

Electronic Supplementary Information for

MOF-derived carbon mediated construction of hierarchical rod-shaped MoO₃/Co₃O₄ heterojunction towards efficient triethylamine detection

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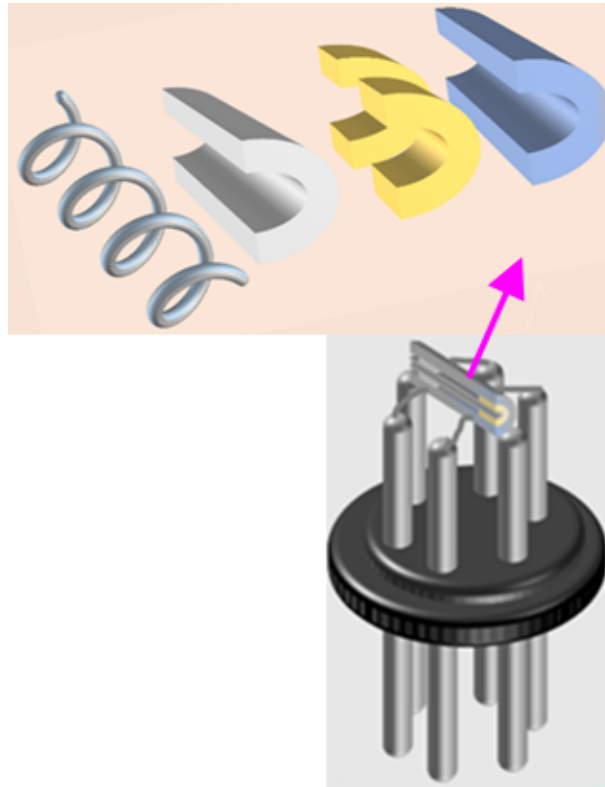


Fig. S1 Schematic diagram of a gas sensor.

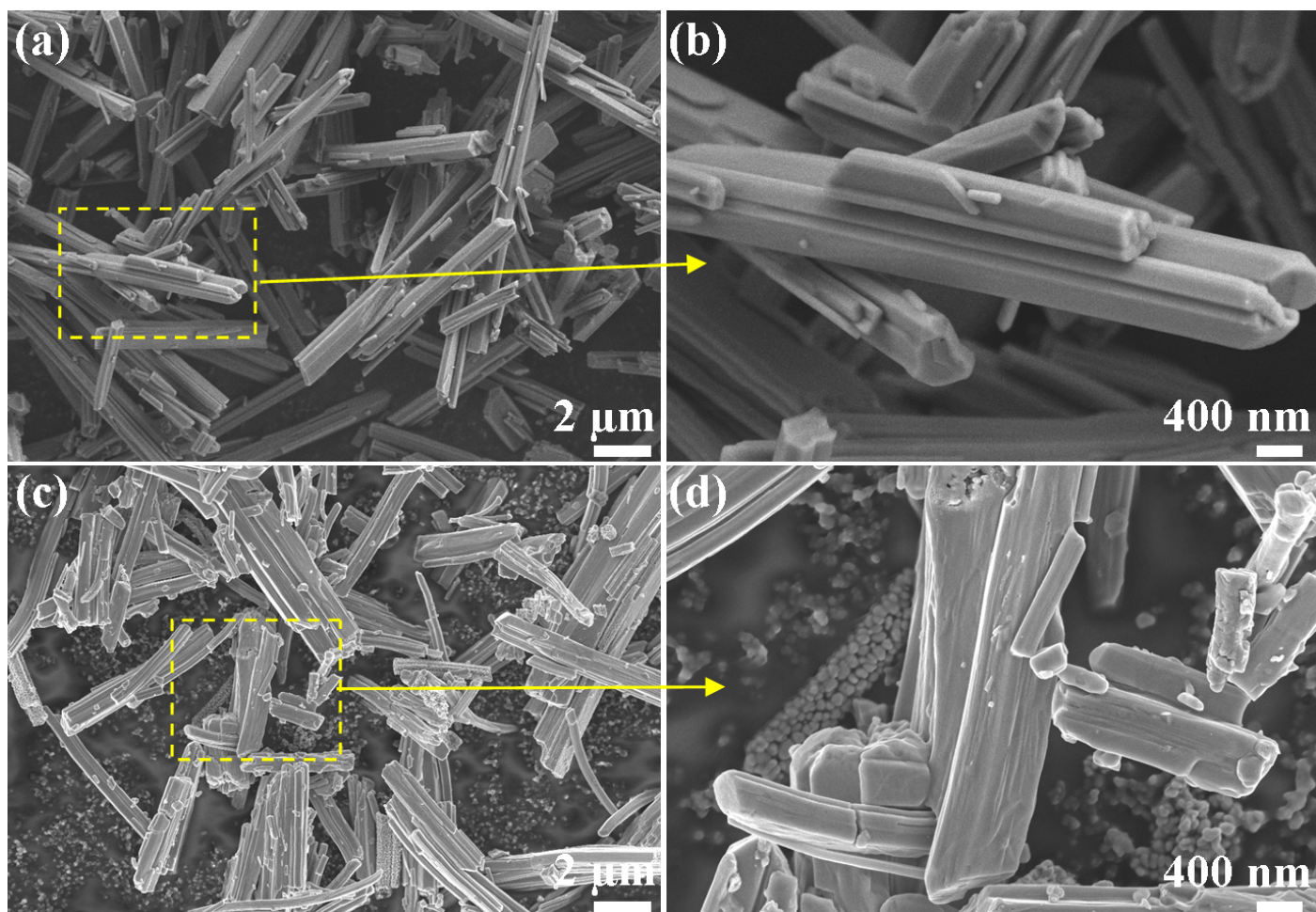


Fig. S2 SEM images of (a, b) Mo-MOF, and (c, d) MoO₂/C.

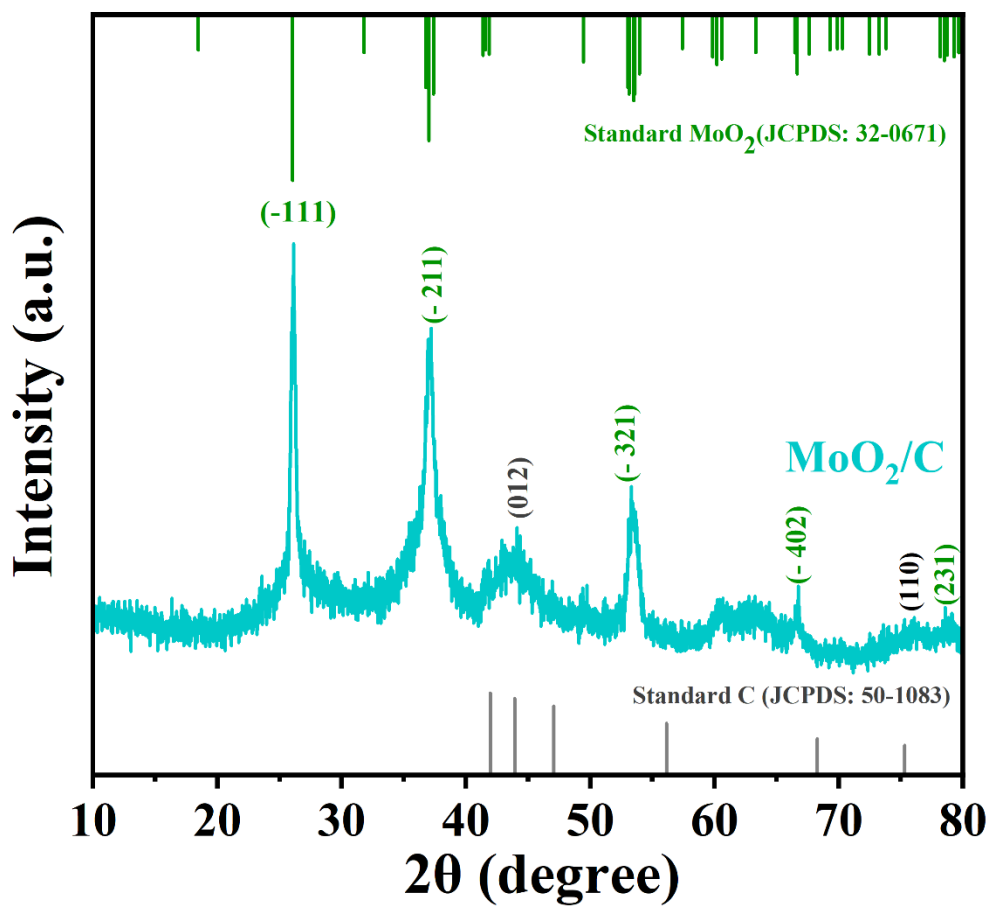


Fig. S3 XRD pattern of the as-prepared MoO₂/C sample.

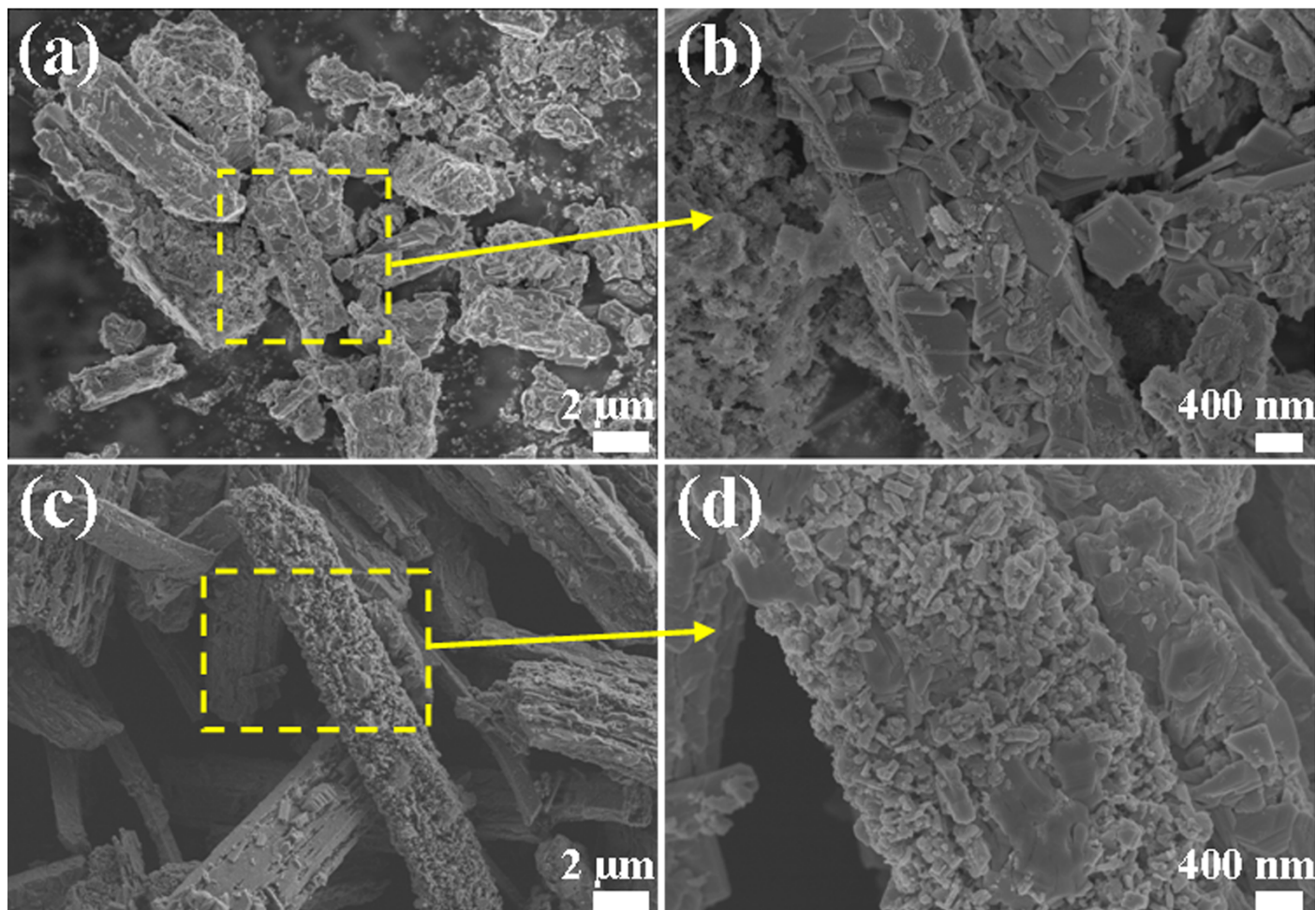


Fig. S4 SEM images of the (a, b) MoO₃/Co₃O₄-1, and (c, d) MoO₃/Co₃O₄-3.

Table. S1 Detailed synthetic conditions for the sample preparations.

Samples	MoO₂/C	Co(NO₃)₂·6H₂O	2-MeI	PVP
MoO ₃	25 mg	0	0	0
Co ₃ O ₄	0	0.0735 mmol	0.588 mmol	10 mg
MoO ₃ /Co ₃ O ₄ -1	25 mg	0.0368 mmol	0.294 mmol	10 mg
MoO ₃ /Co ₃ O ₄ -2	25 mg	0.0735 mmol	0.588 mmol	10 mg
MoO ₃ /Co ₃ O ₄ -3	25 mg	0.147 mmol	1.176 mmol	10 mg

Calculation of the theoretical limit of detection (LOD)

The noise value for the sensor was calculated using the variation in the relative sensor response in the baseline level using the root-mean-square (RMS) deviation. 100 points obtained from Fig. 9a before exposed to TEA were averaged and a standard deviation (S^2) was gathered as 0.00786859. The RMS noise can be calculated as following formula:

$$RMS_{noise} = \sqrt{S^2/N} \quad (N = 100)$$

The RMS noise was calculated to be 0.00887051.

According to the IUPAC definition, the signal (S) to noise (N) ratio (S/N) is 3, and the slope is 1.81487 from inset of Fig. 9b, therefore, the theoretic limit of detection (LOD) can be calculated as following:

$$LOD = 3*(RMS_{noise} / Slope) = 3*(0.00887051/1.81487) = 0.0147\text{ppm} = 14.7 \text{ ppb}$$