

Electronic Supplementary Information (ESI)

For

**Robust cobalt-perforated with multi-walled carbon nanotubes as effective
sensing materials for acetone detection**

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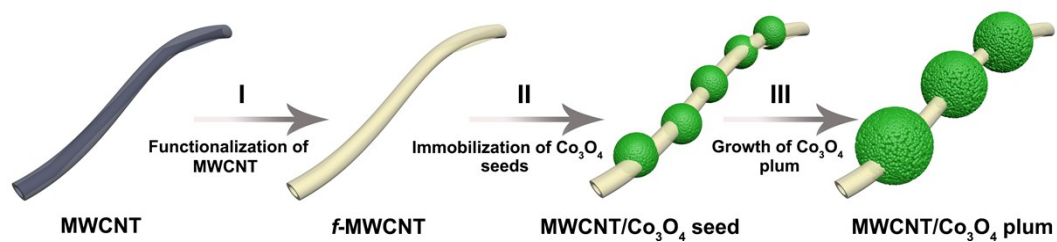


Figure S1. Schematic diagram of the process to fabricate MWCNTs/Co₃O₄ plum composites: (I) functionalization of the MWCNTs by addition of surfactant and ultrasonication; (II) immobilization of Co₃O₄ particles on MWCNT by assembly of the cobalt precursor; (III) growth of the Co₃O₄ octahedron on MWCNT by hydrothermal process.

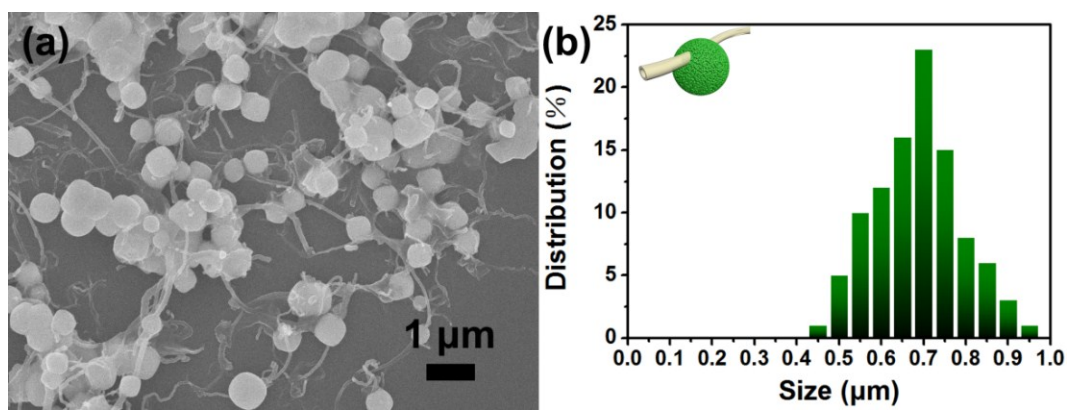


Figure S2. (a) SEM and (b) size distribution of Co_3O_4 plum.

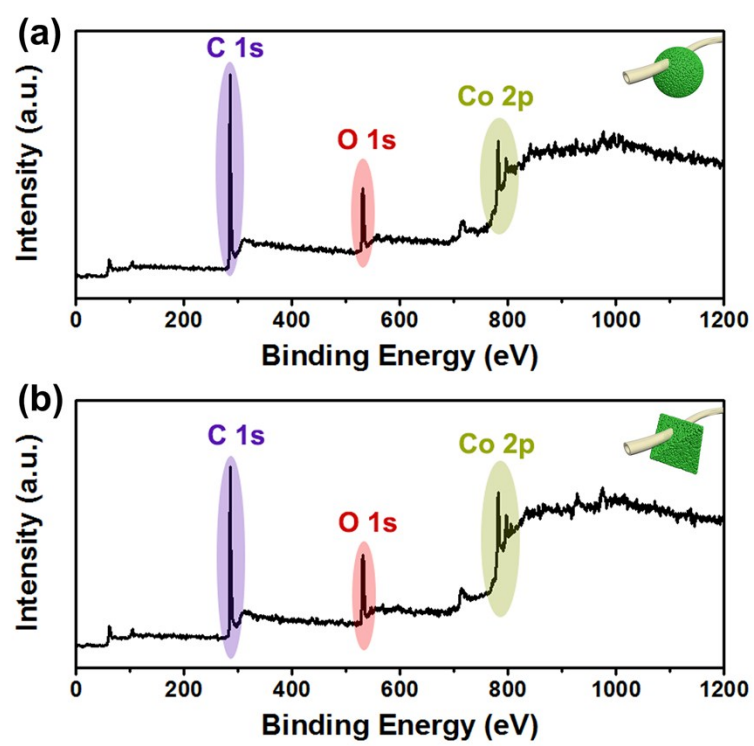


Figure S3. XPS spectra of MWCNTs/Co₃O₄ (a) plum and (b) octahedron.

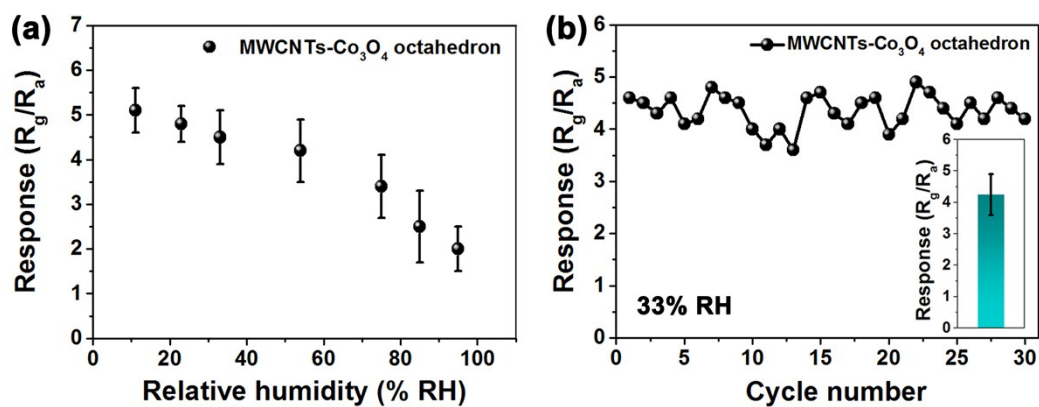


Figure S4. (a) Relationship between acetone sensing response and relative humidity; (b) cyclic testing at 33%RH of MWCNTs/Co₃O₄ octahedron-based sensor. (measurement number=3)

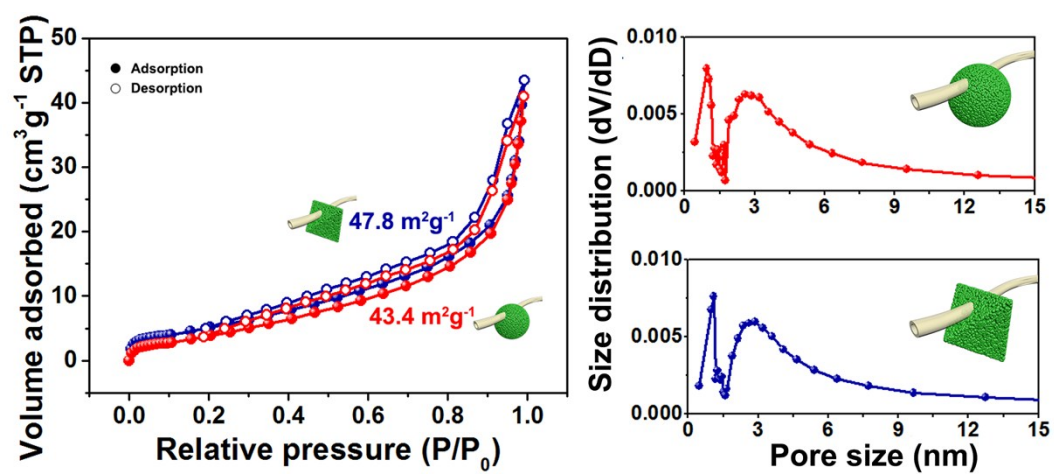


Figure S5. N_2 adsorption-desorption isotherms and pore size distributing of of MWCNTs/ Co_3O_4 plum and octahedron.