

## Supporting information for Self-Assembled Nanowire Arrays as Three-Dimensional Nanopores for Filtration of DNA Molecules

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Video clip S1. Video clip of a DNA filtration between T4 DNA and  $\lambda$  DNA by the 3D nanopore structure under an applied DC electric field of 500 V/cm.

Video clip S2. Video clip of a single  $\lambda$  DNA molecule that migrated into the 3D nanopore structure under an applied DC electric field of 500 V/cm.

Video clip S3. Video clip of a single T4 DNA molecule that migrated into the 3D nanopore structure under an applied DC electric field of 500 V/cm.

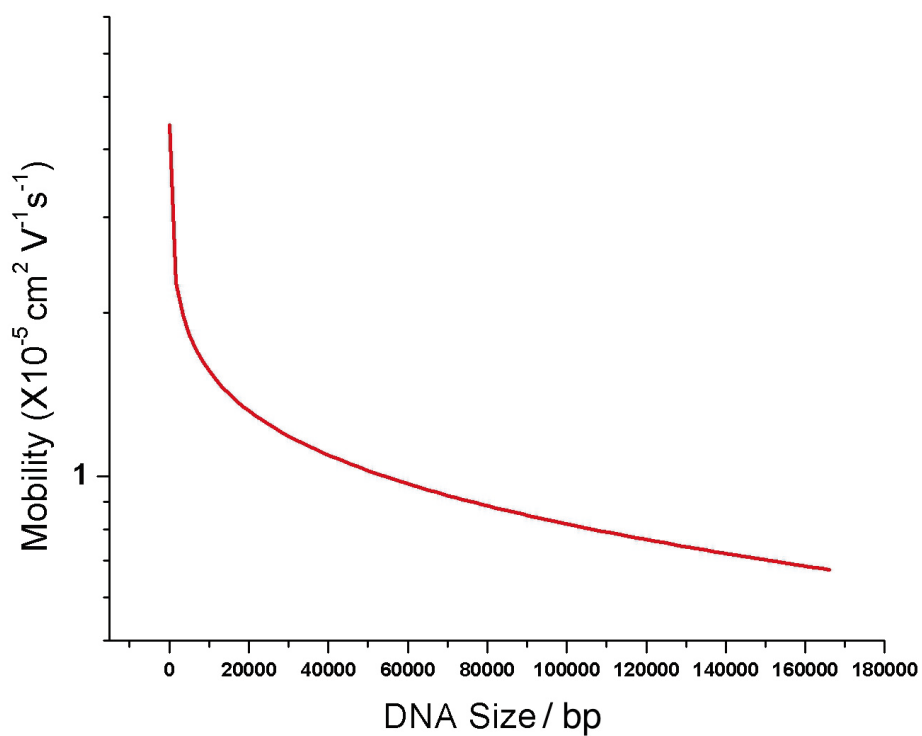


Figure S1. The fitting curve for electrophoretic mobility of DNA molecules in the 3D nanopore structure under an applied DC electric field of 500 V/cm.

**The gyration size of DNAs**

We can consider the radius of gyration ( $R_g$ ) of DNA molecule by

$$R_g = \frac{1}{\sqrt{6}} \sqrt{bL} \quad (\text{m})$$

where  $b$  is Kuhn length and  $L$  is the contour length of DNA molecule. In addition, the contour length  $L$  can be determine by

$$L = 0.34 N \quad (\text{nm})$$

where  $N$  is the number of basepair and 0.34 nm is the distance between nucleotide of DNA molecule.