + \frac{1}{4} \left(\frac{g}{h} - 1 - \frac{h_{tb}}{h} \right)^2 \right\}^{1/2}$$

(S2)

Here, based on the equation S2, we can find physical condition causing increased trapping gap size.

$$\frac{g}{h} - 1 - \frac{h_{tb}}{h} > 0$$

(S3)

The increased size of the trapping gap can be expressed in the graph of normalized parameters as the shift of the line of capturing (Fig. S2).

$$\frac{d}{h} = \left\{ \left(\frac{s}{h}\right)^2 + \frac{1}{4} \left(\frac{g}{h} - 1 - \frac{h_{tb}}{h}\right)^2 \right\}^{1/2}$$
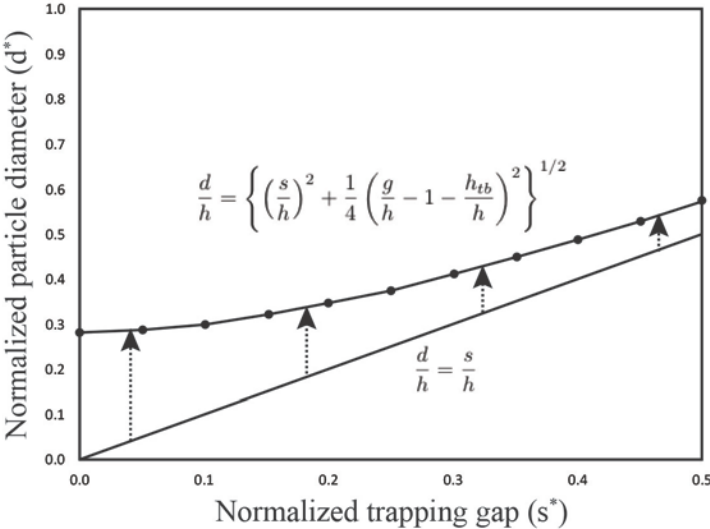
$$\frac{d}{h} = \frac{s}{h}$$

Fig S2. The shift of line of capturing in the graph of normalized parameters. The line of capturing drawn here was obtained at fixed h of 200 μm and normalized inter-barriers gap (g*) of 1.67.