

## Supporting Information

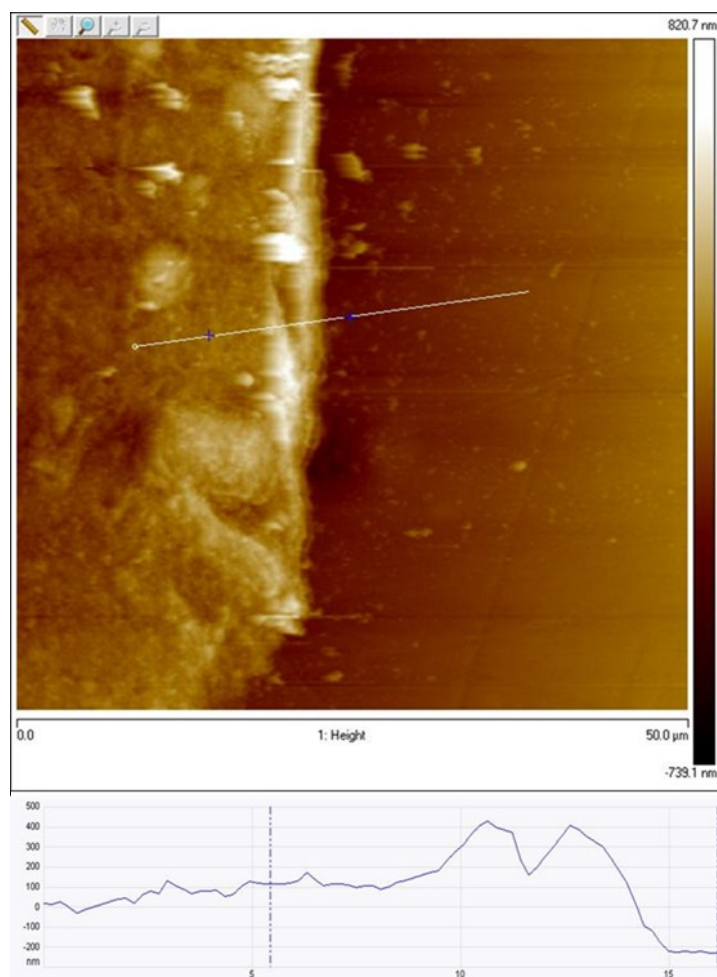


Fig. S1 The AFM image of  $W_{18}O_{49}$  needle film coated on quartz glass and line analysis for determining the thickness.

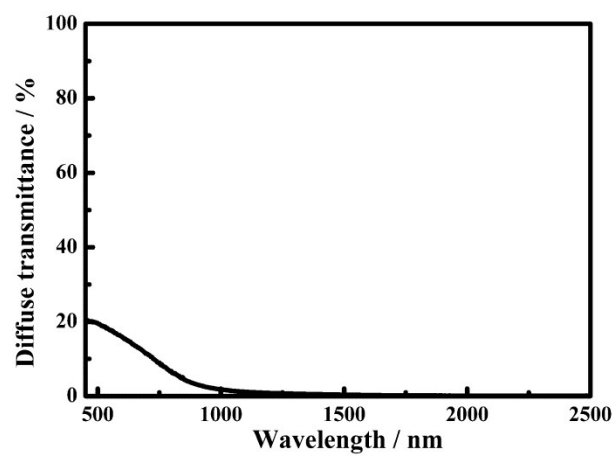


Fig. S2 Diffuse transmittance of  $W_{18}O_{49}$  nanoneedle film

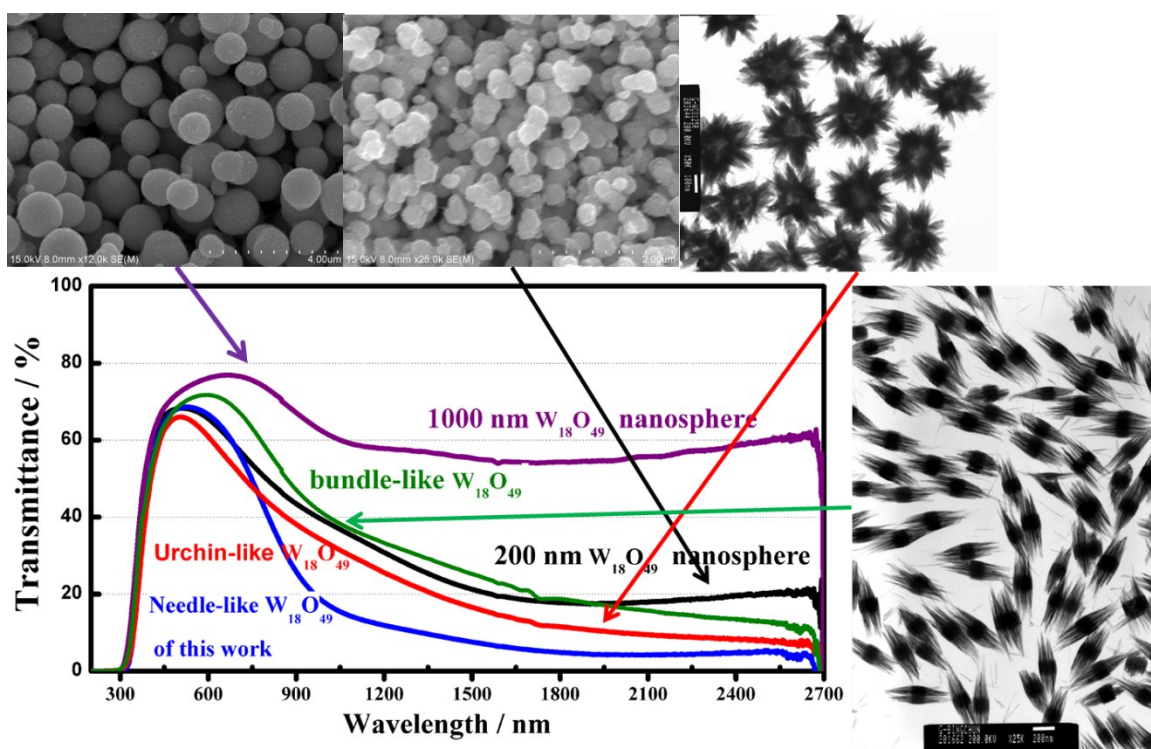


Fig. S3 Comparative study on near shielding properties between needle-like  $W_{18}O_{49}$  of this work and other  $W_{18}O_{49}$  nanostructures. The synthesis method of different shaped  $W_{18}O_{49}$  is according to *Inorg. Chem.* 2012, 51, 4763–4771.

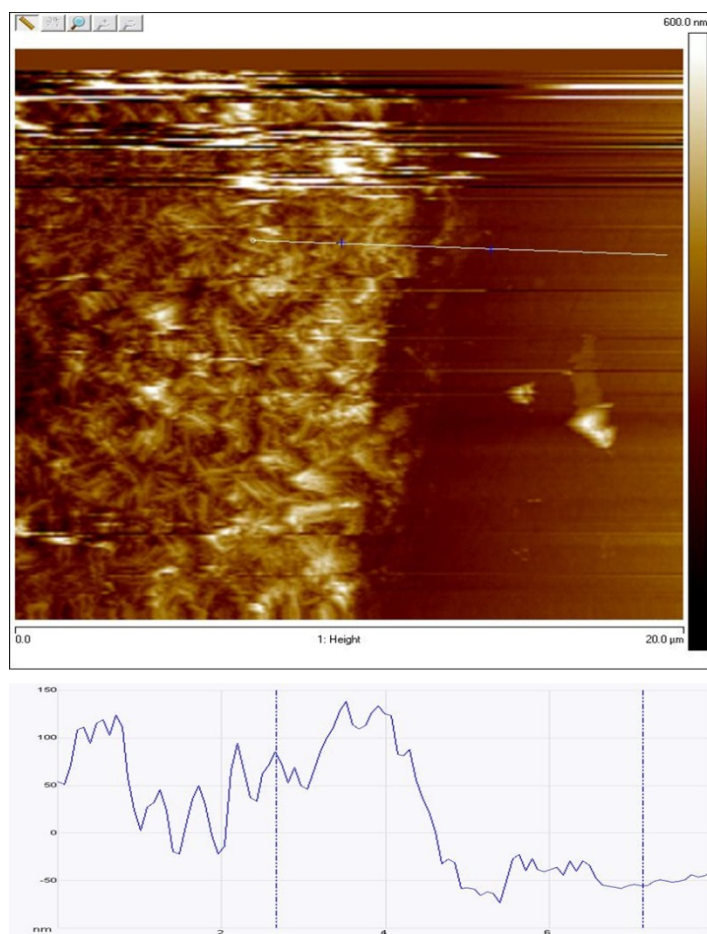


Fig. S4 AFM image of  $W_{18}O_{49}$  needle film deposited by LBL method and corresponding line analysis for determining the thickness.

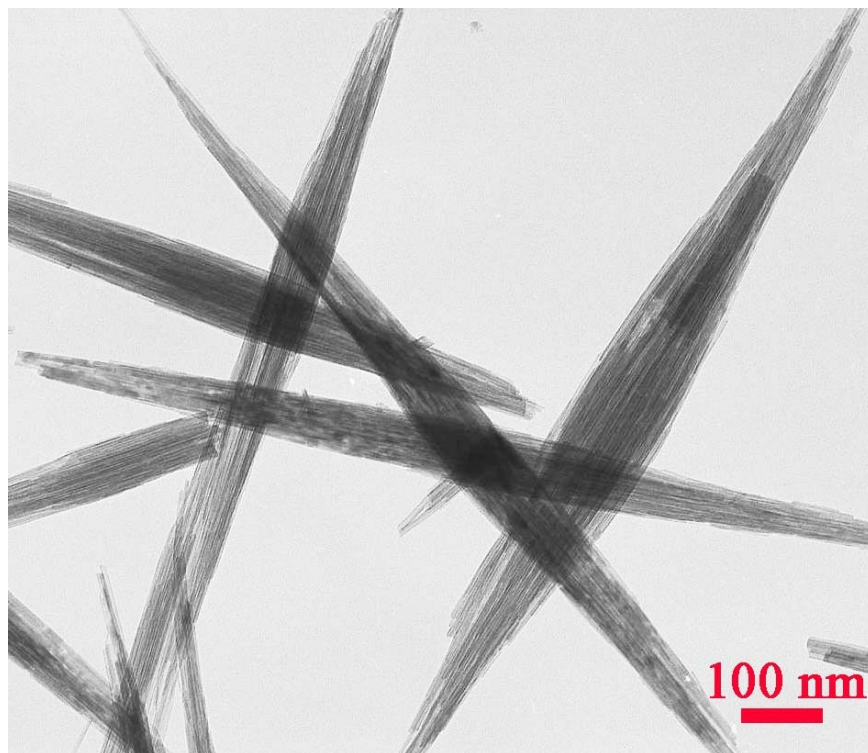


Fig. S5 Enlarged TEM image of needle-like  $\text{W}_{18}\text{O}_{49}$  in this work.