# Supporting Information

## A sensitive electrochemical assay for T4 polynucleotide kinase activity based on titanium dioxide nanotubes and rolling circle amplification strategy

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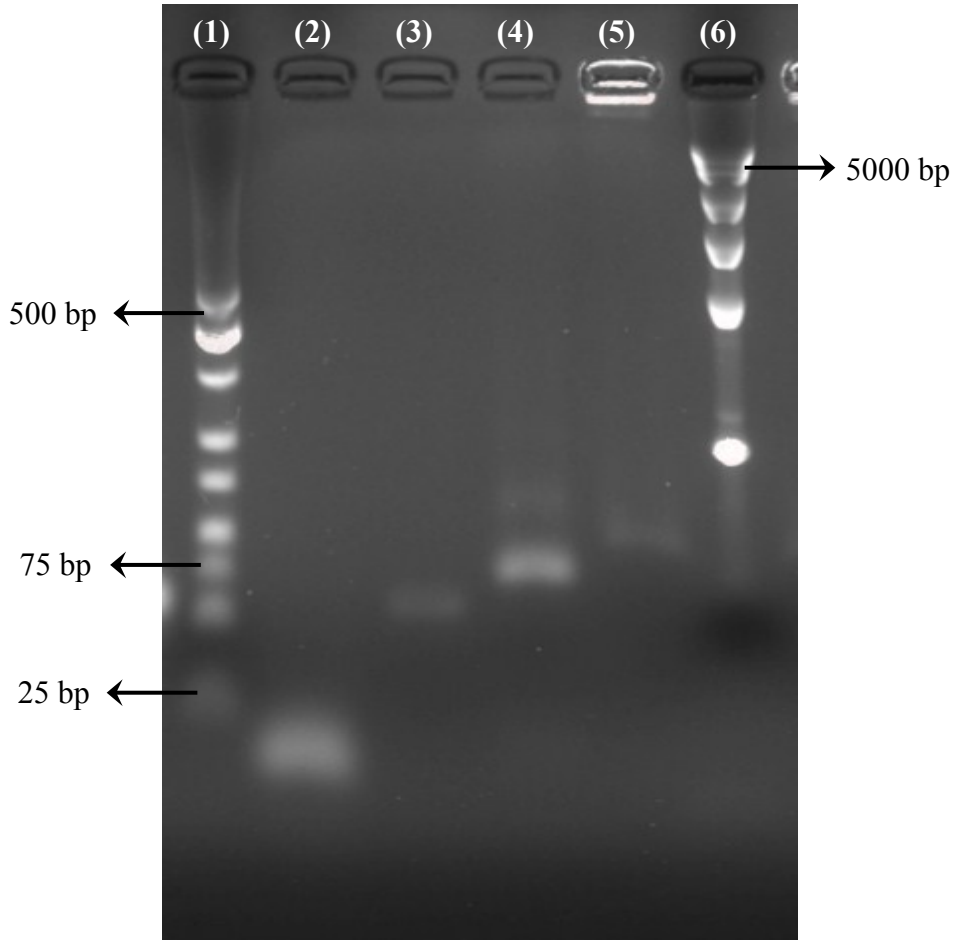
**Supporting figure captions:**

**Fig. S1** Electrophoresis analysis of the RCA products. Lane 1: DNA marker (500 bp), Lane 2: primer S2, Lane 3: circular template S3, Lane 4: circularization mixture, Lane 5: RCA product, Lane 6: DNA marker (5000 bp). The products were separated by 3% agarose gel electrophoresis and stained by bromophenol blue.

**Fig. S2** The effects of phosphorylation time (A), concentration of ATP (B), concentration of $TiO_2$ NTs (C), concentration of circularization mixture (D), RCA time (E), and concentration of phi29 DNA polymerase (F) on PNK activity assay. The assays were carried out in 10 mM Tris-HCl (pH 7.4, 0.1 M NaCl, 1 mM $H_2O_2$ and 1 mM HQ) containing 20 U $mL^{-1}$ PNK.

**Fig. S3** The effects of concentration of S4 DNA (A), HRP-SA (B), $H_2O_2$ (C), and HQ (D) on the electrochemical response of the biosensor. The assays were carried out in 10 mM Tris-HCl (pH 7.4) containing 20 U $mL^{-1}$ PNK.

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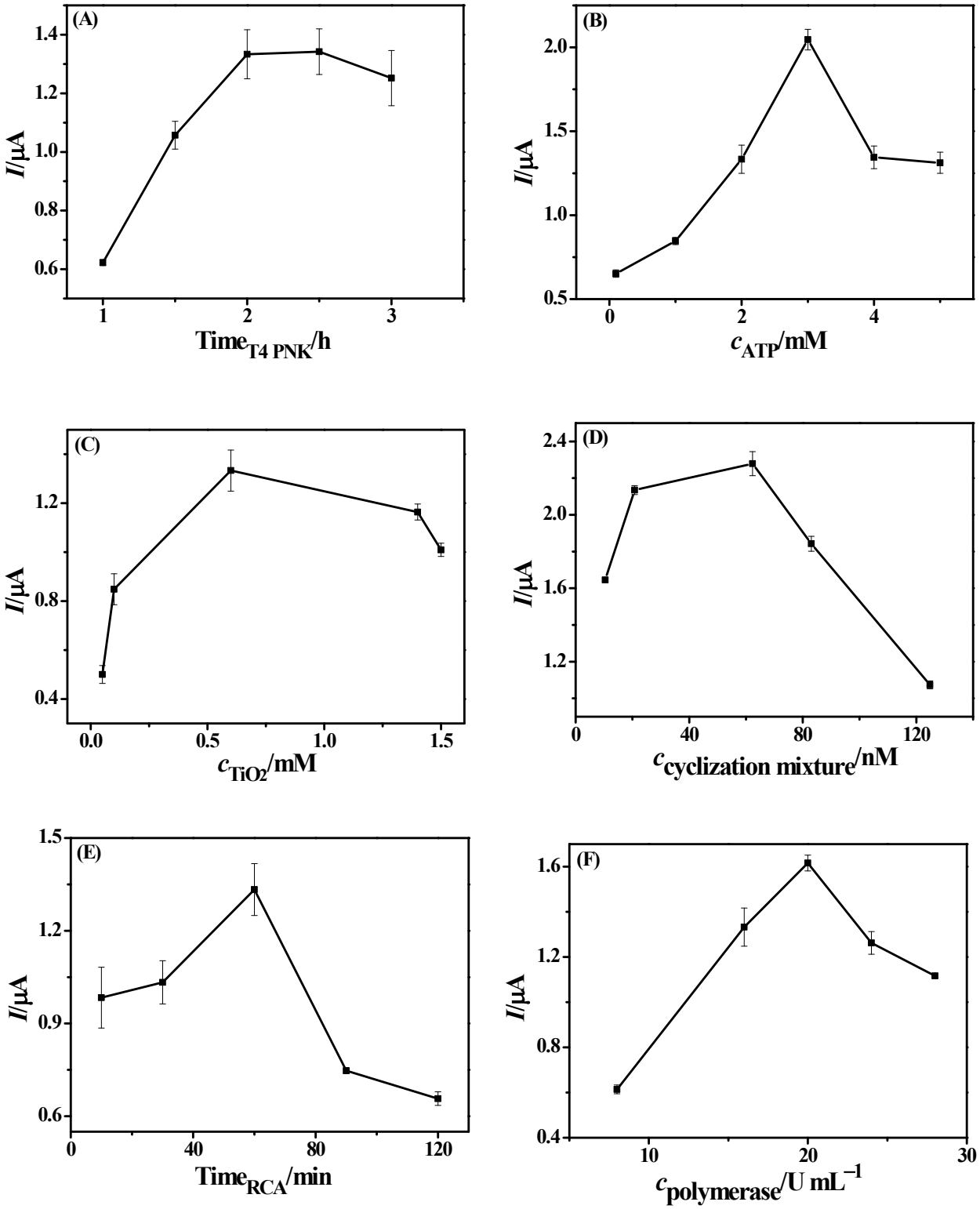


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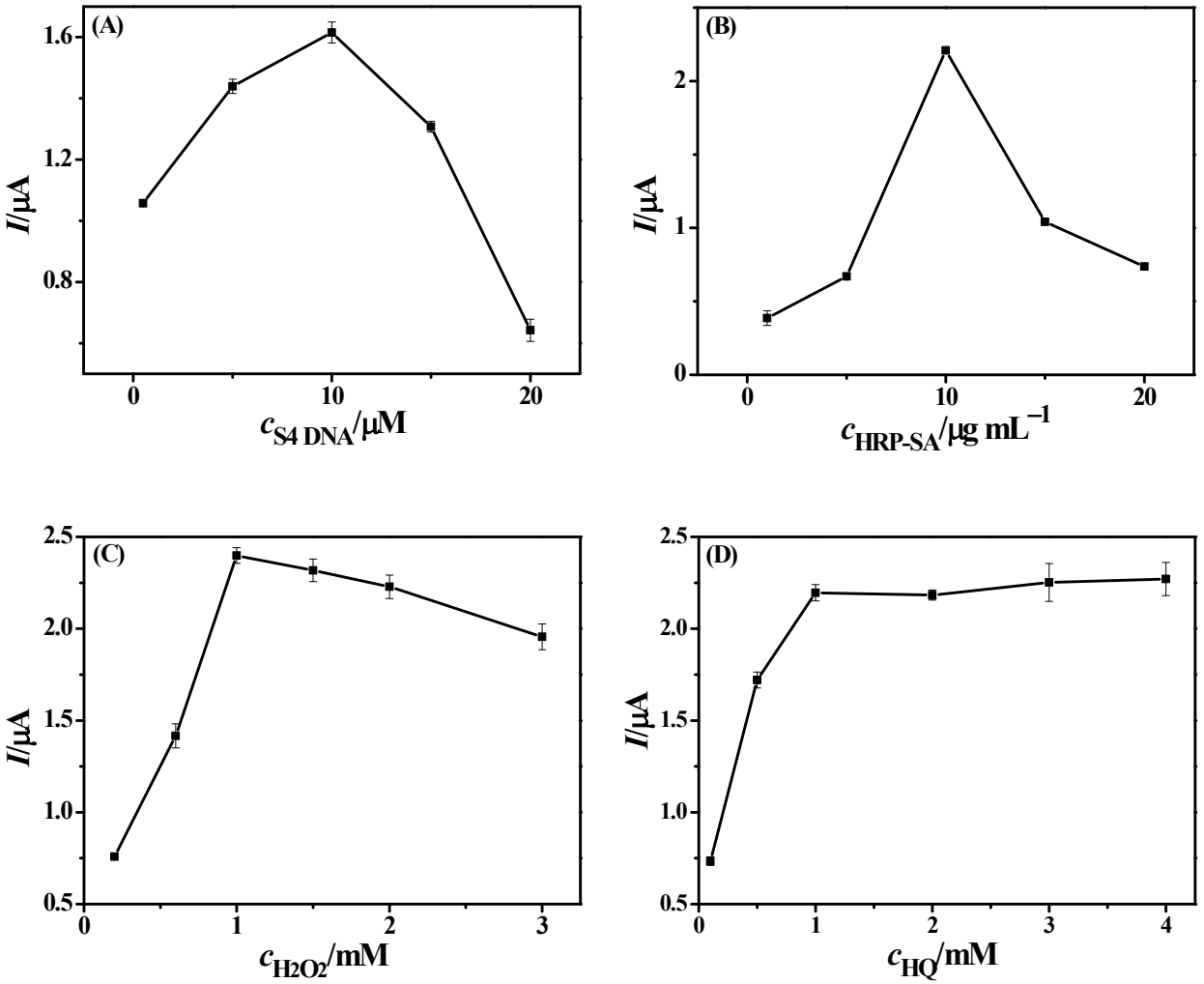


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