

Supporting Information

Aspect Ratio Control of TaS₂ Nanosheets: A Methodology for Room Temperature Formaldehyde Gas Sensing Performance Optimization

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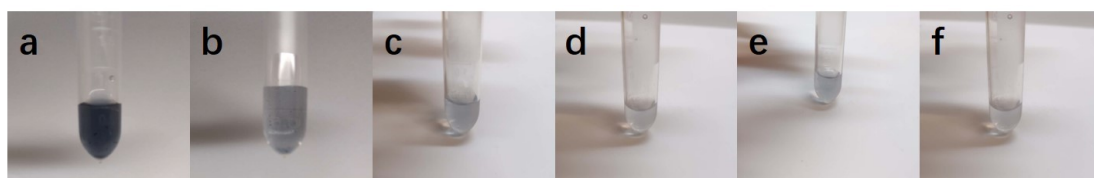


Figure S1. TaS₂ nanosheet dispersions synthesized using different centrifugation rates: (a) 2 krpm, (b) 4 krpm, (c) 6 krpm, (d) 8 krpm, (e) 10 krpm and (f) 12 krpm.

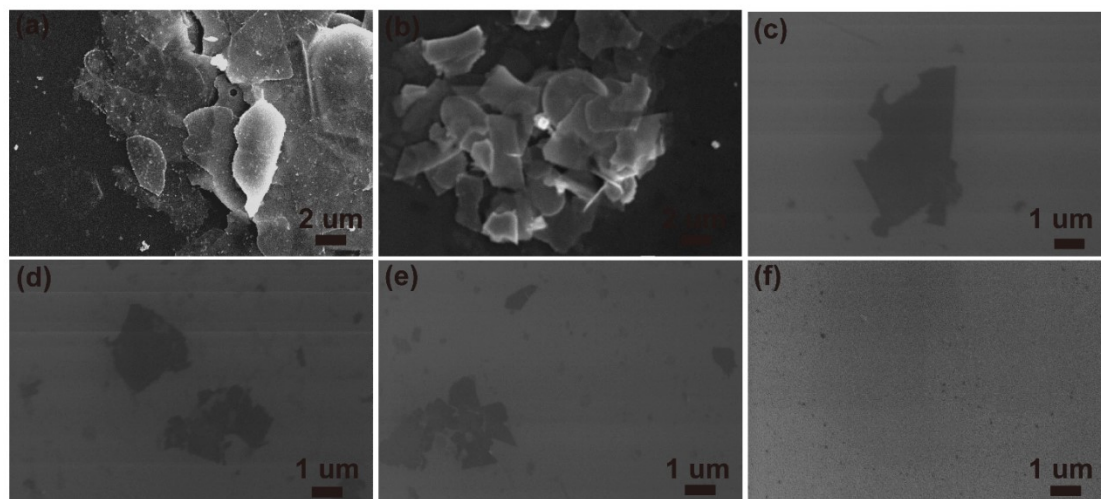


Figure S2. SEM images of TaS₂ nanosheet dispersions synthesized under different centrifugation rates: (a) 2 krpm, (b) 4 krpm, (c) 6 krpm, (d) 8 krpm, (e) 10 krpm and (f) 12 krpm.

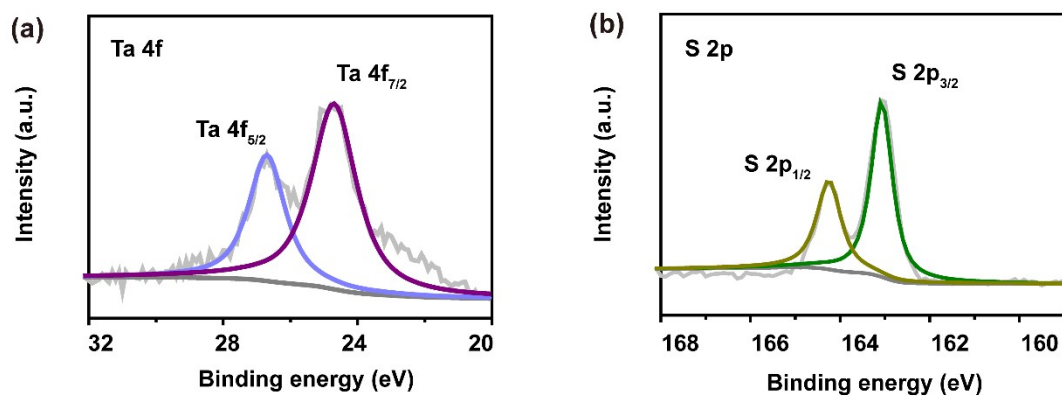


Figure S3. XPS spectra of TaS₂ nanosheet under 6 krpm: (a) Ta 4f and (b) S 2p.

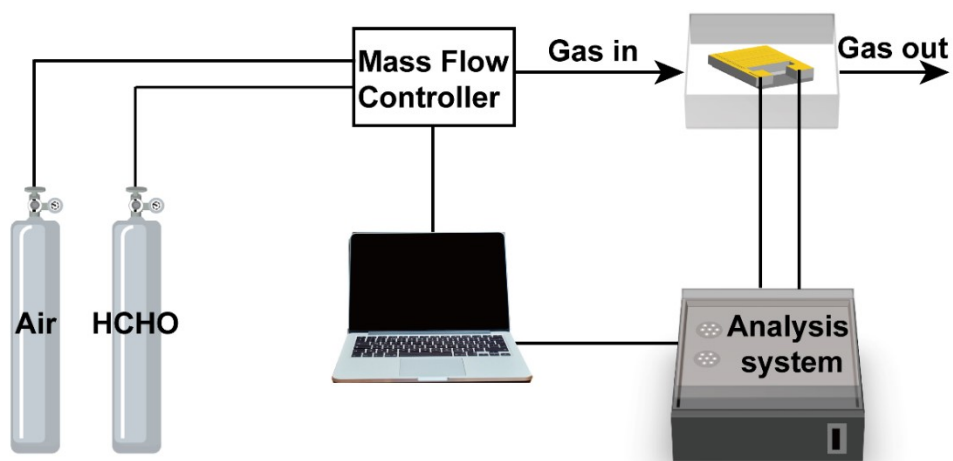


Figure S4. Schematic of custom gas testing system.

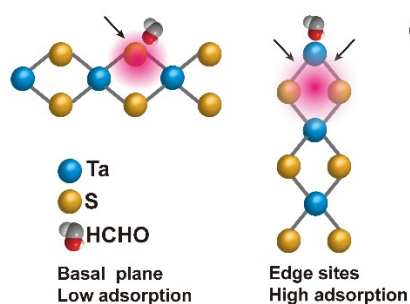


Figure S5. Schematic illustration of gas adsorption mechanism on edge sites and the basal plane of TaS₂.

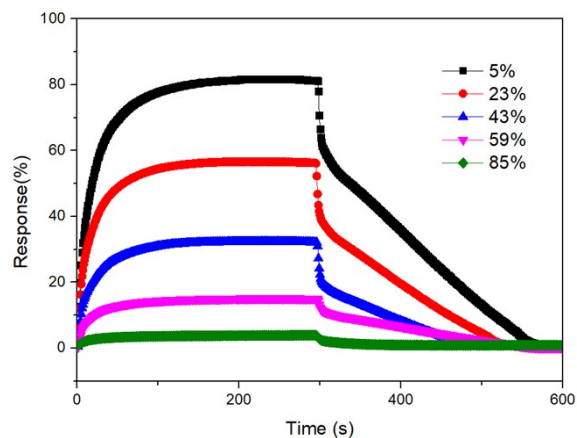


Figure S6. Dynamic responses for the 6k sensor towards 10 ppm formaldehyde under different relative humidities.

Samples	2k	4k	6k	8k	10k	12k
Response time (s)	49	57	68	72	81	92
Recovery time (s)	207	216	222	235	256	268

Table S1. Comparison table of response and recovery times.