

## Supporting Information

### **Urchin-like ZnO microspheres synthesized by thermal decomposition of hydrozincite as a copper catalyst promoter for Rochow reaction**

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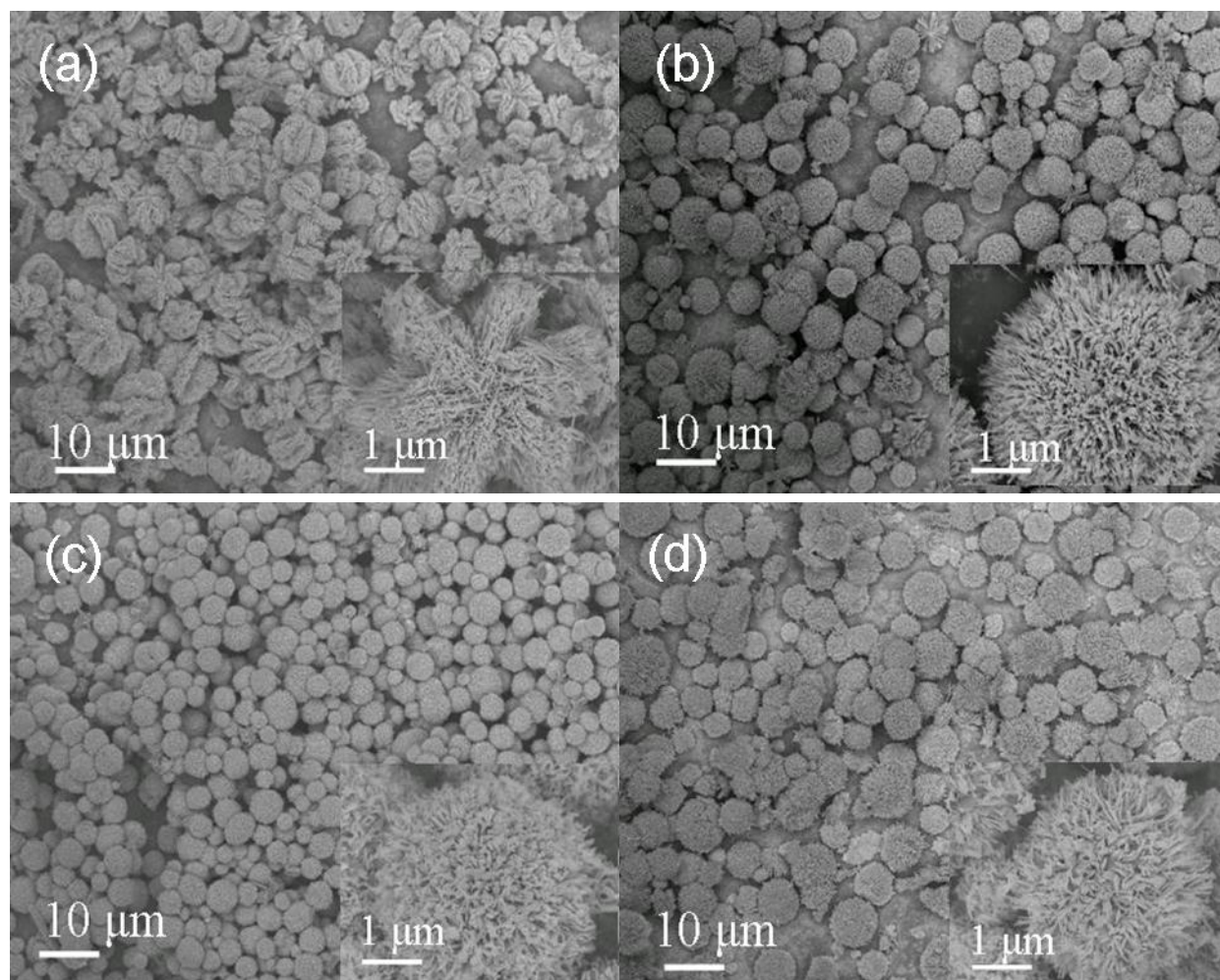
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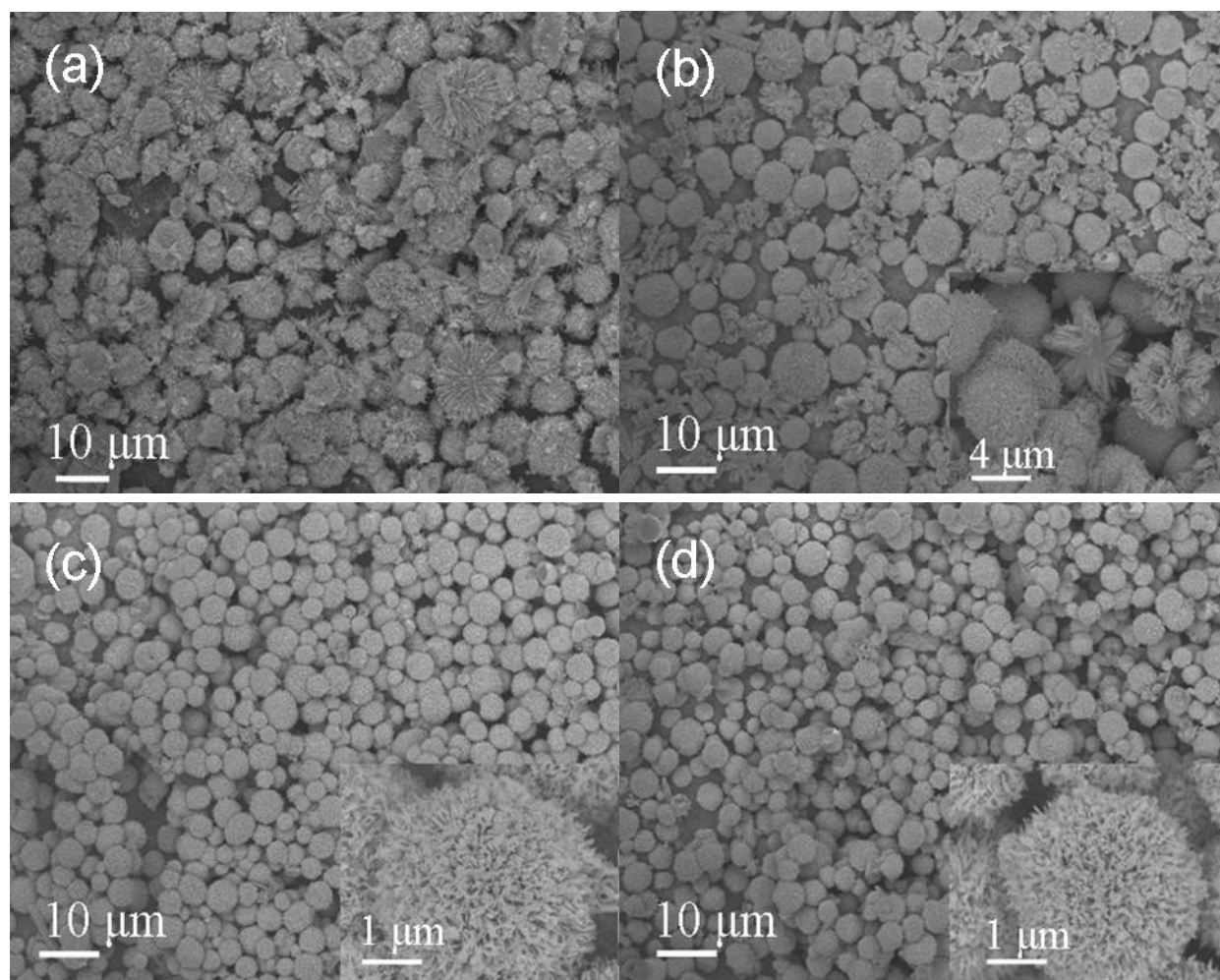
**Table S1** Surface area and the average crystallite size of ZnO samples

Sample	Surface area (m <sup>2</sup> /g)	Average crystal size (nm)	Particle Size (μm)
S1	16.4	21	3 - 8
S2	26.2	23	3 - 8
S3	30.7	23	3 - 8
S4	25.5	25	3 - 8
S5	18.9	28	3 - 8
S6	21.5	28	3 - 8
S7	26.2	23	3 - 8
S8	27.7	23	3 - 8
S9	22.2	28	3 - 8
S10	21.5	28	3 - 8
S11	27.9	21	3 - 8
S12	28.5	23	3 - 8
Commercial Zn	0.6	43	3 - 10
Commercial ZnO	2.1	42	0.2 - 1



**Fig. S1** SEM images of ZnO samples synthesized with different zinc nitrate concentrations: (a) 0.025 M (S1), (b) 0.100 M (S2), (c) 0.150 M (S3) and (d) 0.250 M (S4).

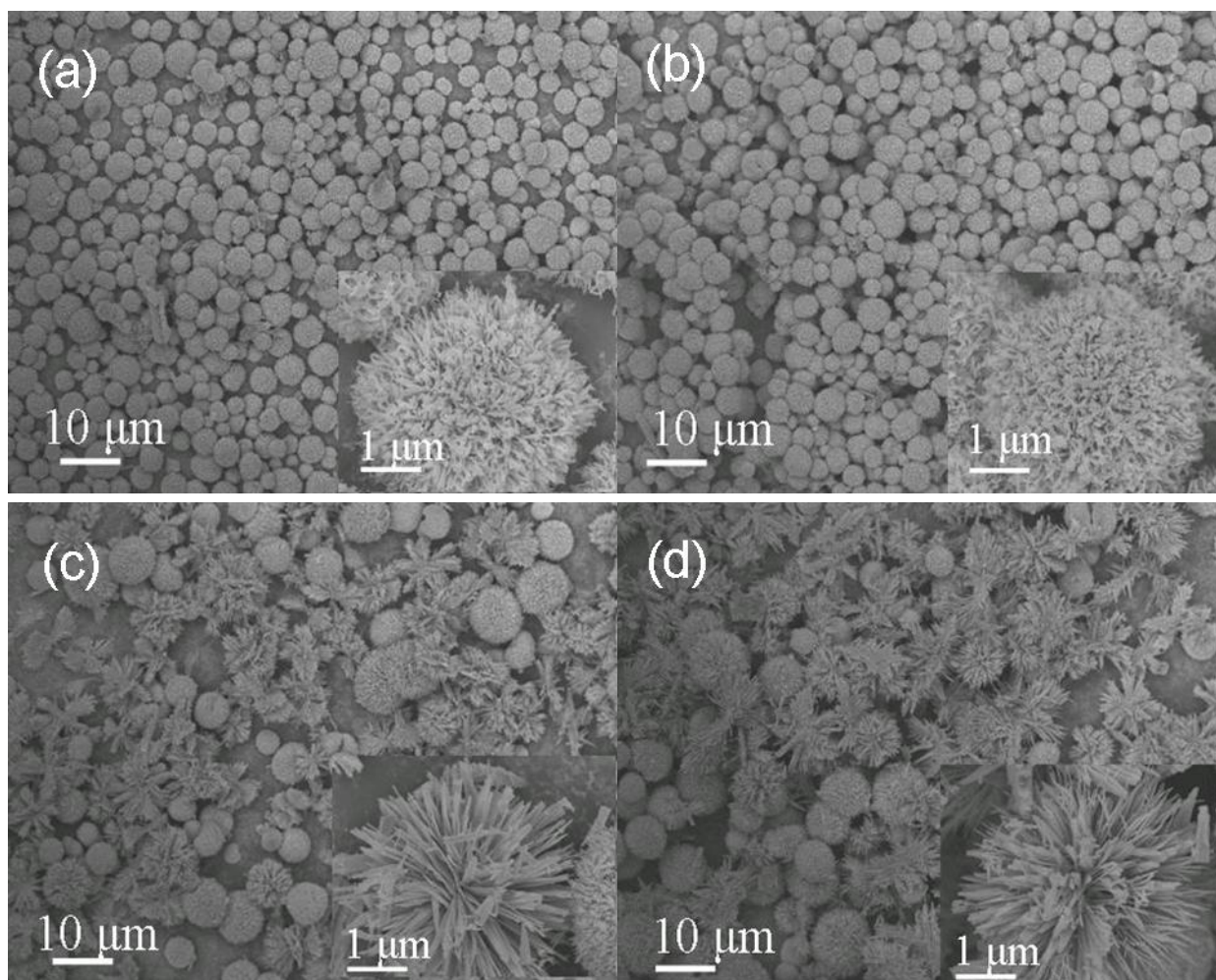
The urchin-like ZnO microspheres with a good crystallinity can be obtained with zinc nitrate concentration of 0.150 M.



**Fig. S2** SEM images of ZnO samples obtained with different PEG amounts: (a) 0 g (S5), (b) 3.0 g (S6), (c) 6.0 g (S3) and (d) 12 g (S7).

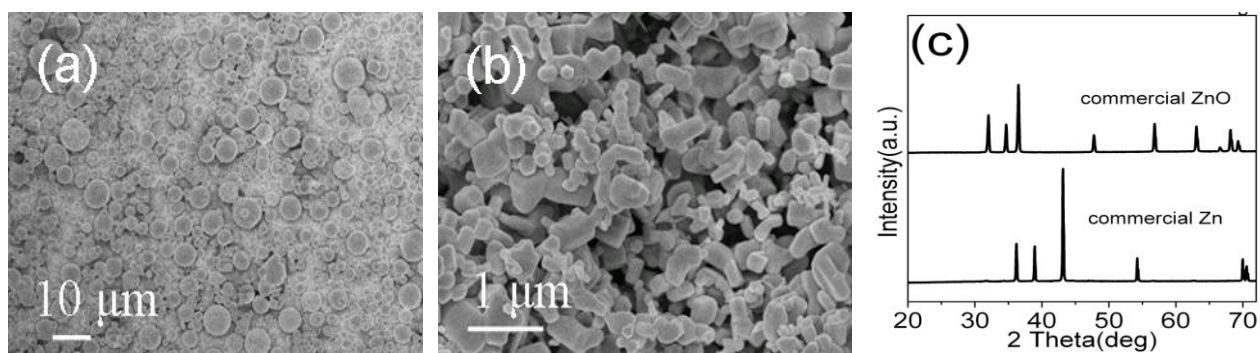
The urchin-like ZnO microspheres can be synthesized with a proper amount of PEG (6.0 – 12.0 g).





**Fig. S3** SEM images of ZnO obtained at different reaction times: (a) 0.25 h (S8), (b) 0.50 h (S3), (c) 1.00 h (S9) and (d) 3.00 h (S10).

The urchin-like ZnO microspheres can be obtained with the reaction time of 0.50 h.



**Fig. S4** SEM images of commercial Zn microspheres (a) and ZnO particles (b), as well as XRD patterns of commercial Zn and ZnO (c).