Electronic Supplementary Information

Microwave Synthesis of Zinc Sulfite and Porous Zinc Oxide Microrods

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Experimental section

Materials

$ZnSO_4 \cdot 7H_2O$ (analytical grade) was purchased from Tianjin Bodi Chemical Co., Ltd., China; ethanediamine（EDA）(analytical grade) was obtained from Tianjin Hengxing Reagent Co., Ltd., China; ethylene glycol (EG) (analytical grade) were obtained from Tianjin Damao Reagent Co., China; and polyvinylpyrrolidone (PVP, MW=3000) (analytical grade) were obtained from Sinopharm Chemical Reagent Co., Ltd., China. All the reagents were used as obtained.

Characterization

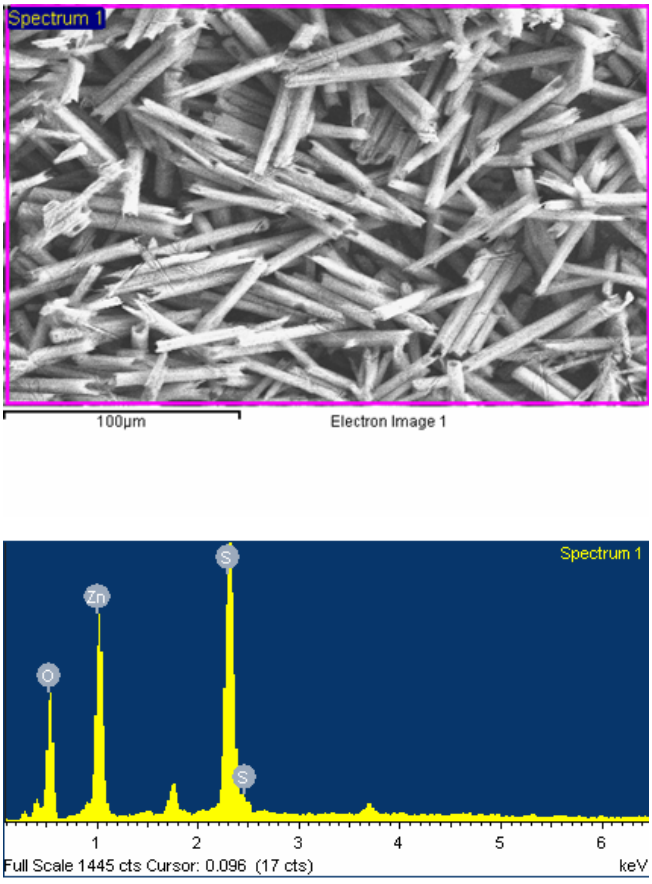
X-ray diffraction (XRD) of as-prepared ZnO was recorded on a Bruker D8-Advance powder X-ray diffraction with Cu Kα radiation (λ=1.5418Å) from 20° to 80° at a scanning rate of 2.4°/min. X-ray tube voltage and current were set at 40 KV and 40 mA, respectively. Scanning electron microscopy (SEM) was carried out on an S4800 scanning electron microscope (Hitachi, Japan). And the samples were prepared by dropping 10μL of $ZnSO_3$ and ZnO dispersed in ethanol onto a silicon chip. UV-Visible spectra were recorded with a U-4100 UV-Visible spectrophotometer (Hitachi, Japan) by dropping a few aliquots onto a glass chip and then dried at room temperature.

Synthesis of $ZnSO_3$ and ZnO microrods

In a typical experiment, 25mL EG containing 0.25mmol of $ZnSO_4 \cdot 7H_2O$, 0.5mL EDA and 20mg PVP were added into the 100mL round-bottomed flask. The mixture was radiated in the microwave oven with reflux exchanger equipment under 400 W. When the reaction time was prolonged to 4 min, the $ZnSO_3$ microrods with hexangular section structures were obtained. The white products were separated via centrifugation at 8000 rpm for 1 min. And then, the precipitates were washed with ethanol several times and dispersed in ethanol. The ZnO was prepared by dropping $ZnSO_3$ dispersed in ethanol onto a silicon chip and dried at room temperature, followed by annealing in Muffle Furnaces at 500℃ for 4.5h.

Movie S1 (see attached.)

Description:
The direct evidence of $ZnSO_3$ microrods is anion identification based on the metathesis reaction of inorganic compounds in aqueous medium. The solid microrod sample was dissolved in de-ionized water affording clear solution. Drops of $BaCl_2$ aqueous solution was added and white precipitates appeared. Afterwards, addition of drops of HCl aqueous solution resulted in the dissolution of white precipitate, which is the characteristics of sulfite ions and excludes the existence of sulfate ions.



Element	Weight %	Atomic %
O K	29.16	55.73
S K	22.92	21.85
Zn K	47.92	22.42
Totals	100.00	

Figure S1. SEM images and EDS analysis of the obtained products.

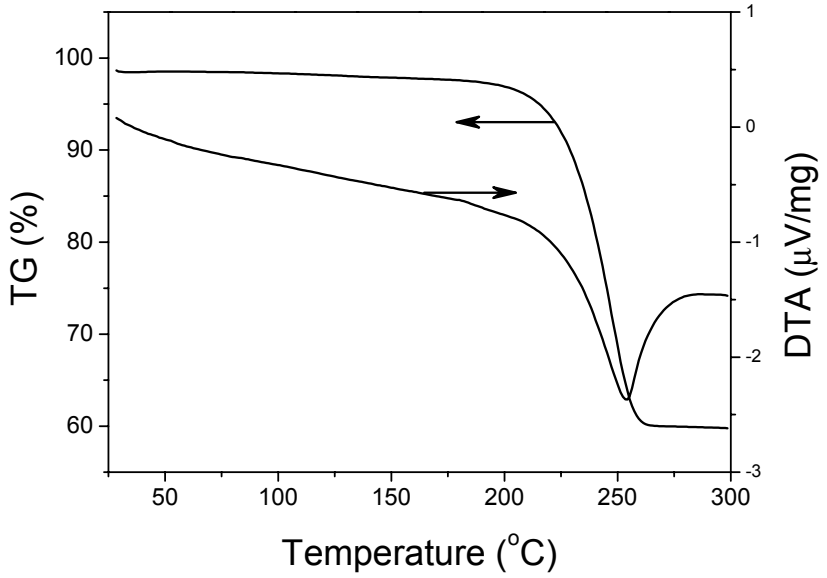


Figure S2. The TG% and DTA curves of $ZnSO_3$ microrods.

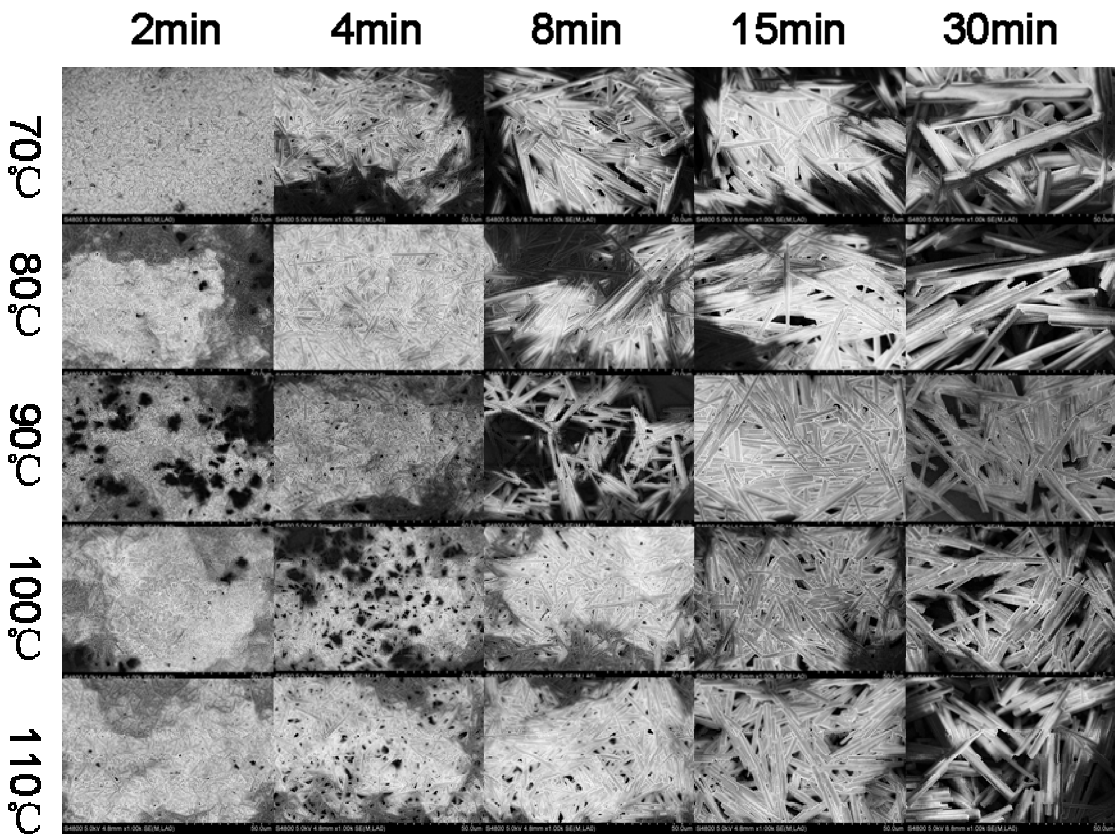


Figure S3. SEM images of the products obtained at different time and different temperature when EDA was changed to 1mL.