

## Supplementary Information

### **Rapid discrimination of DNA strands using an opto-calorimetric microcantilever sensor**

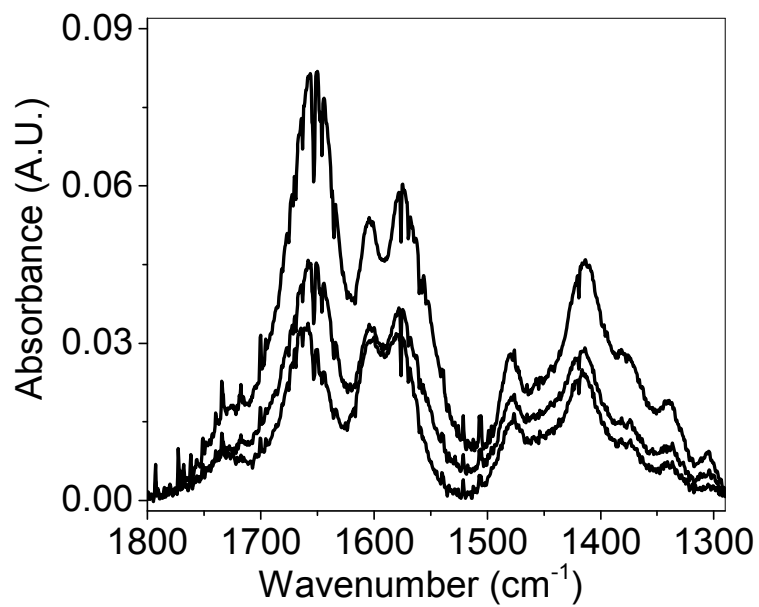
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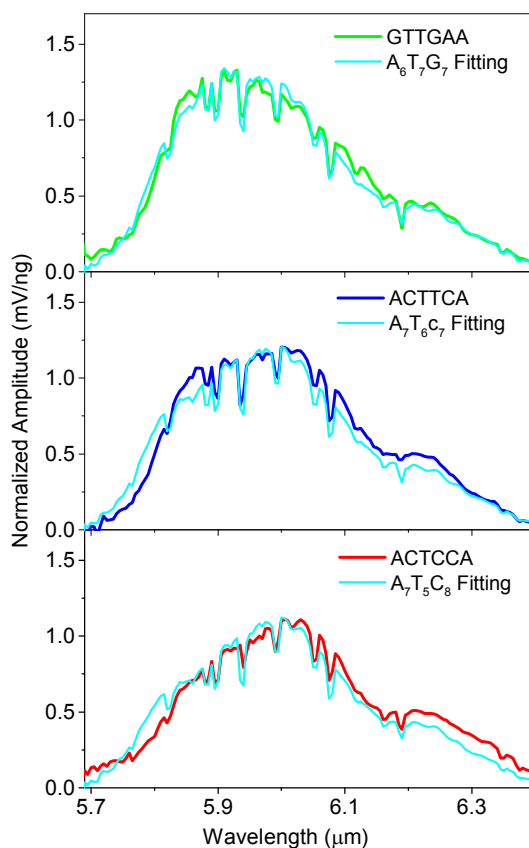
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Fig. S1. The conventional FTIR spectra of A<sub>20</sub> on different locations of a substrate



The different amplitudes of FTIR absorption spectra were shown even with the same nucleotide due to the variation in the surface density of the molecules.

Fig. S2. The normalized microcalorimetric IR spectra of GTTGAA (green), ACTTCA (blue), and ACTCCA (red) were well fitted by the weighted linear superposition (light blue) with certain ratio in the normalized IR spectra of individual nucleotides ( $A_{20}$ ,  $T_{20}$ ,  $G_{20}$ , and  $C_{20}$ ).



GTTGAA is composed of  $A_6T_7G_7$ , whereas ACTTCA is composed of  $A_7T_6C_7$ , and ACTCCA is composed of  $A_7T_5C_8$ . The relative component ratio (A:T:G:C) of GTTGAA is 6:7:7:0, and the relative component ratio (A:T:G:C) of ACTTCA is 7:6:0:7, and the relative component ratio (A:T:G:C) of ACTCCA is 7:5:0:8, which acts as a ternary mixture. The calorimetric IR spectrum of each DNA strand was fitted by the average spectra of individual nucleotides with the relative component ratio. The each IR spectrum shows excellent agreement with the mathematical fitting with the normalized IR spectra of individual nucleotides since the IR spectrum of mixture is a linear superposition of individual spectra. Some mismatches of the spectra may be induced by some errors of adsorbed mass determination.