Supplemental Material

"A Multiplexed Optofluidic Biomolecular Sensor for Low Mass Detection"

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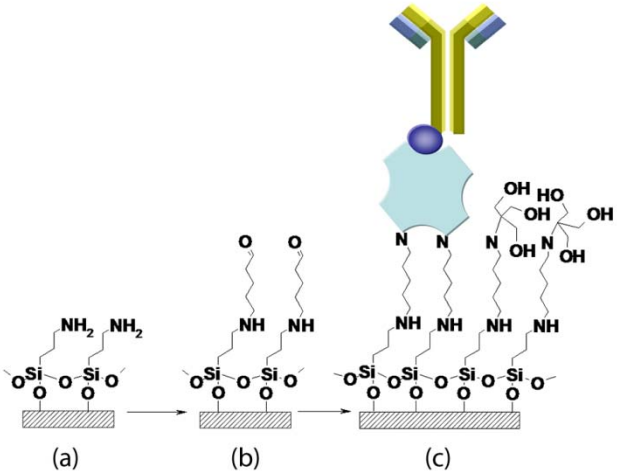

Figure S1. Schematic of surface functionalization chemistry. (a) After APTMS treatment, (b) after immobilization of glutaraldehyde, (c) after conjugation of streptavidin hydrazide, blocking of remaining aldehyde groups by Tris, and finally association of biotinylated capture antibodies.

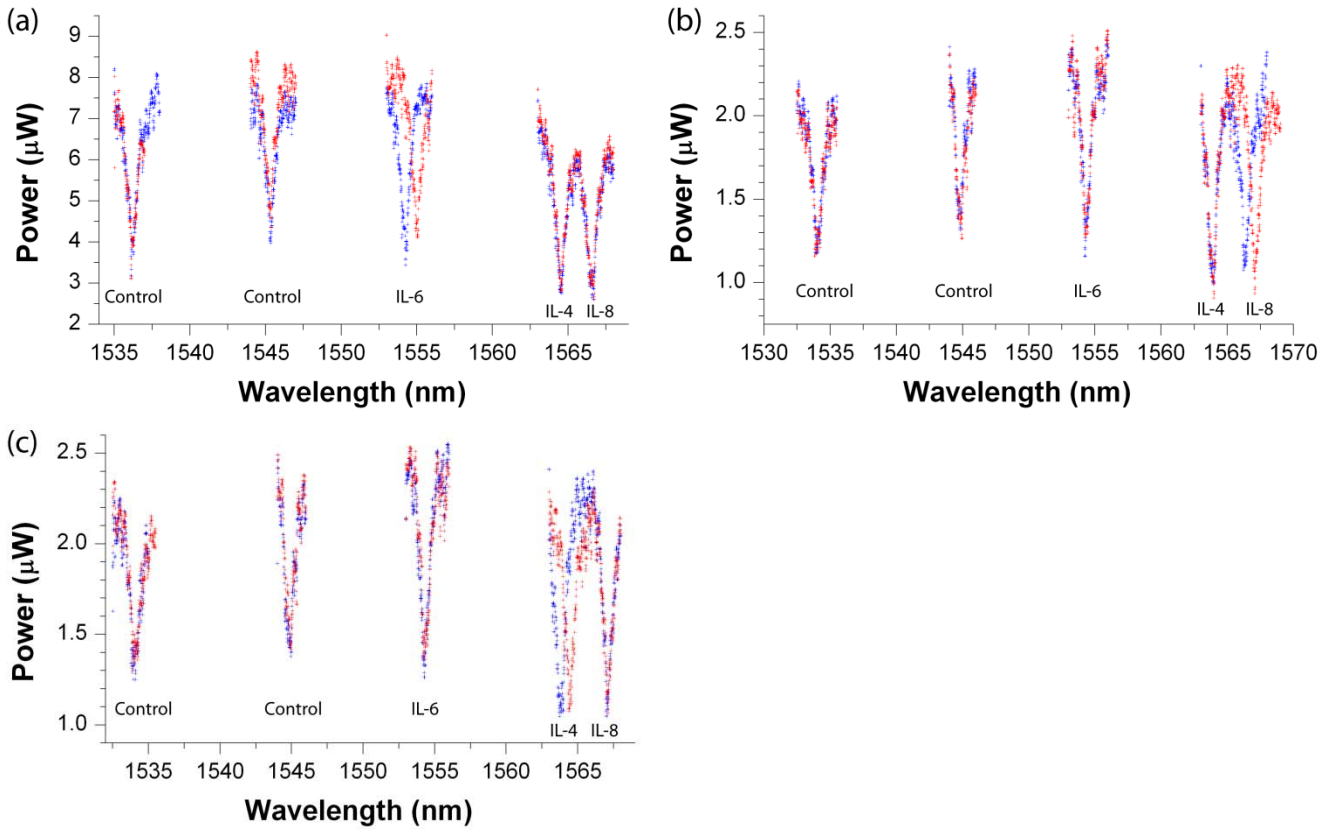

Figure S2. Plot showing the resulting spectra from multiplexed assays after introduction of 10 μg/ml of (a) interleukin 6, (b) interleukin 8, and (c) interleukin 4, followed by association with secondary antibody. Blue data points indicate the baseline spectrum taken before introducing the interleukins in the microfluidic channel. The red data points indicate the final test spectra after association with secondary antibodies. In each case we observe a shift of approximately 0.72 nm with negligible cross-reactivity.

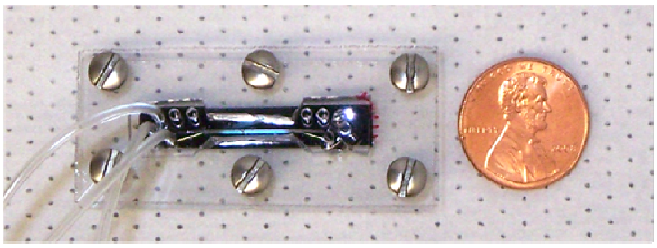

Figure S3. NOSA chip integrated with PDMS microfluidics and secured in a plexiglass housing.

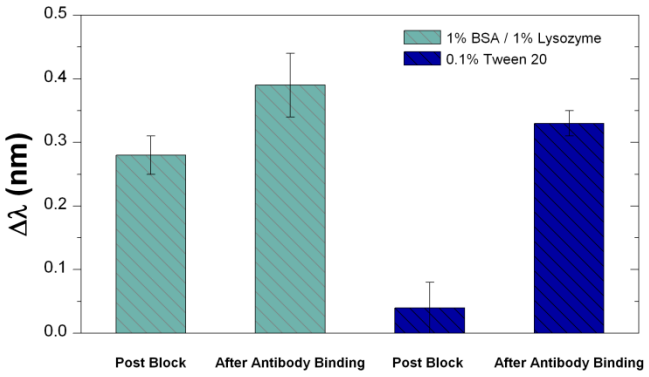

Figure S4. Effect of blocking buffer on device performance. Data represent mean of at least six repetitions; error bars represent standard deviation. In each experiment, the device is blocked for 15 minutes in blocking buffer, followed by association of 10 mg/ml anti-streptavidin antibody and recording of the resulting output spectra. Although the resonance shifts after association with antibody were similar, the resonance shift attributed to adsorbed blocking buffer alone was considerably higher with 1% BSA / 1% Lysozyme blocking buffer than with 0.1% Tween 20 blocking buffer (0.28 nm and 0.04 nm respectively). From this it was determined that 0.2 mg/ml BSA and 0.1% Tween 20 in PBS served as an appropriate blocking buffer.