Fig. S1: SEM image of the urchin-like ZnO/Zn microspheres

Fig. S2: (a) TEM image of the outer shell of the microsphere, (b) SAED pattern of the shell and (c) HR-TEM image of the shell

Fig. S3: (a) UV-vis spectrum and (b) photoluminescence spectrum of the microspheres

Fig. S4: Temperature profile for the formation of the urchin-like microsphere

Fig. S5: SEM images correspond to oxidation of microspheres at various temperatures and dwell times

Fig. S6: (a) Weight gain of the urchin-like microspheres with various oxidation temperatures and dwell times, and (b) the thermogravimetric analysis (TGA) and differential thermal analysis (DTA) of the Zn microspheres with a ramping rate of 5 ^{o}C /minute in air

Supplemental Information

Kirkendall void formation and selective directional growth of urchin-like ZnO/Zn microspheres through thermal oxidation in air

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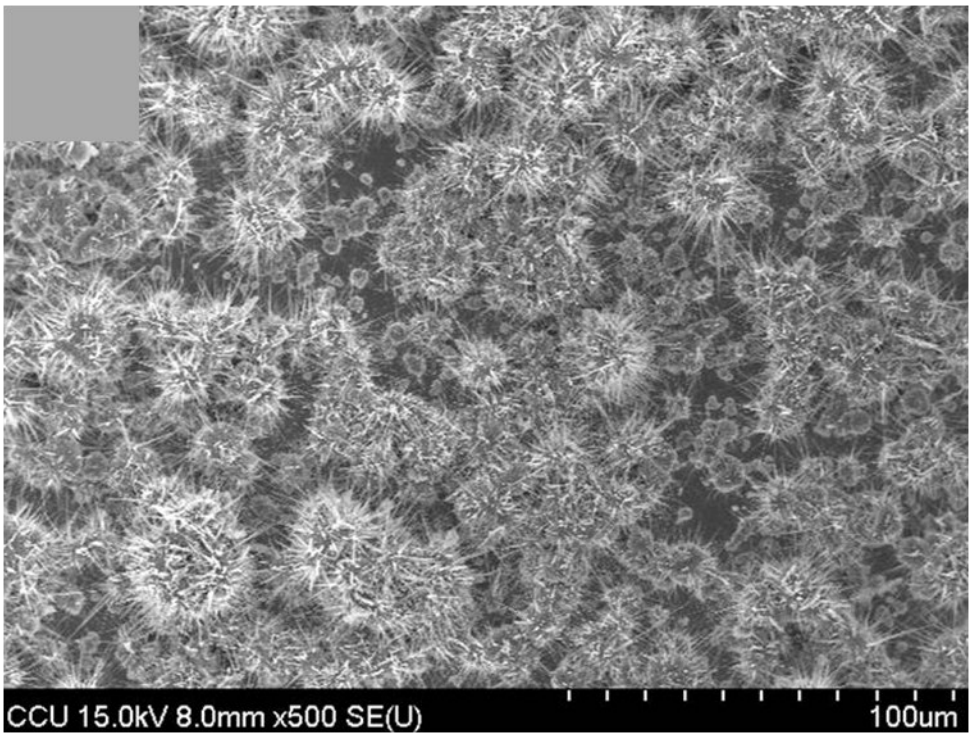


Figure S1: SEM image of the urchin-like ZnO/Zn microspheres

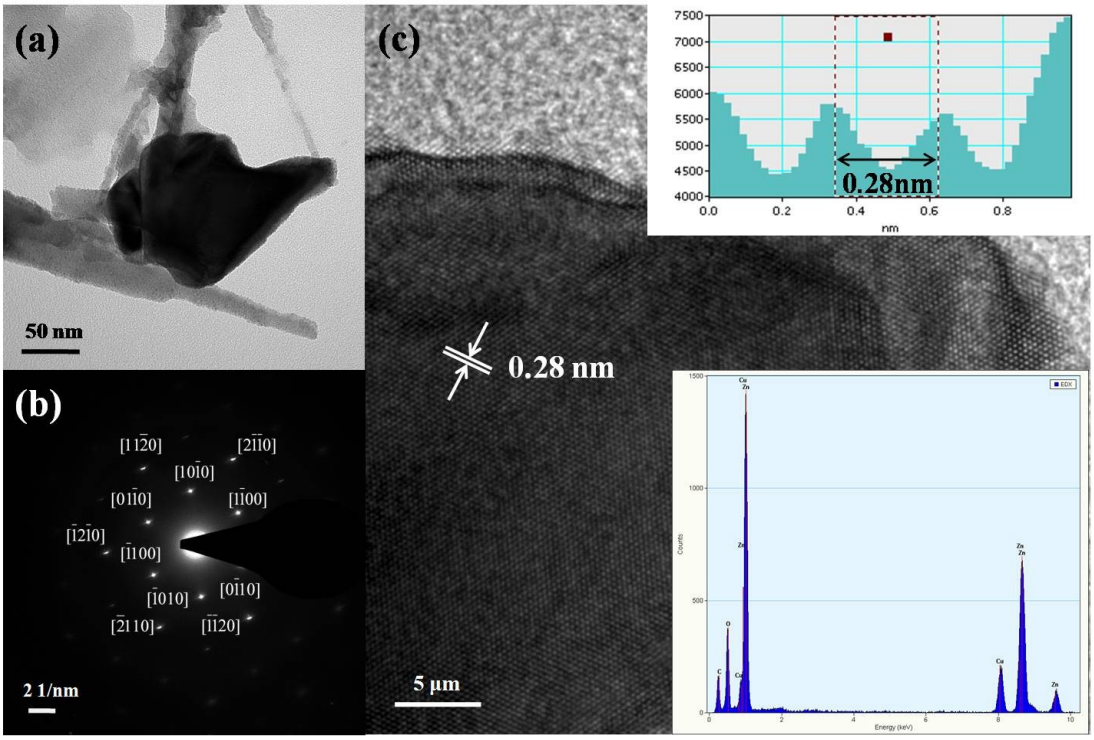


Figure S2: (a) TEM image of the outer shell of the microsphere, (b) SAED pattern of the shell, and (c) HR-TEM image of the shell

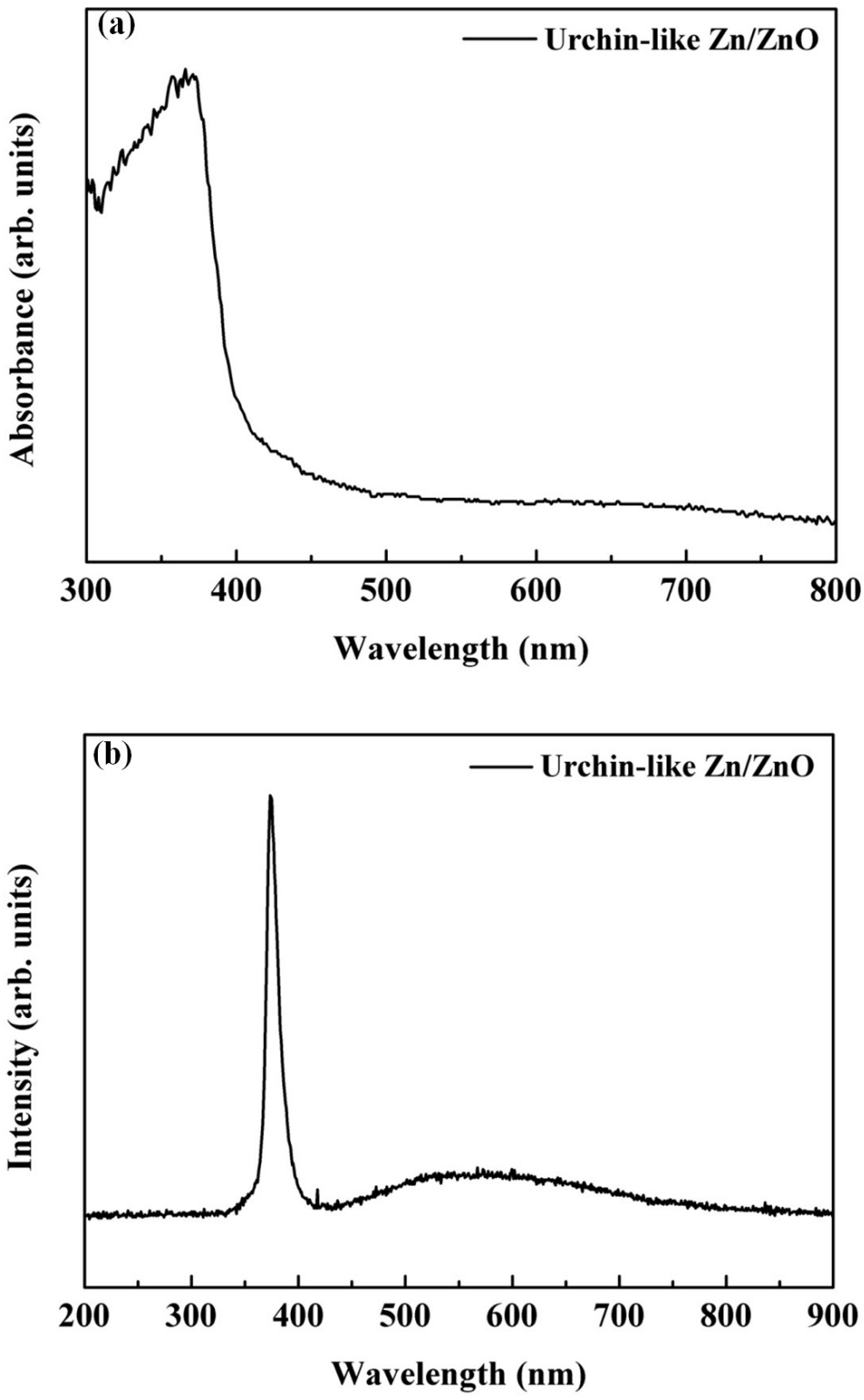


Figure S3: (a) UV-vis spectrum and (b) photoluminescence spectrum of the microspheres

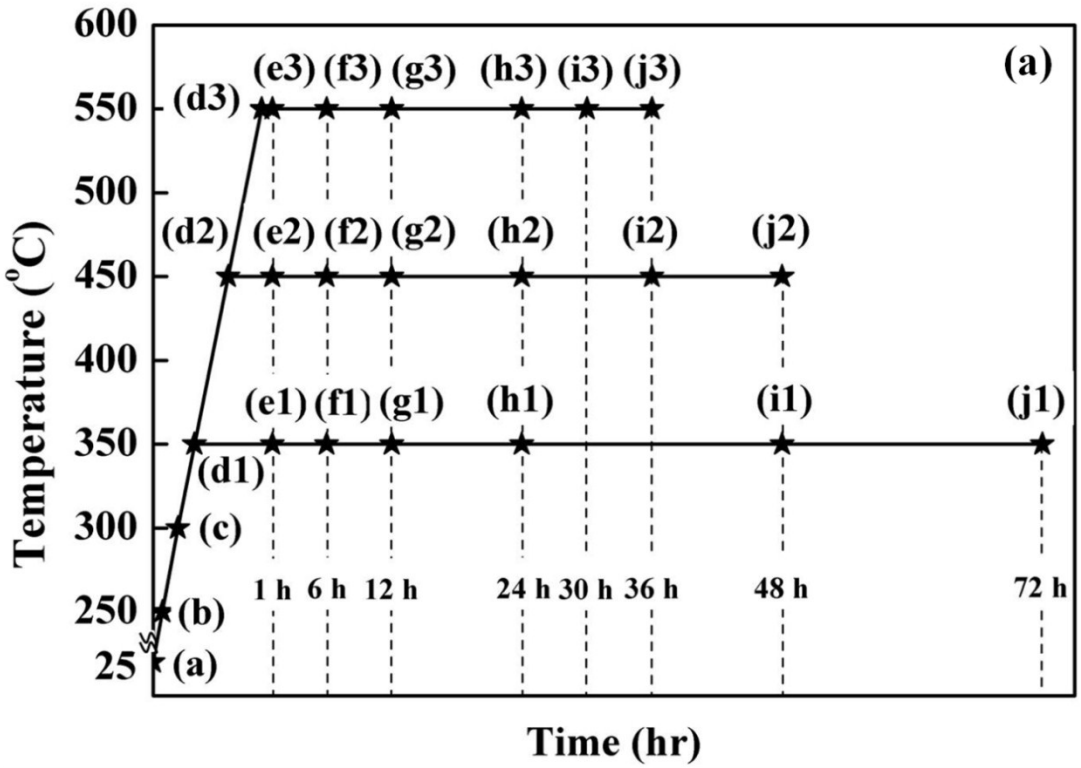


Figure S4: Temperature profile for the formation of the urchin-like microsphere

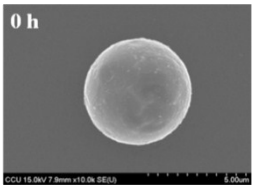
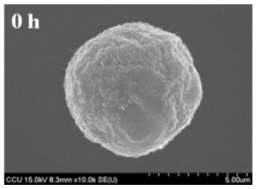
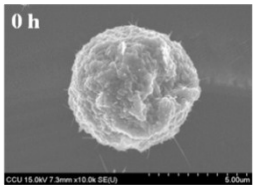
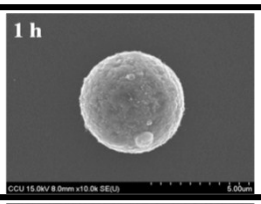
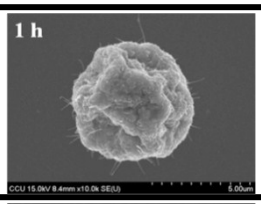
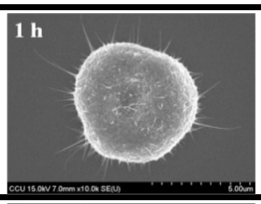
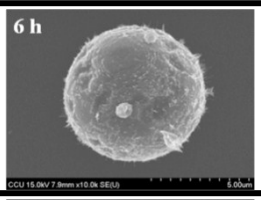
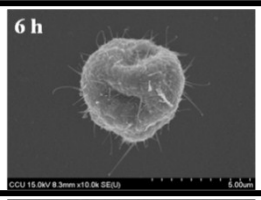
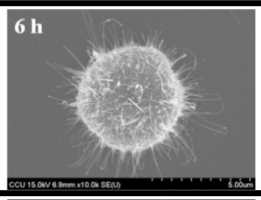
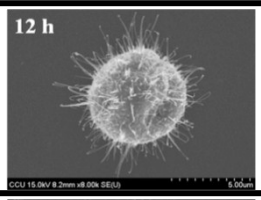
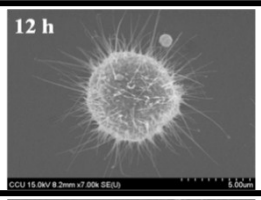
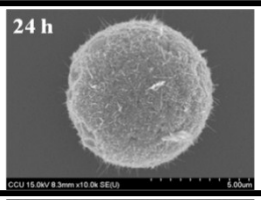
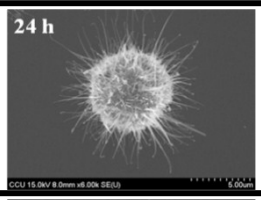
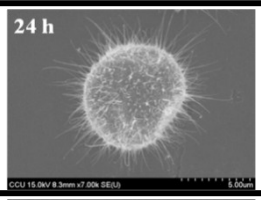
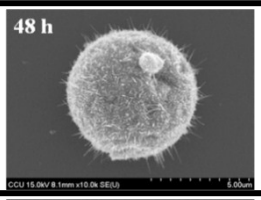
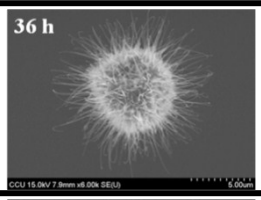
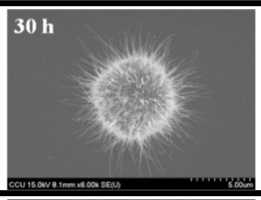
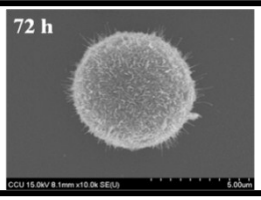
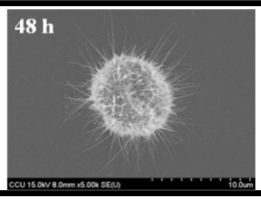
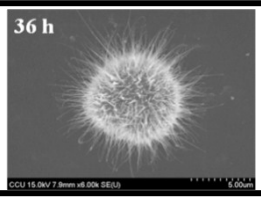
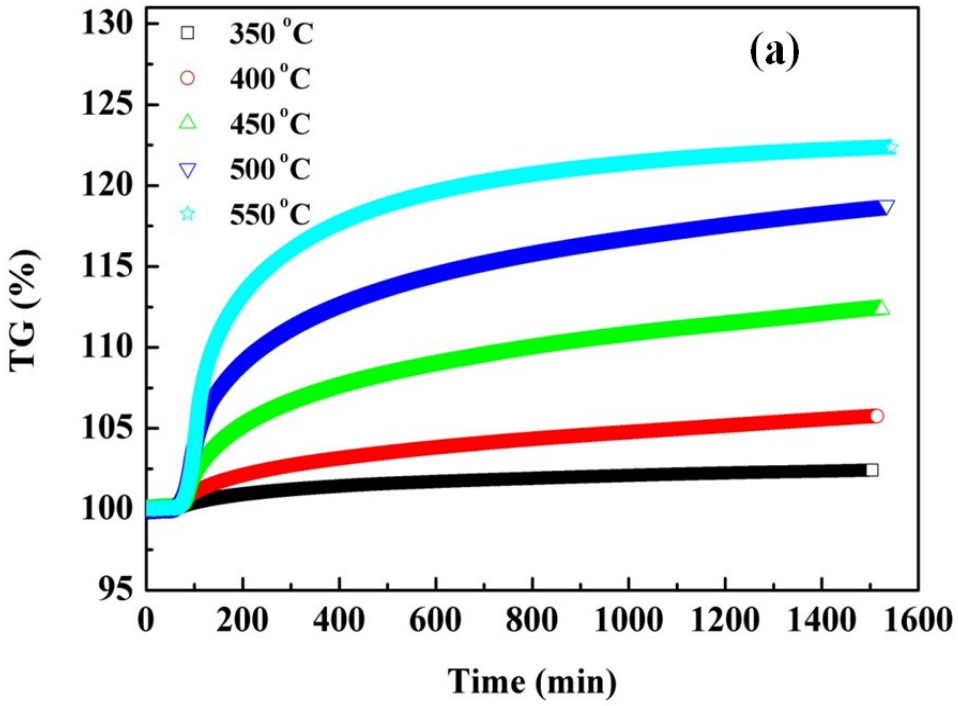
No.	350 °C	No.	450 °C	No.	550 °C
d1		d2		d3	
e1		e2		e3	
f1		f2		f3	
g1		g2		g3	
h1		h2		h3	
i1		i2		i3	
j1		j2		j3	

Figure S5: SEM images correspond to oxidation of microspheres at various temperatures and dwell times



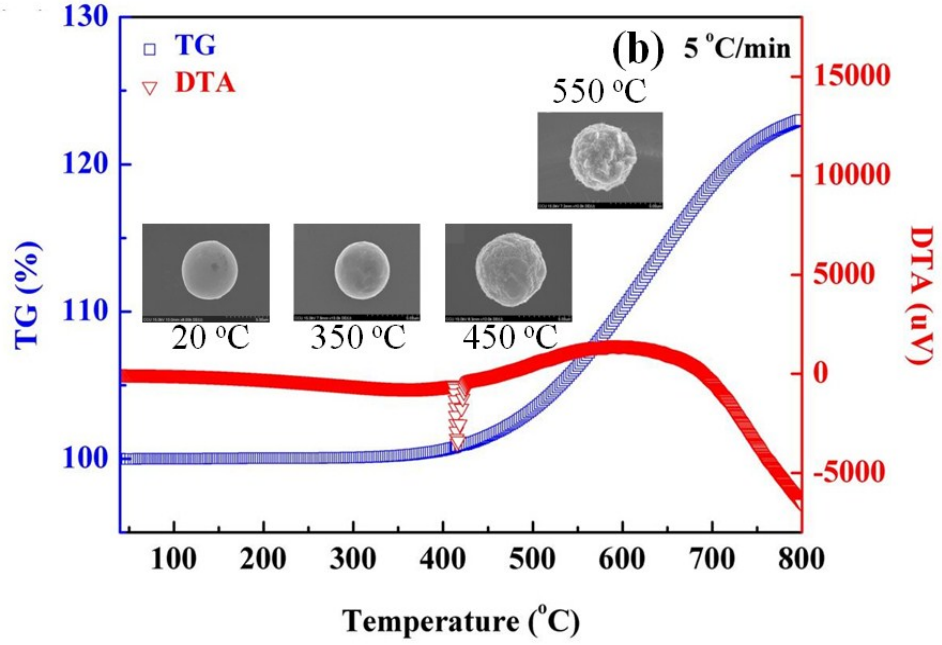


Figure S6: (a) Weight gain by the urchin-like microspheres with various oxidation temperatures and dwell times, and (b) the thermogravimetric analysis (TGA) and differential thermal analysis (DTA) of the Zn microspheres with a ramping rate of 5 °C/minute in air