Supporting Information for:

Low-cost synthesis of graphitic carbon nanofibers as excellent room temperature sensors for explosive gases

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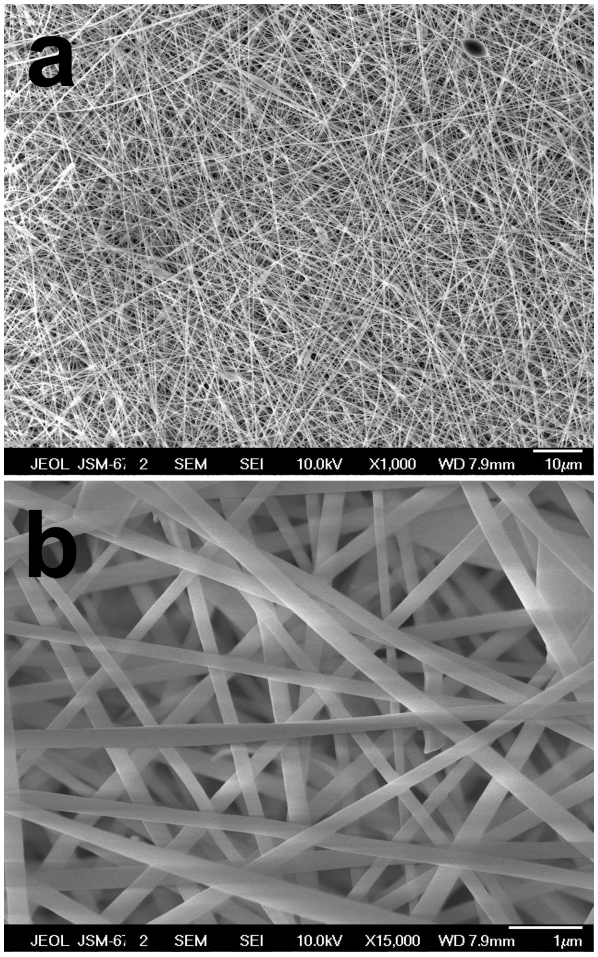

Fig. S1 a) Low magnitude SEM image of electrospun $Fe(acac)_3$/PAN composite nanofibers; b) SEM image of electrospun $Fe(acac)_3$/PAN composite nanofibers with higher magnification.

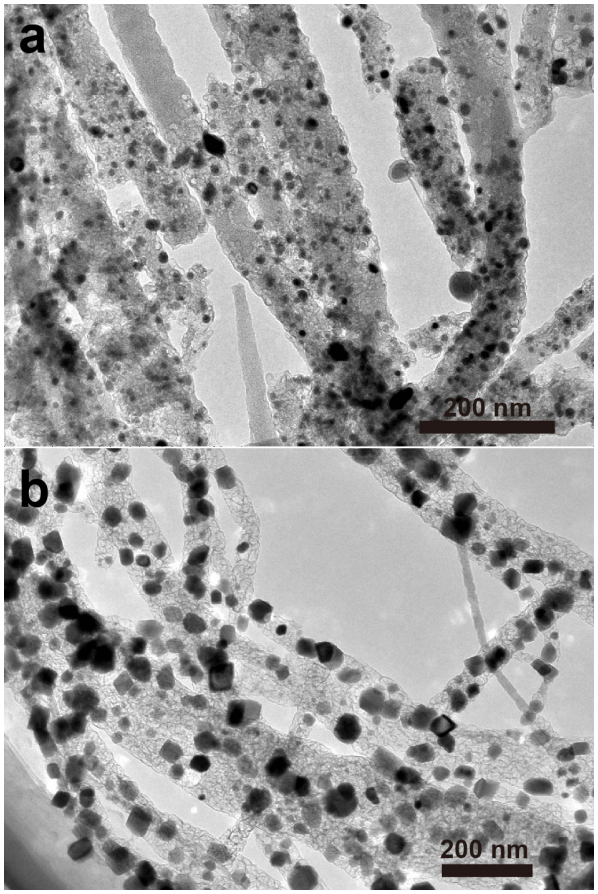

Fig. S2 TEM image of (a) CNF-800 and (b) CNF-1000 without the removal of Fe nanoparticles

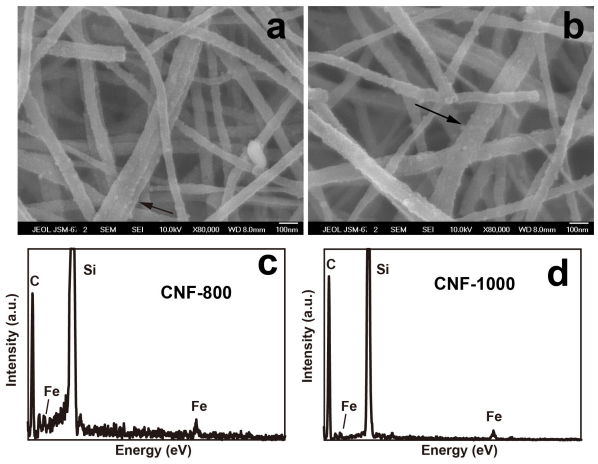

Fig. S3 Higher magnitude SEM image of (a) sample CNF-800 and (b) CNF-1000 with iron nanoparticles embedded in and EDX spectra of (c) sample CNF-800 and (d) CNF-1000; the Si peak arises from the silicon slice.

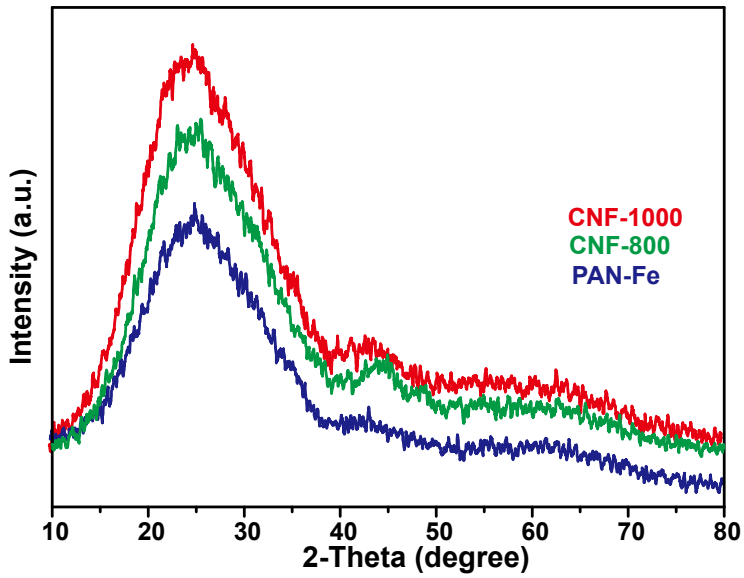

Fig. S4 XRD patterns of $Fe(acac)_3$/PAN composite nanofibers nanofibers, CNF-800 and CNF-1000.

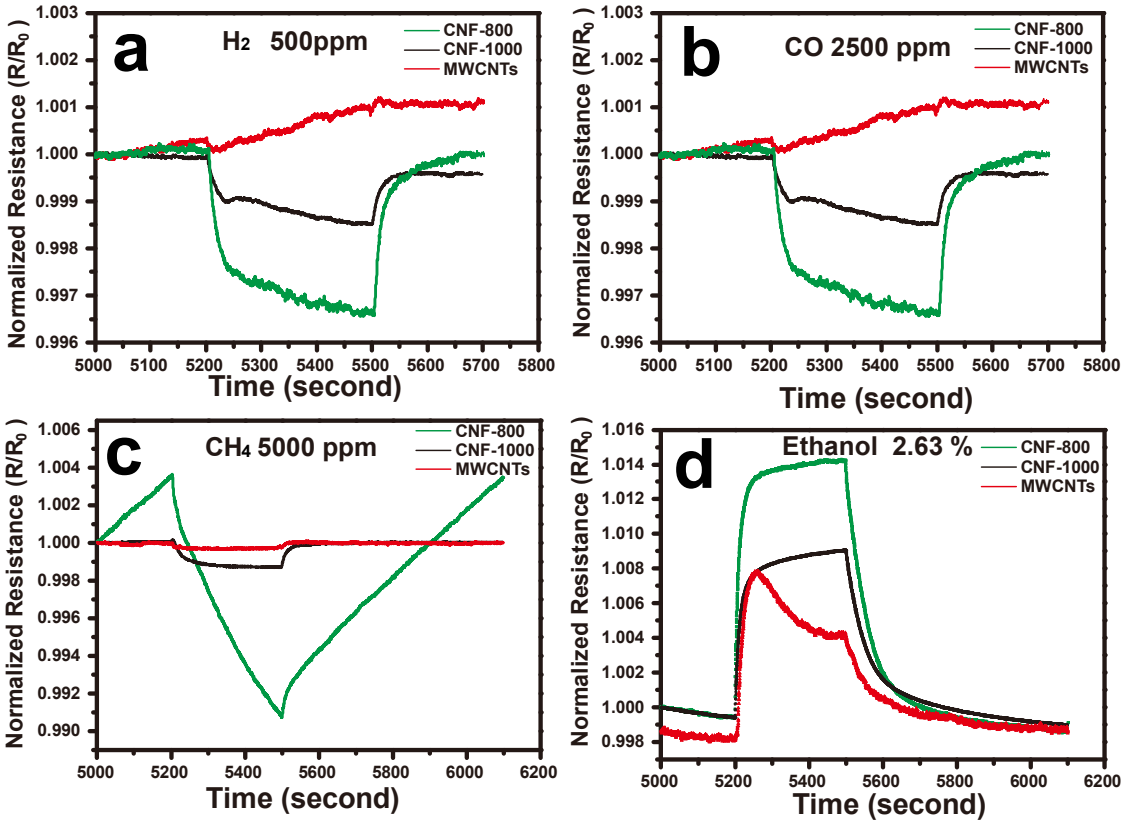

Fig. S5 The magnified response curves of the sensor based on CNF-800 (green line), CNF-1000 (black line) and commercial MWCNTs (red line) to (a) 500 ppm of H_2, (b) 2500 ppm of CO, (c) 5000 ppm of CH_4 and (d) 2.63 vol % of ethanol at room temperature (298 K), respectively.

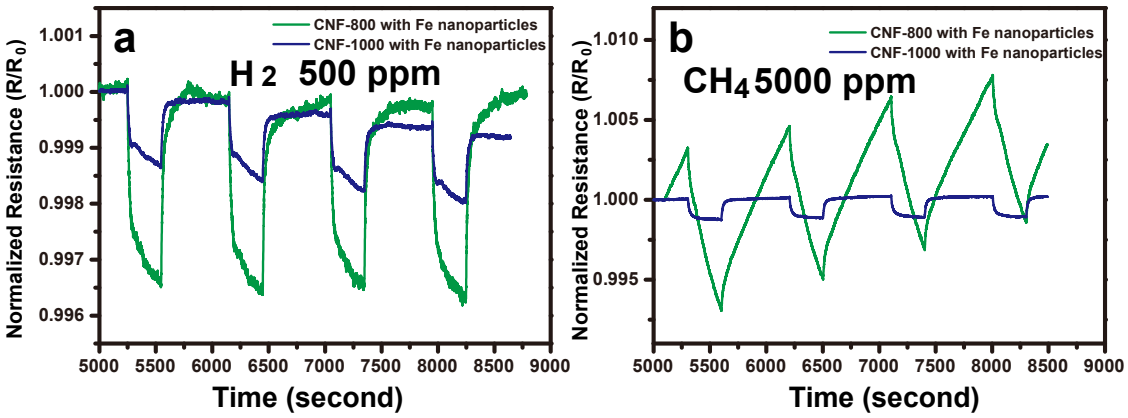

Fig. S6 The typical response curves of CNF-800 and CNF-1000 samples before removing iron particles to (a) 500 ppm of H_2 and (b) 5000 ppm of CH_4 at 298 K.

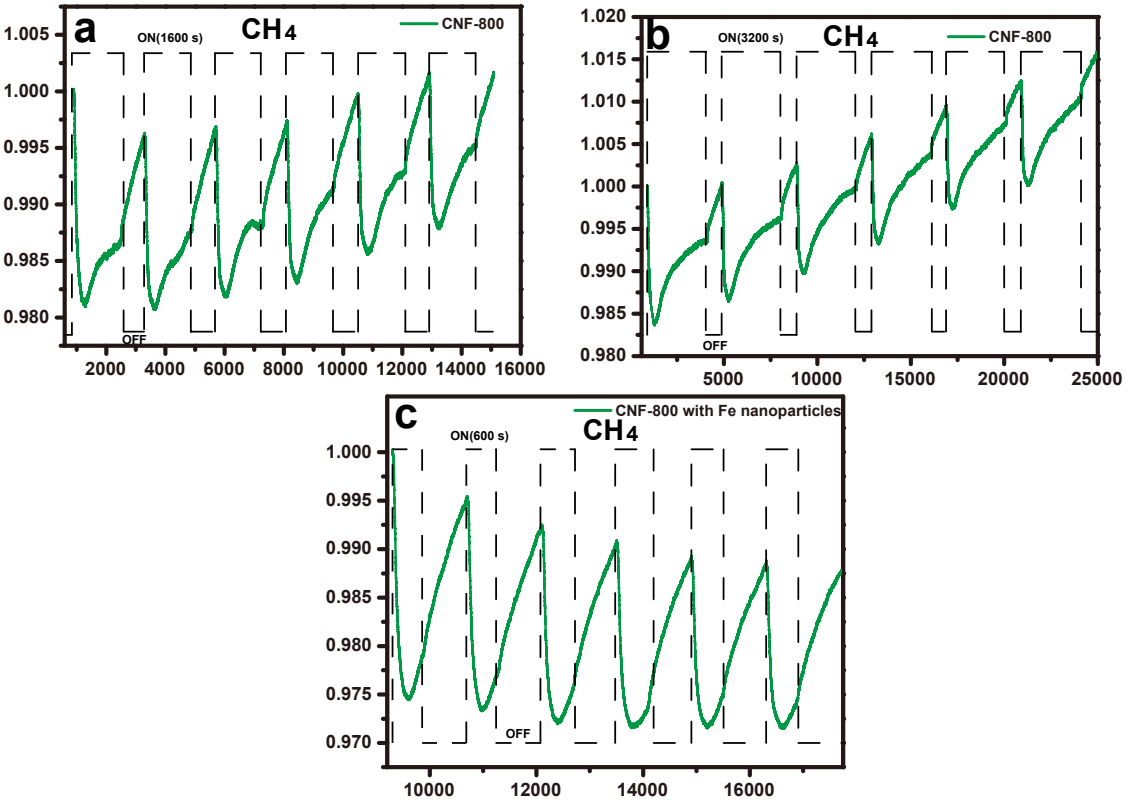

Fig. S7 (a) The response curve of CNF-800 to 5000 ppm of CH_4 (The CH_4 gas flow keeps on for 1600 s and off for 800 s), (b) the response curve of CNF-800 to 5000 ppm of CH_4 (The CH_4 gas flow keeps on for 3200 s and off for 800 s) and (c) the response curve of CNF-800 samples before removing Fe nanoparticles to 5000 ppm of CH_4 (The CH_4 gas flow keeps on for 600 s and off for 800 s).

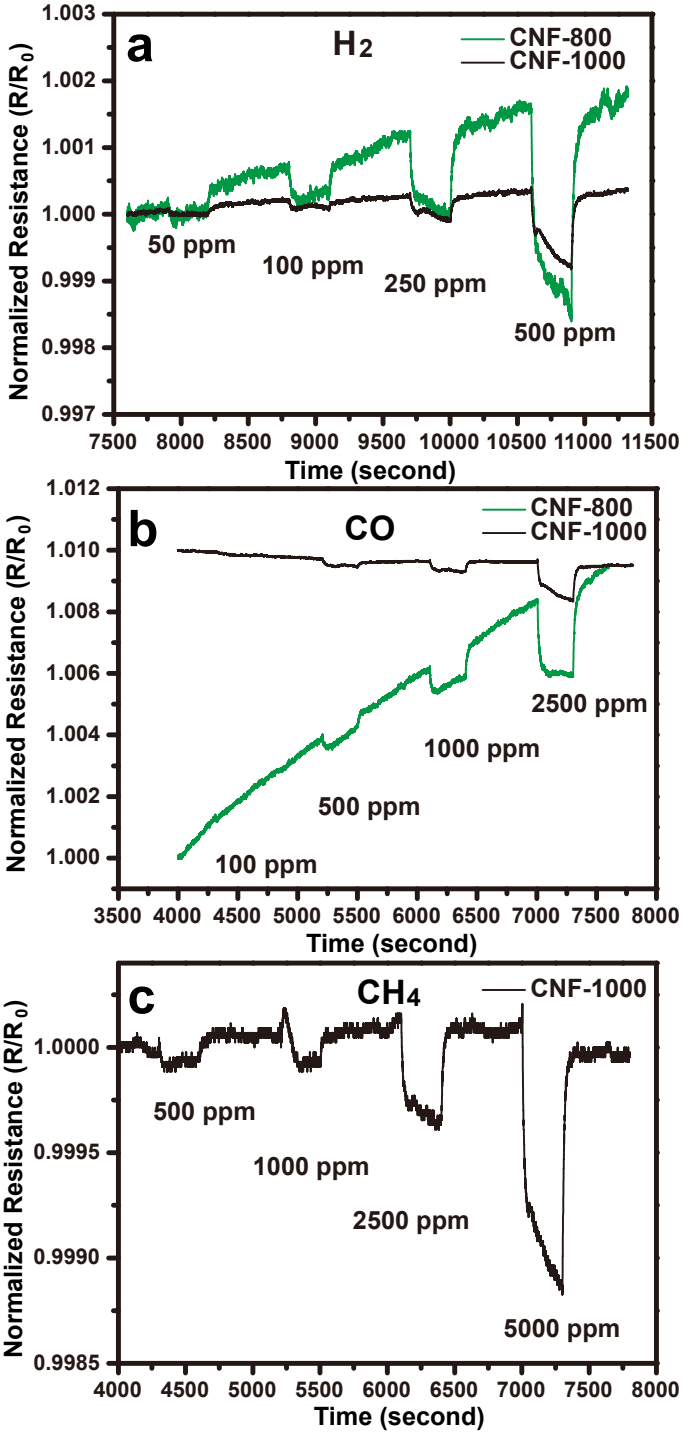

Fig. S8 a) Typical response curves of CNF-800 and CNF-1000 to H_2 with different concentrations ranging from 50 ppm to 500 ppm, b) Typical response curves of CNF-800 and CNF-1000 to CO with different concentrations ranging from 100 ppm to 2500 ppm, and c) Variation of the response of the sensor based on CNF-1000 to CH_4 with the changing concentration ranging from 500 ppm to 5000 ppm.