

## Supporting Information for

# Controlled Preparation of High Quality WS<sub>2</sub> Nanostructures by Microwave-Assisted Solvothermal Method

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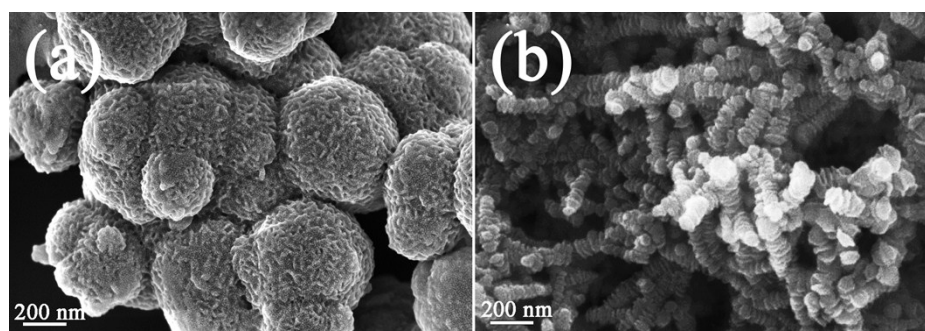
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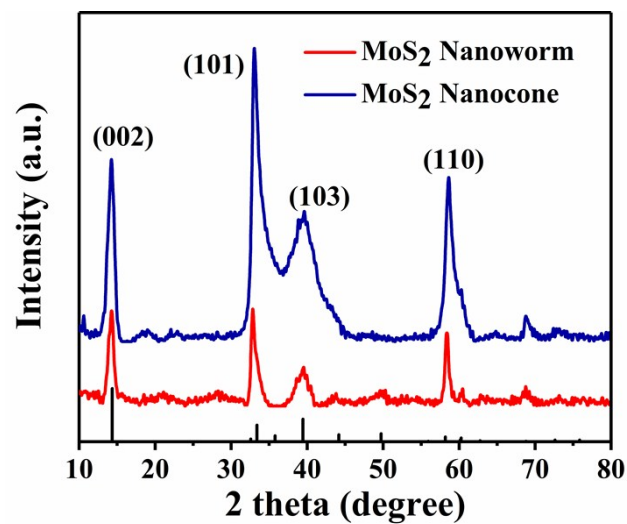
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WS <sub>2</sub> Morphology	Mass of WCl <sub>6</sub> (g)	Mass of S (g)	Volume of NMP (ml)	Temperature (°C)	Reaction Time (h)
Nanoworms	0.112	0.18	30	240	7
Nanosheets	0.446	0.72	30	240	7
Nanocones	0.892	1.44	30	240	7

**Table S1.** The experimental parameters of obtained WS<sub>2</sub> nanostructure.



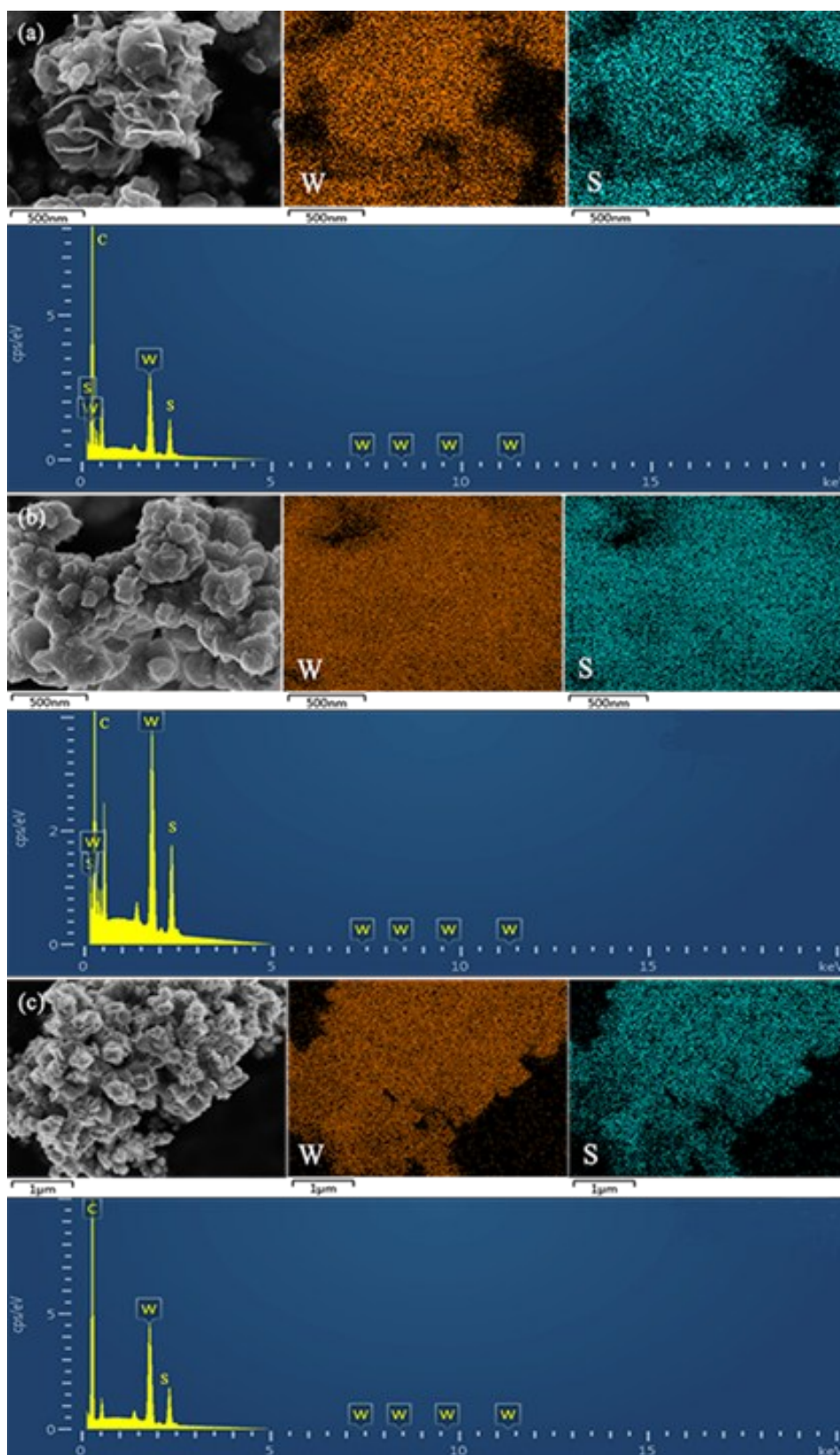
**Figure S1.** SEM images of the (a) MoS<sub>2</sub> nanocones (240 °C, 7h, MoCl<sub>5</sub> 0.614 g, S 1.44 g, NMP 30 ml); (b) hierarchical MoS<sub>2</sub> nanoworms (240 °C, 7h, MoCl<sub>5</sub> 0.077 g, S 0.18 g, NMP 30 ml).



**Fig.S2.** XRD patterns of MoS<sub>2</sub> nanocones and MoS<sub>2</sub> nanoworms.

Elementals	Nanosheets	Nanocones	Nanoworms
W (atom%)	27.03	28.22	36.18
S (atom%)	47.83	48.18	53.25
O (atom%)	25.23	23.6	10.57

**Table S2.** Elemental analyses of WS<sub>2</sub> nanosheets, WS<sub>2</sub> nanocones, and WS<sub>2</sub> Nanoworms.



**Fig.S3.** (a-c) EDS-Mapping of the (a) WS<sub>2</sub> nanosheets, (b) WS<sub>2</sub> nanocones, (c) hierarchical WS<sub>2</sub> nanoworm.

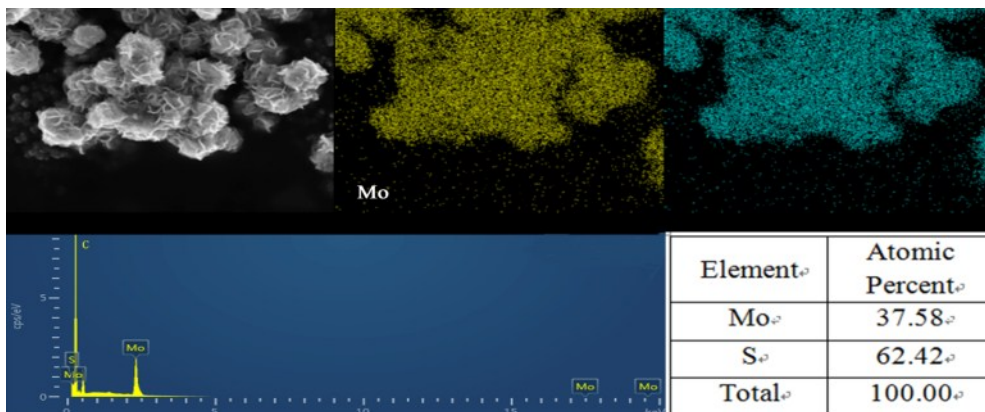


Fig.S4. (a-d) EDS-mapping measurement of MoS<sub>2</sub> nanocones.

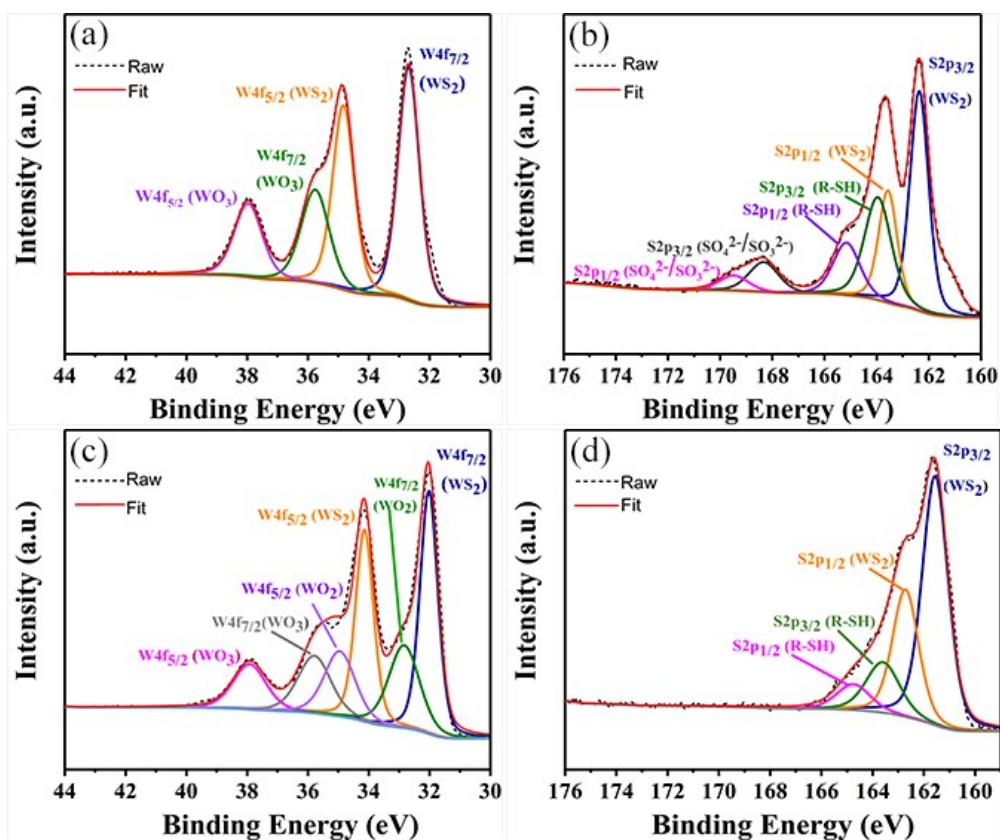
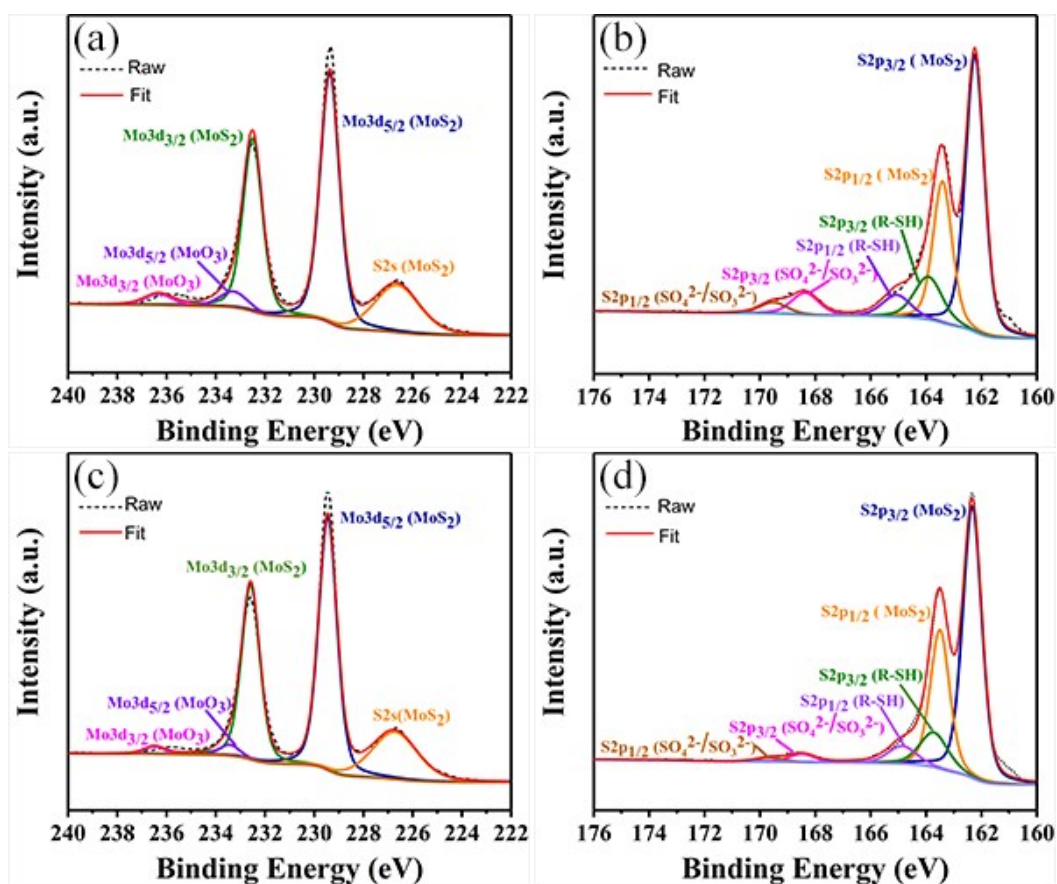


Fig.S5. XPS spectra of WS<sub>2</sub> nanocones and WS<sub>2</sub> nanoworm. (a,c) Elemental XPS spectra of W4f in WS<sub>2</sub> nanocones and WS<sub>2</sub> nanoworm respectively ; (b,d) Elemental XPS spectra of S2p in WS<sub>2</sub> nanocones and WS<sub>2</sub> nanoworm respectively.



**Fig.S6.** XPS spectra of MoS<sub>2</sub> nanocones and MoS<sub>2</sub> nanoworm. **(a,c)** Elemental XPS spectra of Mo3d in MoS<sub>2</sub> nanocones and MoS<sub>2</sub> nanoworm respectively; **(b,d)** Elemental XPS spectra of S2p in MoS<sub>2</sub> nanocones and MoS<sub>2</sub> nanoworm respectively.