Supplementary information: Binding Assay for Low Molecular Weight Analytes Based on Reflectometry of Absorbing Molecules in Porous Substrates

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1 Adsorption Isotherm

Figure 1 (black dots) shows typical the adsorption kinetics monitored after administration of Atto488-Biotin at rising concentrations (the arrows indicate the addition of biotin as well as the concentration) recognized by surface-bound avidin in an AAO matrix. The red lines are monoexponential fits ($f(t) = A_0 e^{-\frac{t}{\tau}}$) illustrating that the Langmuir description captures the data well. Addition of non-labelled biotin (blue curve)

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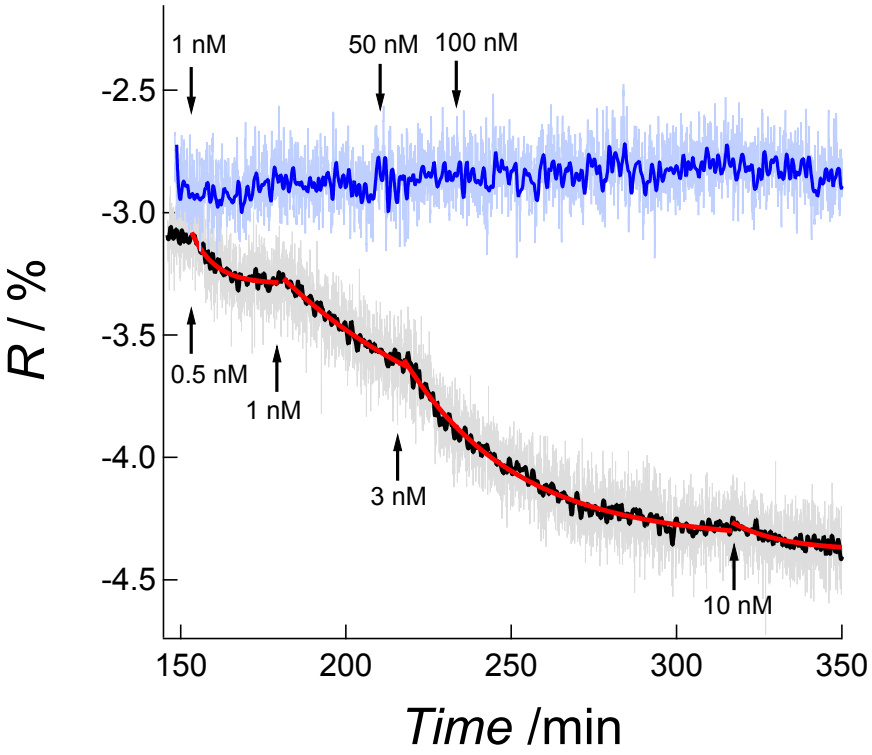

Figure 1: Change in reflectivity after addition of Atto488-Biotin to an avidin coated AAO membrane (grey) in rising overall concentration and a addition of non-labelled biotin to an avidin coated AAO film (blue). The black dots are a smoothed data representation of the grey curve, while the dark blue curve is smoothed data of the light blue representation. The red continuous lines denote monoexponential fits supporting the validity of the Langmuir description of adsorption.

2 Control Experiment

The next experiment (figure 2) demonstrates that the optical thickness does change only negligible after administration of Atto-labelled biotin in contrast to the reflectivity change monitored at 501 nm.

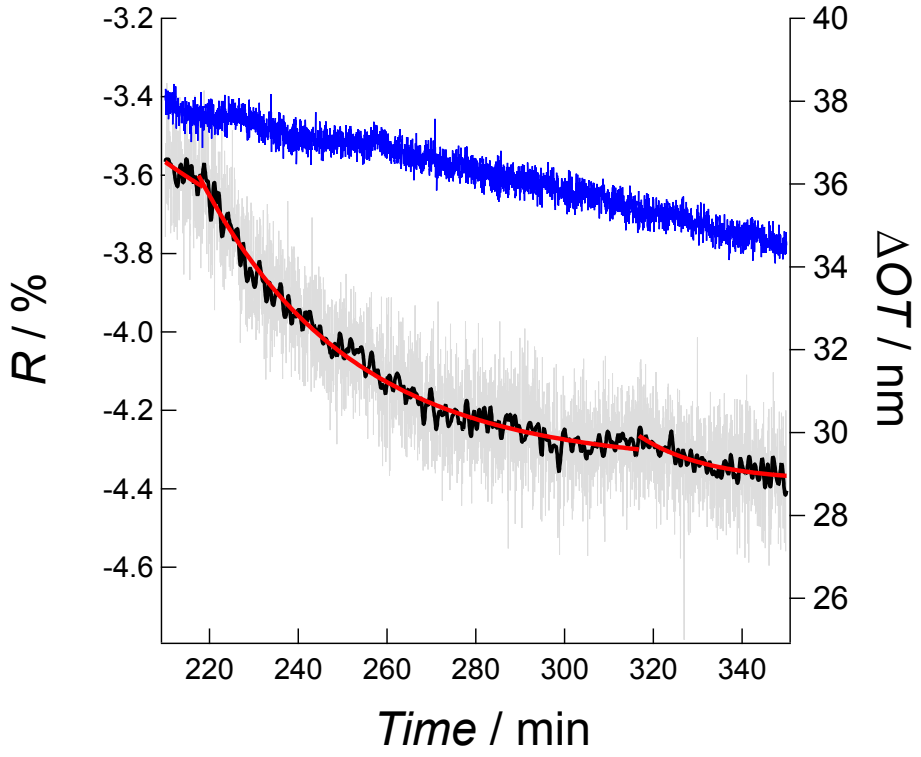

Figure 2: Change in reflectivity (black) and optical thickness OT (blue) after addition of Atto488-Biotin to an avidin-functionalised AAO membrane. The red lines are monoexponential fits to illustrate the applicability of the Langmuir description of the adsorption process.