Refractive Index Increment Determination

All refractive index values for the nucleotides studied were measured with a Leica AR600 Automatic Refractometer at 589 nm. We expect the refractive index increments obtained for the nucleotides at this wavelength to be the same (within our reported error) to those at 632.8 nm, our experimental SPR wavelength. This assumption is supported by previous RII determinations for dinucleotides in a similar wavelength range1.

Sample stock solutions were prepared by weighing each nucleotide on an analytical balance and dissolving in distilled water. Mild heating was required to dissolve the dA nucleotide completely. Because of concerns over evaporation and nucleotide water absorption, the exact concentration of each stock solution was determined via UV-vis spectroscopy at 260 nm. Nucleotide molar extinction coefficients were obtained from the literature2. Stock solutions were then diluted in series to obtain eight different concentrations of nucleotide ranging from 0 to 15 mg/ml in water and five different concentrations of nucleotide ranging from 0 to 4 mg/ml in 1 M KH2PO4.

Prior to use, the instrument was calibrated with distilled water and refractive index liquids from Cargille Labs, Inc. Two sets of data (two trials per set) were collected for each nucleotide at room temperature. These refractive index values were adjusted to 20°C with the known temperature coefficient of water and the measured coefficient of 1 M KH2PO4 (this is a reasonable approximation at these concentrations), averaged and fit to a weighted line.

![Figure S1](image.png)

**Figure S1.** Refractive index data for individual nucleotides dT (black square), dA (open square), and dC (gray square) in water. Two sets of data are represented for each nucleotide. The error bars were calculated for the average of two trials within each data
set. Lines shown are a weighted fit to the points. The RII values obtained from these fits for dA, dT, and dC in water are $0.217 \pm 0.001$, $0.174 \pm 0.001$, and $0.225 \pm 0.002$ respectively.

**Figure S2.** Refractive index data for individual nucleotides dT (black square), dA (open square), and dC (gray square) in 1 M KH$_2$PO$_4$. Two sets of data are represented for each nucleotide. The error bars were calculated for the average of two trials within each data set. Lines shown are a weighted fit to the points. The RII values obtained from these fits for dA, dT, and dC in 1 M KH$_2$PO$_4$ are $0.206 \pm 0.001$, $0.151 \pm 0.001$, and $0.218 \pm 0.004$ respectively.
Comparison of ssDNA-thiol/ssDNA Kinetic Profiles

Figure S3. Film formation kinetics for thiolated and non-thiolated sequences during the first hour of immobilization. (Top) Poly(dT)-thiol (black circles) and poly(dT) (open circles) immobilization. (Middle) Poly(dC)-thiol (black squares) and poly(dC) (open squares) immobilization. (Bottom) Poly(dA)-thiol (black diamonds) and poly(dA) (open
diamonds) immobilization. Comparison of the data in this form demonstrates the opposite behaviors of A- and T-sequences. Amongst the thiolated sequences, poly(dT)-thiol adsorbs to the surface fastest and poly(dA)-thiol slowest. Amongst the non-thiolated sequences, poly(dT) adsorbs to the surface slowest and poly(dA) fastest. The behaviors of the C-sequences are intermediate. For clarity, only every 2nd point is shown on the graphs; lines are a guide to the eye.

References
