

Supplementary information:

Detailed experimental procedure:

In a typical process, 0.15 g of $\text{Bi}(\text{NO}_3)_3 \cdot 5\text{H}_2\text{O}$, 0.04 g of thiourea and 0.05 g of lysozyme were put into a Teflon-lined stainless steel autoclave, followed by filling it with 10.0 g distilled water. The measured pH value was about 3.5 and there was no need to exclude oxygen during our experiments. The autoclave was maintained at 160 °C for 15 h and then cooled to room temperature. The product was collected, filtered and washed with distilled water and absolute alcohol several times, followed by drying at room temperature. The synthesis procedure of bismuth oxide is quite similar to that of the bismuth sulfide but without the addition of thiourea. The synthetic reaction was also carried out in a Teflon-lined stainless steel autoclave under 160 °C hydrothermal conditions for 15 h.

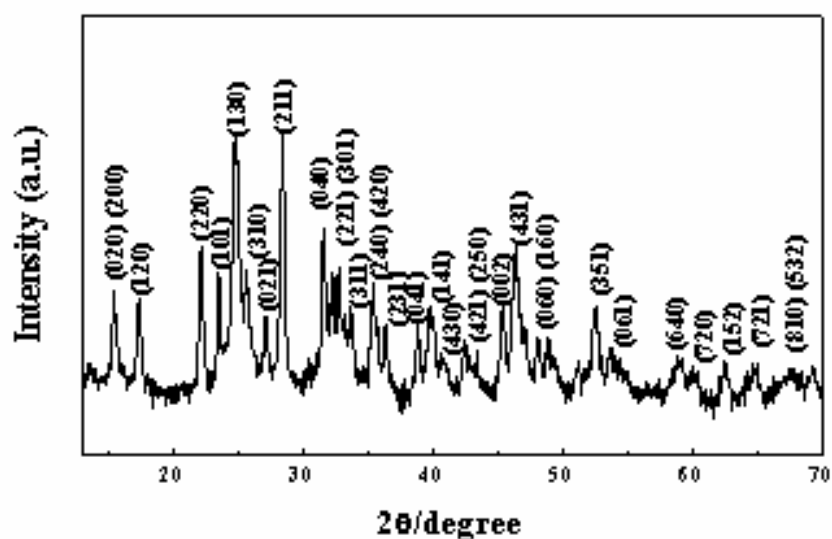


Figure 1. XRD pattern of the obtained bismuth sulfide sample

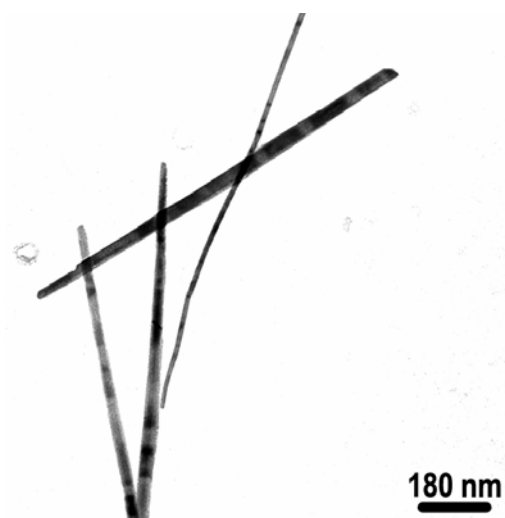
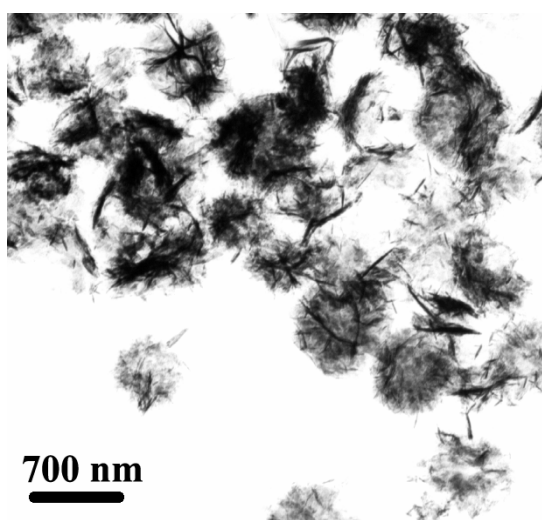
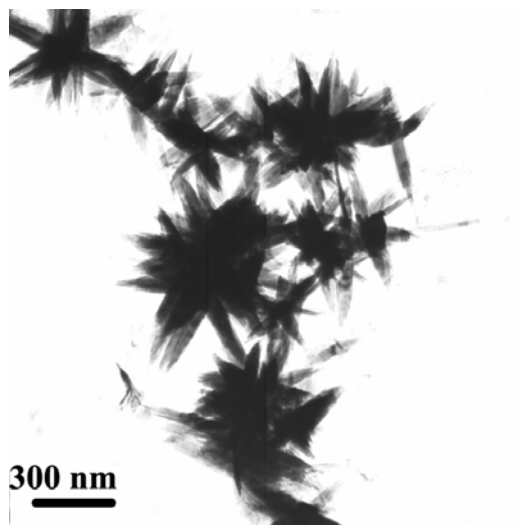


Figure 2. TEM image of the obtained bismuth sulfide sample



(a)



(b)

Figure 3. TEM images of the bismuth sulfide samples prepared under different conditions:
(a) 0.03 g of $\text{Bi}(\text{NO}_3)_3$ and 0.05 g of lysozyme; (b) 0.15 g of $\text{Bi}(\text{NO}_3)_3$ and 0.20 g of lysozyme;