

Yarn-based superhydrophobic wearable sensors for ammonia gas detection at room temperature

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Table S1 ZS/Mn-NPs with different contents of ZnO and MnCl₂·4H₂O besides a fixed content of SnCl₄·5H₂O

Sample	Contents/(g per 30 mL)		
	ZnO	SnCl ₄ ·5H ₂ O	MnCl ₂ ·4H ₂ O
ZS	0.030	1.240	0
ZS/Mn Z0	0	1.240	0.040
ZS/Mn Z1	0.005	1.240	0.040
ZS/Mn Z2	0.010	1.240	0.040
ZS/Mn Z3	0.015	1.240	0.040
ZS/Mn Z4	0.030	1.240	0.040
ZS/Mn Z5	0.050	1.240	0.040
ZS/Mn Z6	0.070	1.240	0.040

Table S2 ZS/Mn-NPs with different contents of SnCl₄·5H₂O and MnCl₂·4H₂O besides a fixed content of ZnO

Sample	Contents/(g per 30 mL)		
	ZnO	SnCl ₄ ·5H ₂ O	MnCl ₂ ·4H ₂ O
ZS	0.030	1.240	0
ZS/Mn S0	0.030	0	0.040
ZS/Mn S1	0.030	0.310	0.040
ZS/Mn S2	0.030	0.620	0.040
ZS/Mn S3	0.030	0.930	0.040
ZS/Mn S4	0.030	1.240	0.040
ZS/Mn S5	0.030	2.480	0.040

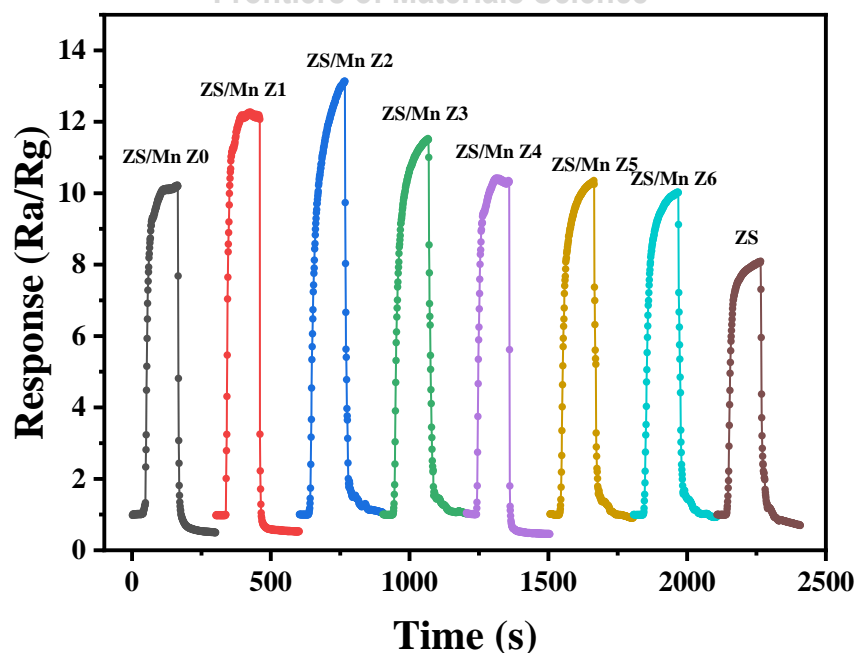


Fig. S1 Response-time plots of gas-sensitive materials listed in Table S1.

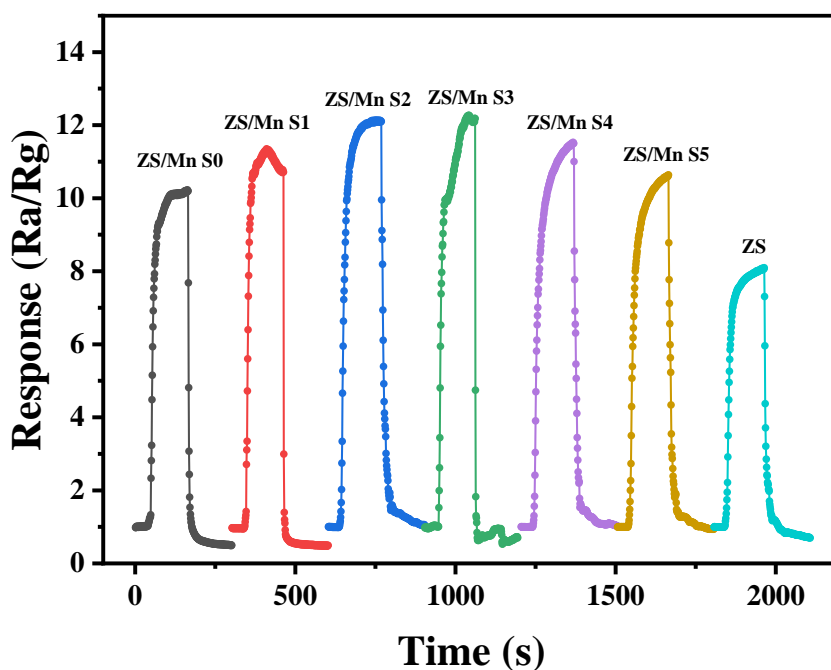


Fig. S2 Response-time plots of gas-sensitive materials listed in Table S2.

The ammonia responses of gas-sensitive materials hydrothermally synthesized with different compositions (Tables S1 and S2) were tested under room temperature conditions with the ammonia concentration of 100 ppm and the relative humidity of 50%, and the results are shown in Figs. S1 and S2. It can be detected that the optimization of compositions improved the response of the gas-sensitive material, and the optimal ratios were selected for further test and analysis. Meanwhile, the responses of Mn-doped ZS/Mn towards ammonia gas are all larger than those of ZS with the same mass ratio, verifying that the doping of Mn in the ZnO/SnO₂ metal-oxide semiconductor heterojunction nanomaterial can effectively improve its response sensitivity towards ammonia gas.