# Supporting Material

## Design of 3D flower-like $NiWO_4/WO_3$ heterostructures with excellent trimethylamine sensing performance

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## 1. Structural and morphological characteristics

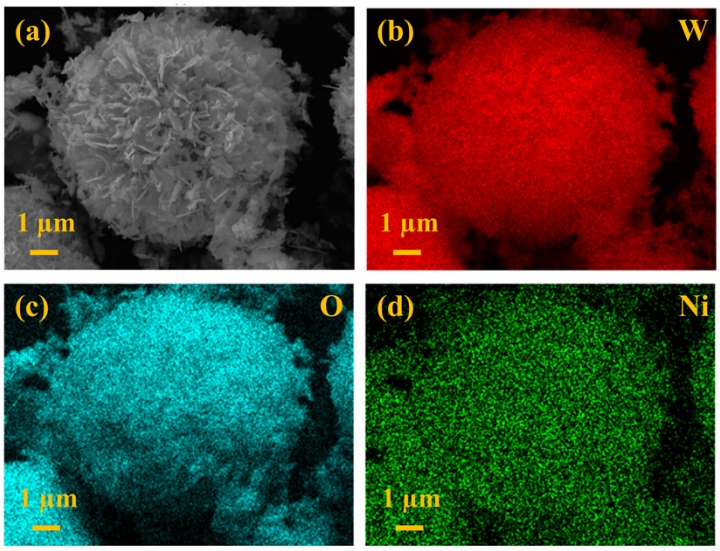


**Fig. S1** EDS element mapping images: W, O, and Ni images of 10-$NiWO_4/WO_3$.

## 2. Theoretical detection limit calculation

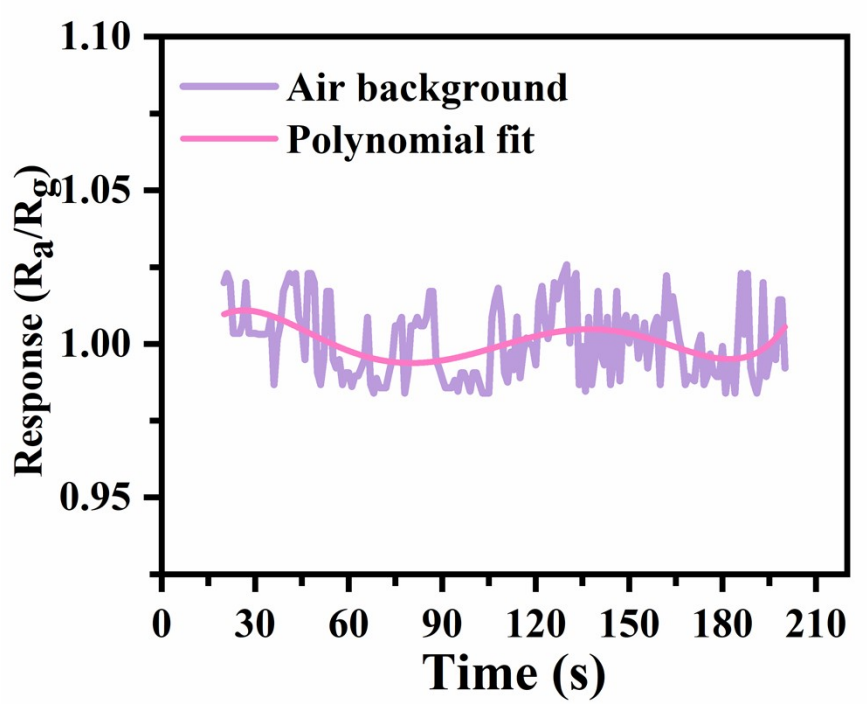


**Fig. S2** Fifth-order polynomial fit response before TMA exposure as a function of baseline time.

**Table S1** 5th order polynomial fitting data for the 10-$NiWO_4/WO_3$ sensor

| Time (sec) | $(y_i-y)$ | $(y_i-y)^2$ |
|---|---|---|
| 20 | -0.01038 | 1.07644E-4 |
| 40 | -0.01285 | 1.65189E-4 |
| 60 | 0.00716 | 5.13144E-5 |
| 80 | -0.0121 | 1.46473E-4 |
| 100 | 0.0062 | 3.84577E-5 |
| 120 | 0.00934 | 8.72509E-5 |
| 140 | -0.01241 | 1.54123E-4 |
| 160 | 0.01391 | 1.93368E-4 |
| 180 | -0.00398 | 1.58505E-5 |
| 200 | 0.01338 | 1.78933E-4 |

**Table S2** Calculation of b, $\sum(yi-y)^2$, $S_{noise}$ and LOD.

| Sensing Material | b ($ppm^{-1}$) | $\sum(y_i-y)^2$ | $S_{noise}$ | LOD (ppm) |
|---|---|---|---|---|
| 10-$NiWO_4/WO_3$ | 2.36602 | 0.00114 | 0.01125 | 0.01426 |