

### Supplementary information on polarization modulation infrared reflection absorption spectroscopy (PM-IRRAS) of tDNA and uDNA

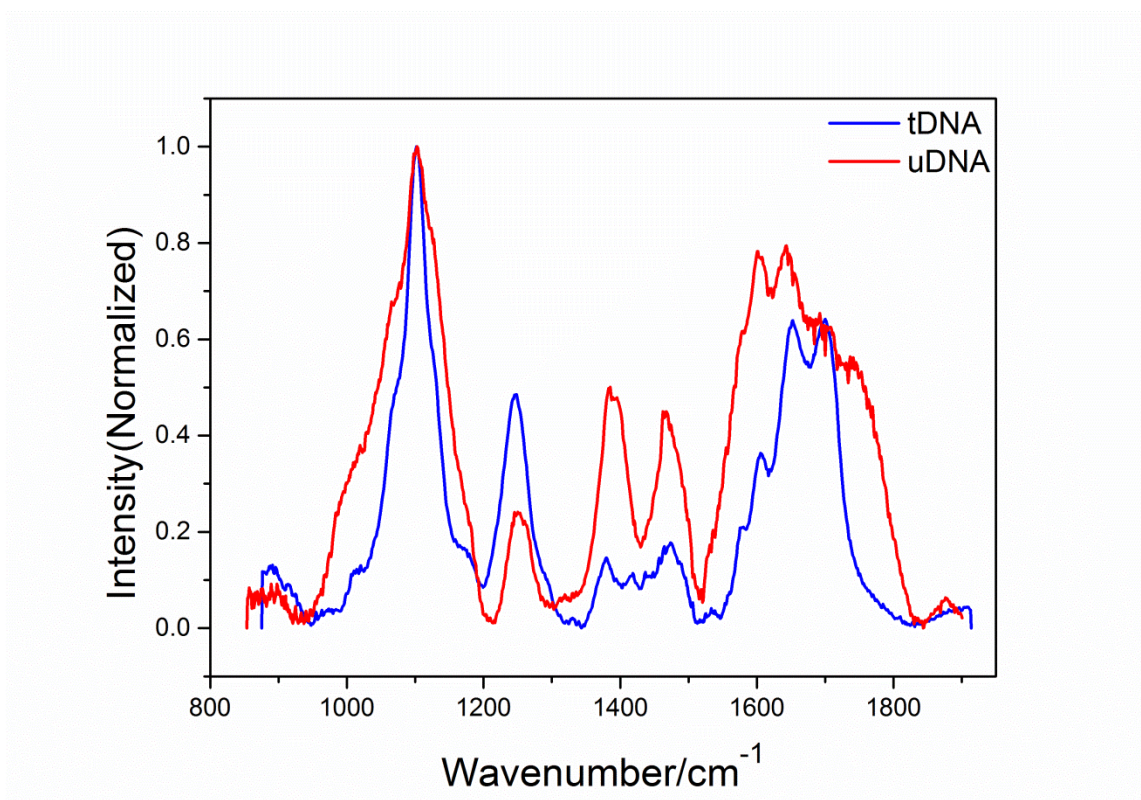


Figure 1: PM-IRRAS Spectra of monolayers of t-DNA and u-DNA on Au at an incidence angle of 80°.

Infrared absorption spectra of tDNA and uDNA were recorded in reflection mode at an incidence angle of 80° using a Nicolet 6700 FTIR, equipped with PEM-90 photo elastic modulator (Hinds Instruments, Hillsboro, OR). The peaks, which are centered at 1100 and 1246 cm<sup>-1</sup>, represents the symmetric and asymmetric PO<sub>2</sub> – stretching vibration of the DNA phosphodiester backbone. The peaks at 1464 result from the purine (DNA bases) ring modes, whereas the band in the region

from 1600 to 1750  $\text{cm}^{-1}$  is due to the C=O and C=N stretching and  $-\text{NH}_2$  bending vibrations of the thymine and adenine bases in the DNA. The strong band at 1604  $\text{cm}^{-1}$  in uDNA spectra shows that DNA bases interact with gold surface directly.<sup>1</sup> The change in the peak positions with the thiolated and non-thiolated DNA has previously been reported by Opdahl *et al.*,<sup>2</sup> who also found that in the case of thymine bases, which do not directly interact with the gold substrate, there is a band at 1700  $\text{cm}^{-1}$ .

1. K.S. Kumar and R. Naaman, *Langmuir*, 2012, **28**, 14514.
2. A. Opdahl, D. Y. Petrovykh, H. Kimura-Suda, M. J. Tarlov and L. J. Whitman, *Proc. Nat. Acad. Sci.*, 2007, **104**, 9-14.