

## Electronic Supplementary Information

### Carbon nanobelts as a novel sensing platform for fluorescence-enhanced DNA detection

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#### Experimental section

##### Materials

1, 8-diaminonaphthalene (DAN),  $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$  and HCl (36 wt%) were purchased from Beijing Chemical Corp. All chemically synthesized oligonucleotides were purchased from Shanghai Sangon Biotechnology Co. Ltd. (Shanghai, China). The water used throughout all experiments was purified through a Millipore system.

Oligonucleotide sequences used are listed below (mismatch underlined):

P<sub>HIV</sub> (FAM dye-labeled ssDNA):

5'-FAM-AGT CAG TGT GGA AAA TCT CTA GC-3'

T<sub>1</sub> (complementary target):

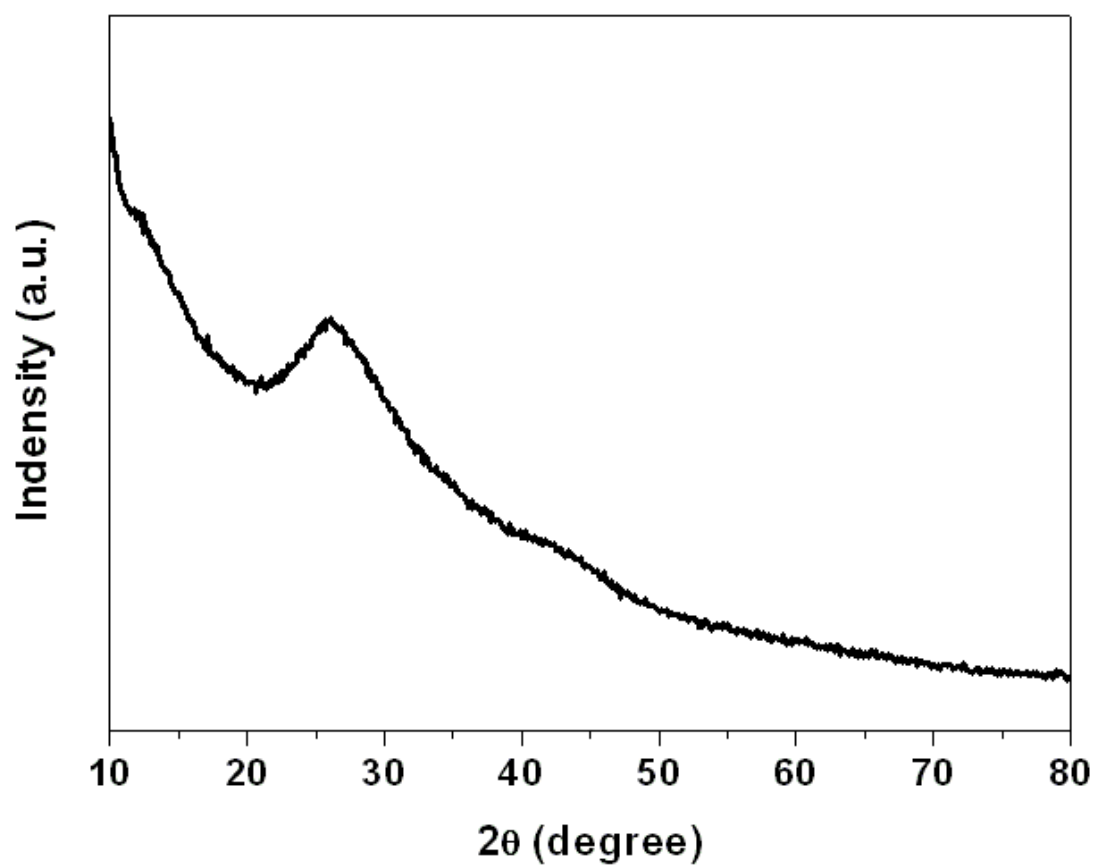
5'-GCT AGA GAT TTT CCA CAC TGA CT-3'

T<sub>2</sub> (single-base mismatched target):

5'-GCT AGA GAT TGT CCA CAC TGA CT-3'

**Preparation of carbon nanobelts (CNBs):** In a typical synthesis, a mixture of DAN and NiCl<sub>2</sub>·6H<sub>2</sub>O with a mass ratio of 1:8 was pressed and heated in a tube furnace at different temperature 900 °C for 4 h under Ar atmosphere flow, followed by natural cooling to room temperature with continuous flowing of argon. After that, the obtained dark black products were leached in 2 M HCl at 80 °C for 4 h, and then thoroughly washed with distilled water to remove any metal residuals.

**Characterizations:** Scanning electron microscopy (SEM) measurements were made on a XL30 ESEM FEG scanning electron microscope at an accelerating voltage of 20 kV. Powder XRD data were collected on a RigakuD/MAX 2550 diffractometer with Cu K $\alpha$  radiation ( $\lambda=1.5418$  Å). Transmission electron microscopy (TEM) measurements were made on a HITACHI H-8100 electron microscopy (Hitachi, Tokyo, Japan) with an accelerating voltage of 200 kV. Fluorescent emission spectra were recorded on a PerkinElmer LS55 Luminescence Spectrometer (PerkinElmer Instruments, U.K.).



**Fig. S1** XRD pattern of the carbonized product after acid leaching.