

Supporting Information

Controlled Synthesis of Pyrochlore Pr₂Sn₂O₇ Nanospheres with Enhanced Gas Sensing Performance†

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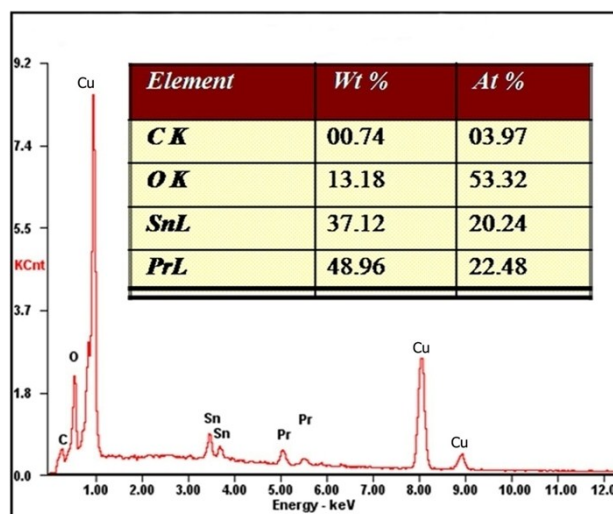


Fig.S1 EDS spectra of the synthesized $\text{Pr}_2\text{Sn}_2\text{O}_7$ nanospheres.

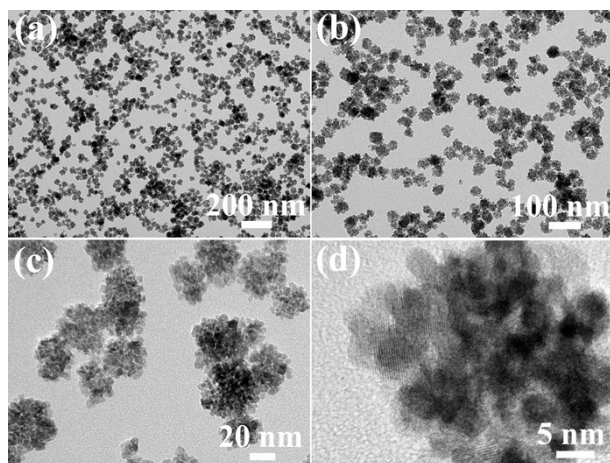


Fig. S2 TEM images of the Pr₂Sn₂O₇ nanospheres at different magnifications.

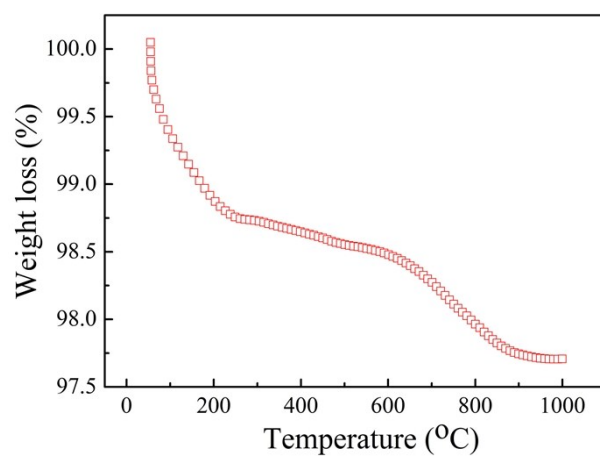


Fig.S3 TG curve of Pr₂Sn₂O₇ nanospheres obtained in nitrogen atmosphere, with heating rate 10 °C min⁻¹.

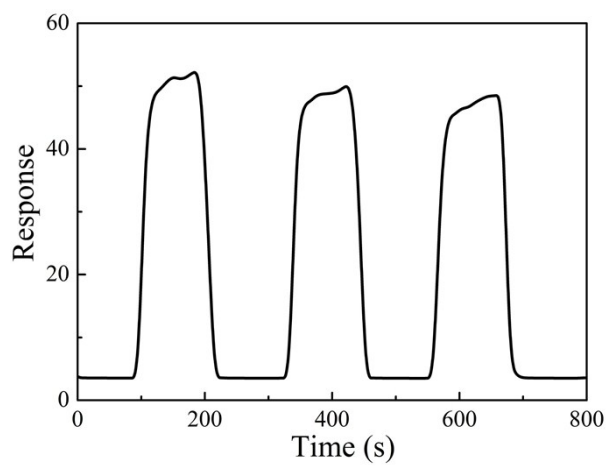


Fig.S4 The repeatability of $\text{Pr}_2\text{Sn}_2\text{O}_7$ nanospheres sensor for ethanol gas of 100 ppm at 300 °C.

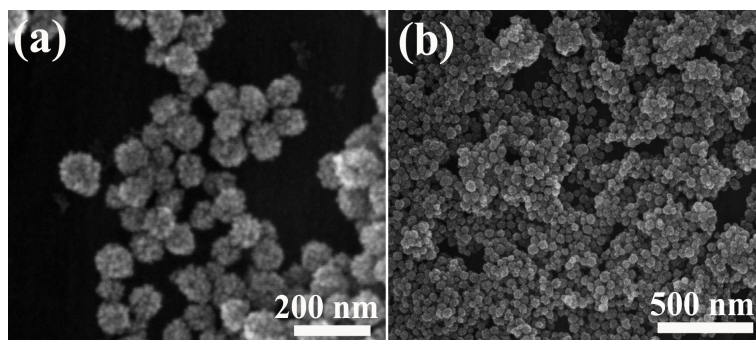


Fig. S5 SEM images of the Pr₂Sn₂O₇ nanospheres after 300 °C heat treatment for 2 h at different magnifications.

Table S1 Nitrogen adsorption–desorption isotherm liner plot of Pr₂Sn₂O₇ nanospheres

Adsorption		Desorption	
Relative Pressure (P/Po)	Quantity Adsorbed (cm ² /g STP)	Relative Pressure (P/Po)	Quantity Adsorbed (cm ² /g STP)
0.00996059	12.7911	0.991791	166.68
0.0329375	15.7007	0.988504	160.086
0.0628705	17.8313	0.974671	156.022
0.0782717	18.7058	0.956294	148.791
0.0992556	19.7835	0.928524	118.277
0.119252	20.723	0.89873	85.777
0.13916	21.6062	0.878171	72.6089
0.159122	22.4577	0.846042	62.8238
0.179041	23.2804	0.821543	58.4465
0.199059	24.0921	0.805963	56.2807
0.24652	25.9856	0.700898	47.2434
0.298269	28.0511	0.642888	43.9743
0.348695	30.1133	0.605208	42.1102
0.397459	32.1659	0.55307	39.6915
0.447101	34.3406	0.502581	37.407
0.496811	36.6158	0.452875	34.9803
0.546681	38.9702	0.403387	32.0377
0.596154	41.432	0.352854	29.7895
0.646147	44.006	0.302909	27.7249
0.695462	46.7513	0.252213	25.6861
0.74479	49.9184	0.202268	23.6883
0.793441	53.9207	0.142342	21.2114
0.81697	56.4031		
0.845043	60.1689		
0.869163	64.5912		
0.898856	73.1194		
0.923428	86.449		
0.945452	110.381		
0.969142	146.266		
0.990087	158.461		
0.991791	166.68		

Table S2 Nitrogen adsorption–desorption isotherm liner plot of SSR-Pr₂Sn₂O₇ sample

Adsorption		Desorption	
Relative Pressure (P/Po)	Quantity Adsorbed (cm ² /g STP)	Relative Pressure (P/Po)	Quantity Adsorbed (cm ² /g STP)
0.0112434	1.28187	0.993651	31.4288
0.033653	1.54066	0.988011	26.2709
0.0682425	1.7447	0.981452	21.7267
0.079866	1.80536	0.973477	17.8612
0.0998794	1.89402	0.952512	12.9558
0.119843	1.98048	0.920027	9.9453
0.13978	2.06676	0.888043	8.43478
0.15976	2.14873	0.860058	7.56115
0.179735	2.23171	0.833853	6.92251
0.199705	2.3056	0.825893	6.75062
0.249146	2.47897	0.801252	6.3005
0.299315	2.64625	0.705869	5.14557
0.348939	2.82375	0.653153	4.70474
0.398937	2.99699	0.60214	4.33907
0.44866	3.17911	0.551567	4.03148
0.498576	3.36862	0.501546	3.74757
0.548415	3.56794	0.453248	2.97691
0.598209	3.80032	0.382634	2.69093
0.648114	4.07313	0.331686	2.50949
0.697942	4.39281	0.281549	2.33126
0.747616	4.8071	0.231395	2.15699
0.797345	5.36824	0.181274	1.97985
0.819078	5.65939	0.121385	1.76124
0.847989	6.17784		
0.873188	6.78626		
0.89805	7.57056		
0.922208	8.69741		
0.946145	10.4758		
0.973538	15.4263		
0.980134	18.1496		
0.987436	24.0444		
0.993651	31.4288		

Table S3 Nitrogen adsorption–desorption isotherm liner plot of Pr₂Sn₂O₇ nanospheres after 300 °C heat treatment for 2 h

Adsorption		Desorption	
Relative Pressure (P/Po)	Quantity Adsorbed (cm ³ /g STP)	Relative Pressure (P/Po)	Quantity Adsorbed (cm ³ /g STP)
0.0101086	11.3203	0.992679	59.4996
0.033317	13.6929	0.986456	54.6629
0.0637108	15.3816	0.976136	50.9549
0.0786203	16.0428	0.965225	48.701
0.0994729	16.8516	0.954512	47.2392
0.119523	17.5527	0.930613	44.8768
0.13947	18.1958	0.903429	42.9051
0.159555	18.8007	0.878313	41.3353
0.179625	19.3633	0.852411	39.8731
0.199743	19.902	0.827153	38.5272
0.247902	21.0808	0.801779	37.2826
0.300297	22.2249	0.70037	33.151
0.348595	23.1957	0.653764	31.5572
0.39853	24.1398	0.602851	30.0003
0.448288	25.0788	0.552323	28.5886
0.498171	26.0602	0.501849	27.3272
0.547872	27.1457	0.453736	25.7546
0.597698	28.3884	0.402333	24.1001
0.647473	29.8104	0.351871	23.0267
0.697122	31.4451	0.302333	22.0401
0.746695	33.3545	0.251447	20.9478
0.796358	35.582	0.201425	19.7443
0.818787	36.7091	0.141425	18.0851
0.847816	38.274		
0.872678	39.7941		
0.897886	41.4552		
0.922189	43.3181		
0.946806	45.6084		
0.970044	48.7928		
0.978714	50.7409		
0.987424	54.2726		
0.992679	59.4996		