

Supporting Information for Lab on a Chip

Double nanohole optical trapping: Dynamics and protein-antibody co-trapping

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The co-trapping event was achieved reliably when we delivered the second particle to the vicinity of the double nanohole, which had the first particle already trapped. Challenges of this experiment included bubbles produced at the T-connection, and the premature release of the first trapped particle before the second particle arrived.

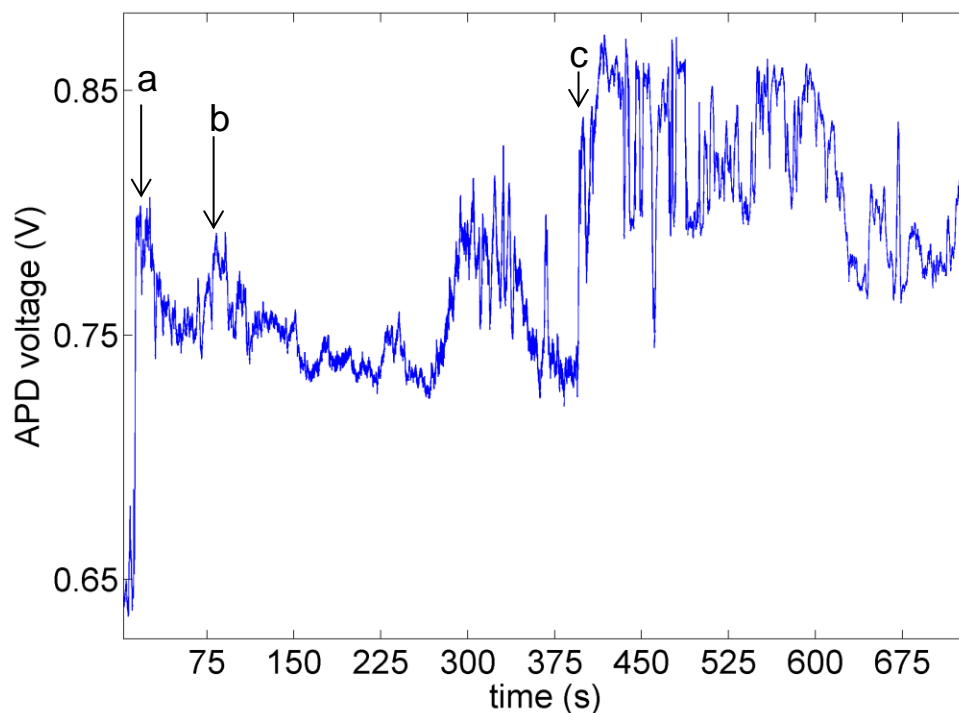


Figure S1. Co-trapping of BSA with anti-BSA. BSA trapping occurs first (a), followed by flowing in anti-BSA (b), and anti-BSA co-trapping (c).

Figure S1 shows an additional co-trapping event in which we first trapped the BSA particle and then flowed the anti-BSA solution to the DNH region. The first jump represents the trapping of BSA, which was followed by flowing the anti-BSA solution. The second jump shows the co-trapping event when the anti-BSA reached the trapping region. We have used a flow rate of $5\mu\text{L}/\text{min}$, which can deliver the second particle in a reasonable time, while not being large enough to release the first trapped particle in most cases.

BSA is smaller than anti-BSA and we found (see Fig. 4 of the manuscript) that the trapping of anti-BSA is easier as compared to trapping of BSA. Therefore, we repeated the experiment reversing the order of trapping to see if the same co-trapping could be achieved. Figure S2 shows the trapping of anti-BSA and subsequent co-trapping of BSA. The first jump is when we trapped anti-BSA and after 10 seconds BSA is flowed into the channel. The second jump is when BSA is co-trapped with the anti-BSA.

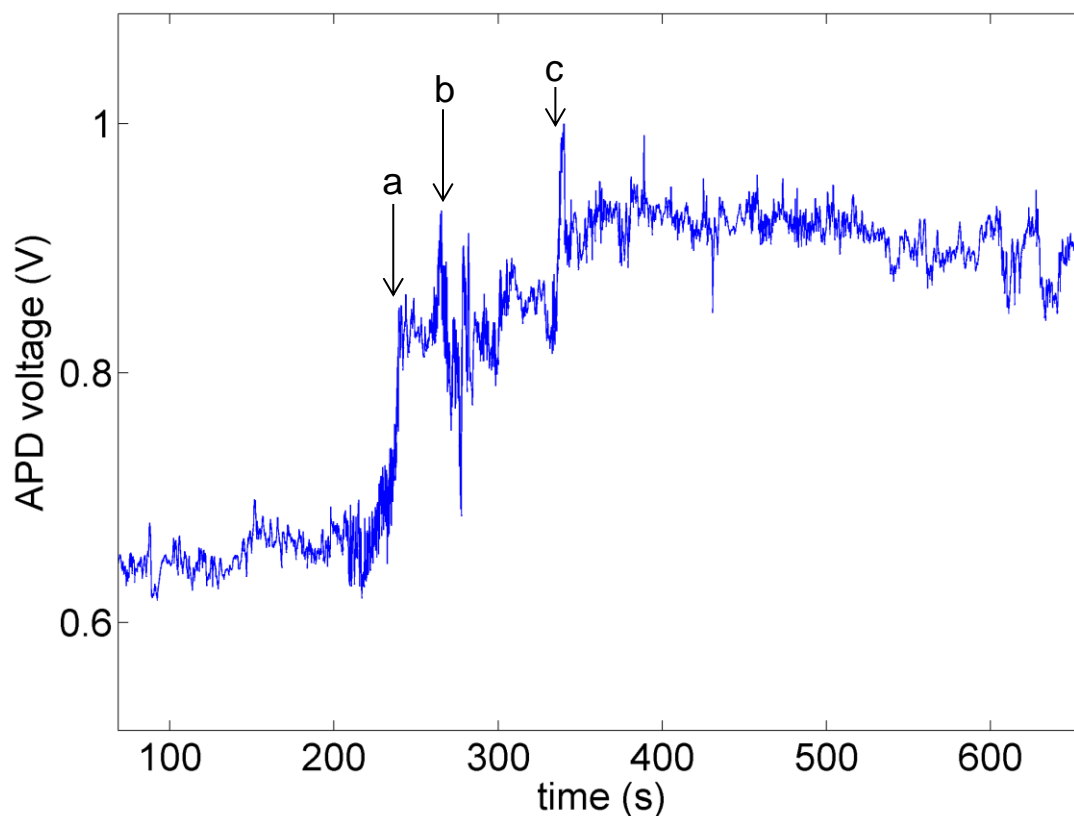


Figure S2. Co-trapping of BSA with anti-BSA. Anti-BSA trapping occurs (a), followed by flowing in BSA (b), and BSA co-trapping (c).