

Electronic supplementary information of the nanuscript “Hydrothermal synthesis of  $\text{Bi}_2\text{Se}_3$  nanosheets by using Gallic acid as a reductant”

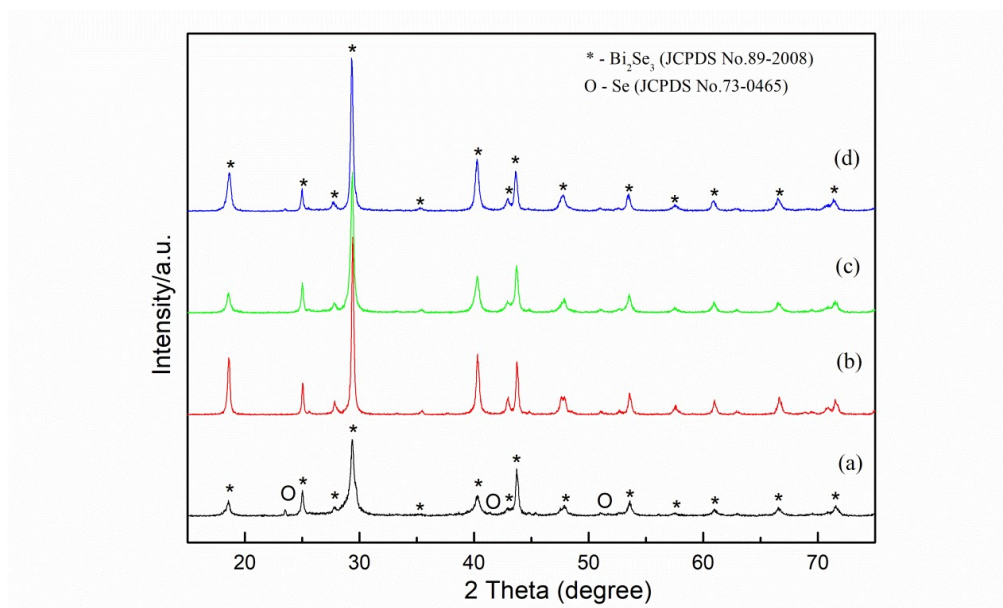


Figure S1. XRD patterns of samples containing different amounts of NaOH

(a) 0.6 g; (b) 1.2 g; (c) 1.8 g; (d) 2.4 g

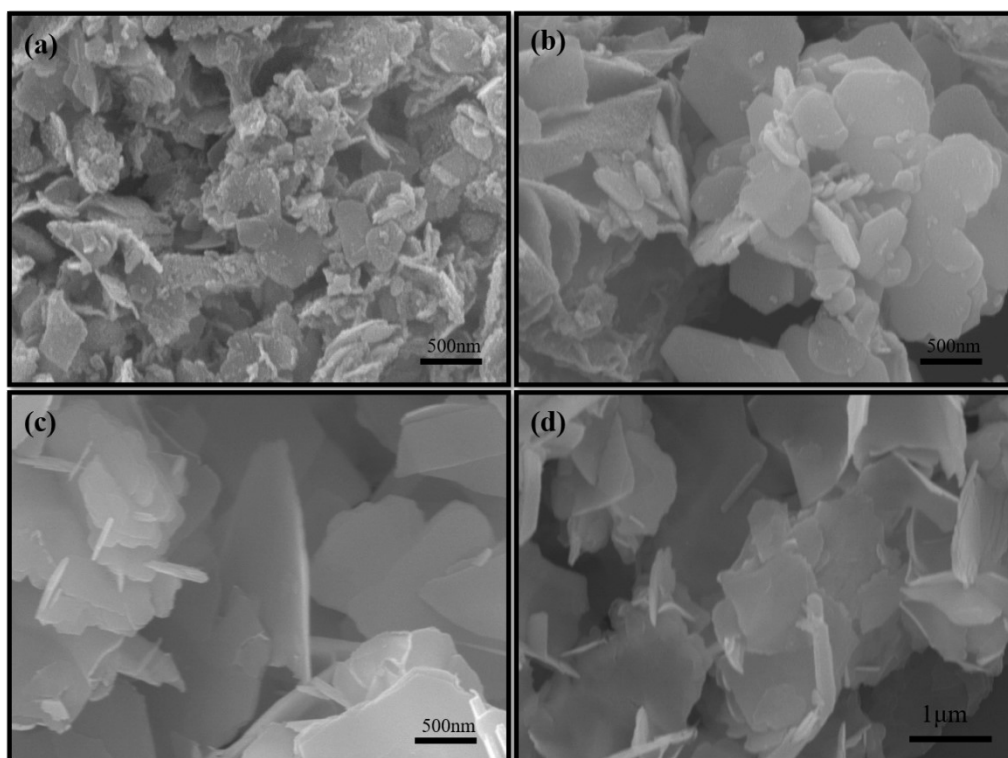


Figure S2. SEM images of  $\text{Bi}_2\text{Se}_3$  containing different amounts of NaOH, (a) 0.6 g; (b) 1.2 g; (c) 1.8 g; (d) 2.4 g. With increasing amount of NaOH, the flat areas of as synthesized  $\text{Bi}_2\text{Se}_3$  nanosheets become larger.

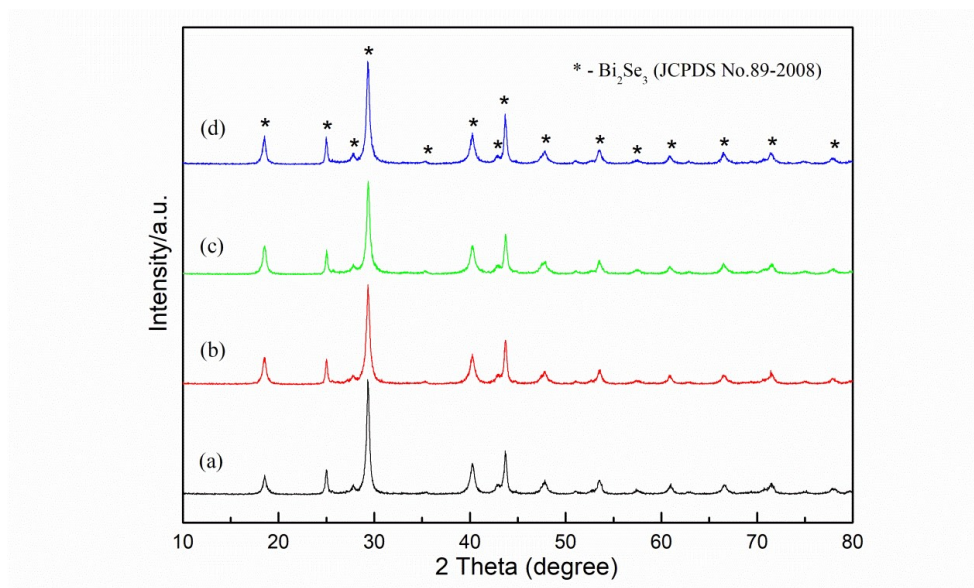


Figure S3. XRD patterns of  $\text{Bi}_2\text{Se}_3$  with various amounts of Triton X-100, (a) 0.05 g; (b) 0.2 g; (c) 0.625 g; (d) 5 g. The phase composition and crystal structure remain unchanged from (a) to (d).

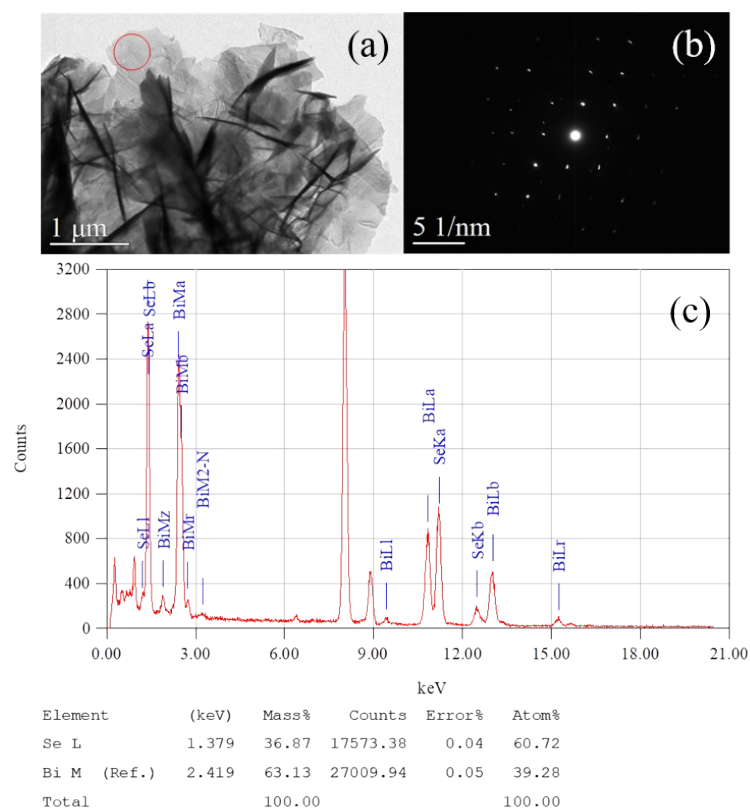


Figure S4. (a) TEM, (b) SAED, and (c) EDS of ultra-thin  $\text{Bi}_2\text{Se}_3$  nanosheets (SAED and EDS were carried out at the red circle indicated in TEM image). The thickness of the ultra-thin nanosheets is a dozen of nanometers, and the nanosheet shows single crystalline feature and perfect element Bi/Se molar ratio of 2/3.