

Electronic Supplementary Information (ESI) for

WO₃ Nanonodule-decorated Hybrid Carbon Nanofibers for NO₂ Gas Sensor Application

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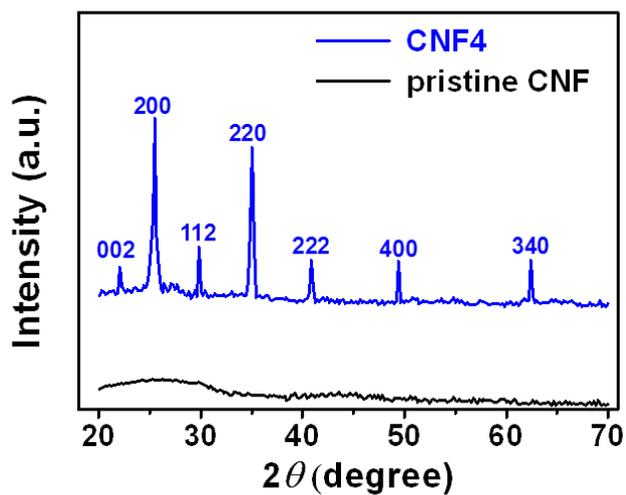


Fig. S1 XRD of (a) pristine CNF and (b) CNF4

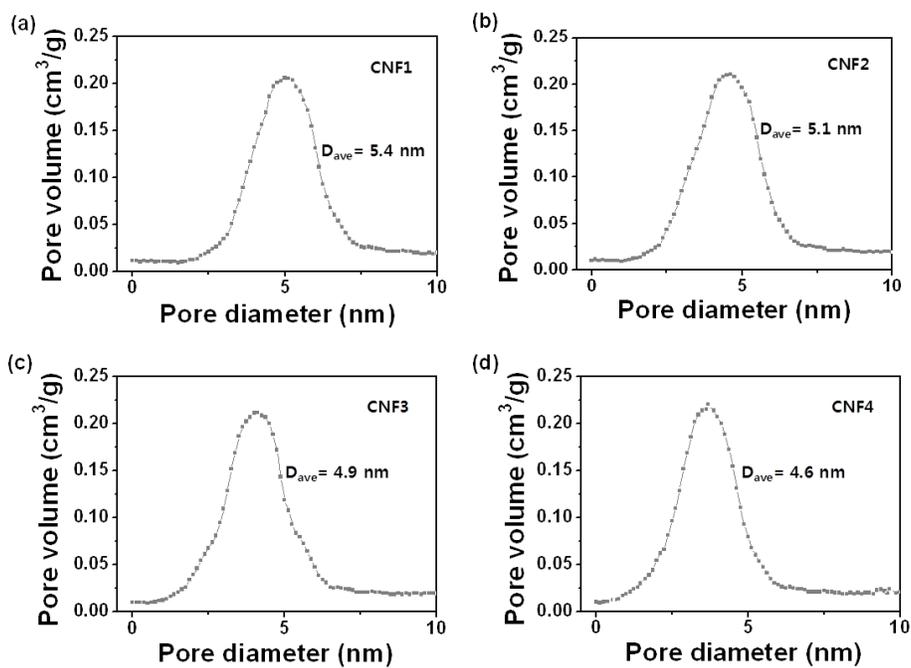


Fig. S2 Pore size distribution curve of various hybrid CNFs: (a) CNF1; (b) CNF2; (c) CNF3; (d) CNF4.

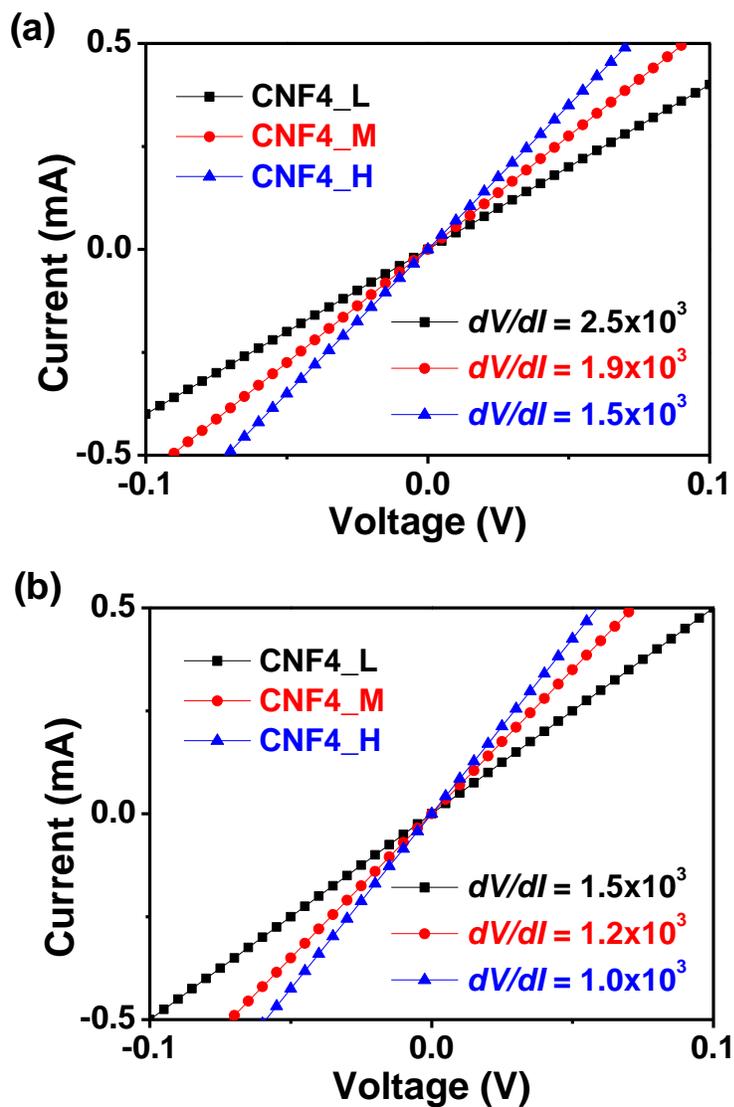


Fig. S3 *I-V* curves of CNF4 with WO₃ population density deposited on IDA by using (a) drop-casting and (b) spin-coating method (black: CNF_L; red: CNF4_M; blue: CNF4_H).

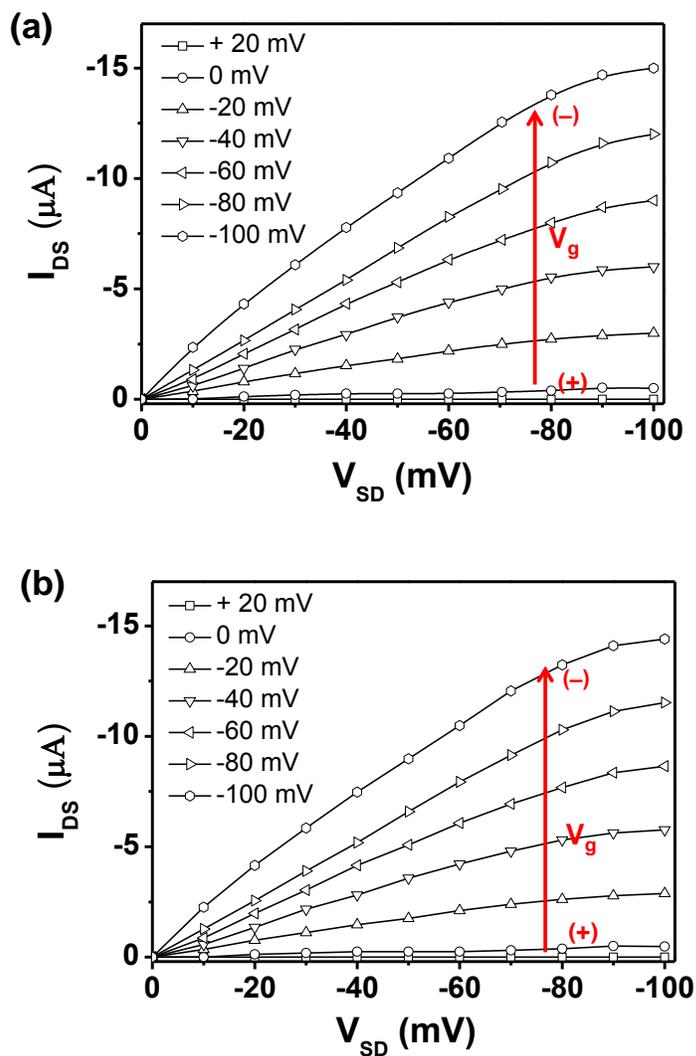


Fig. S4 FET analysis of hybrid CNFs with difference of gate voltage (source-drain voltage sweep rate = 10 mVs⁻¹) of (a) 40 nm-diameter pristine CNFs and (b) hybrid CNFs (CNF4).

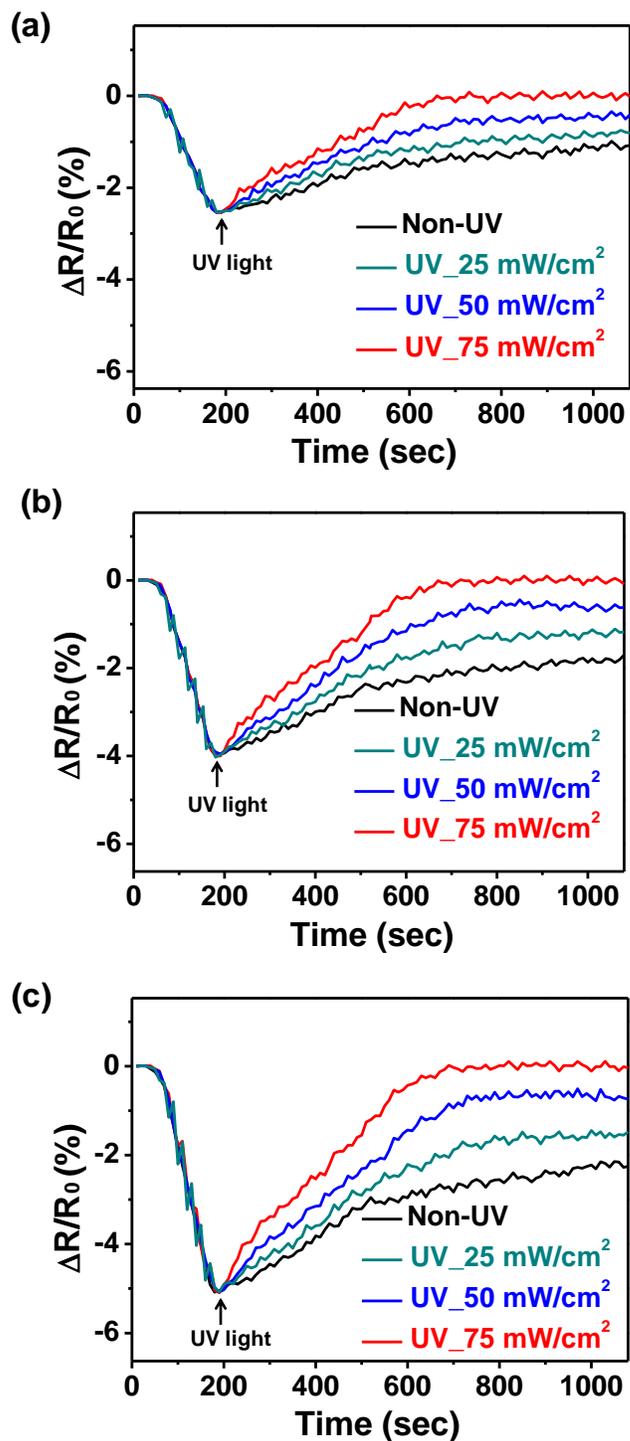


Fig. S5 Response and recovery of (a) CNF1, (b) CNF2, and (c) CNF3 with different intensity of UV-light irradiation during recovery time in the 20 ppm concentration of NO₂ gas at room temperature (without UV light: black; 25 mW/cm²: green; 50 mW/cm²: blue; 75 mW/cm²: red).

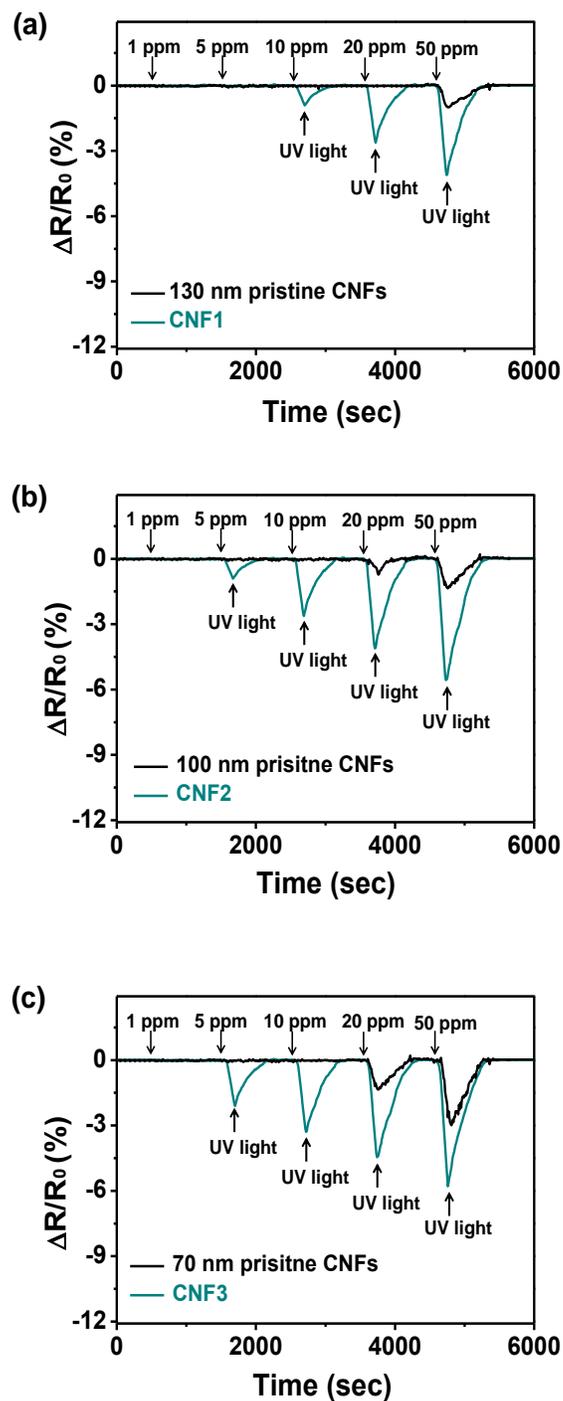


Fig. S6 Response Reversible and reproducible responses upon sequential exposure to various NO₂ gas concentrations are measured of (a) CNF1 and 130 nm diameter pristine CNFs, (b) CNF2 and 100 nm diameter CNFs, and (c) CNF3 and 70 nm diameter CNFs (constant current value (10^{-6} A) and exist UV light (75 mW/cm^2) with normalized resistance changes at room temperature).