

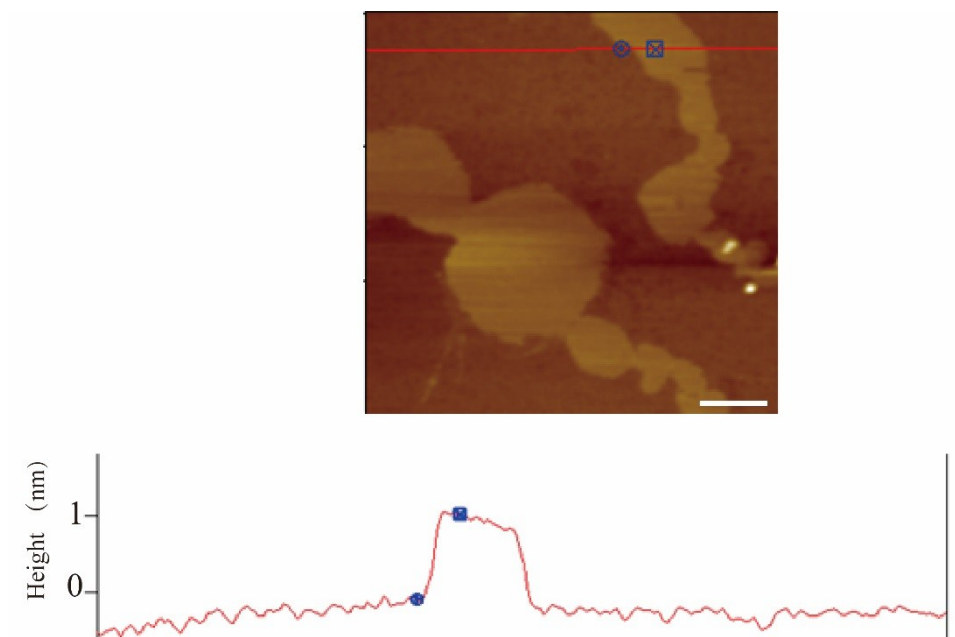
## Supporting Information

### **A negative feedback loop based on proton-driven in situ formation of plasmonic molybdenum oxide nanosheets**

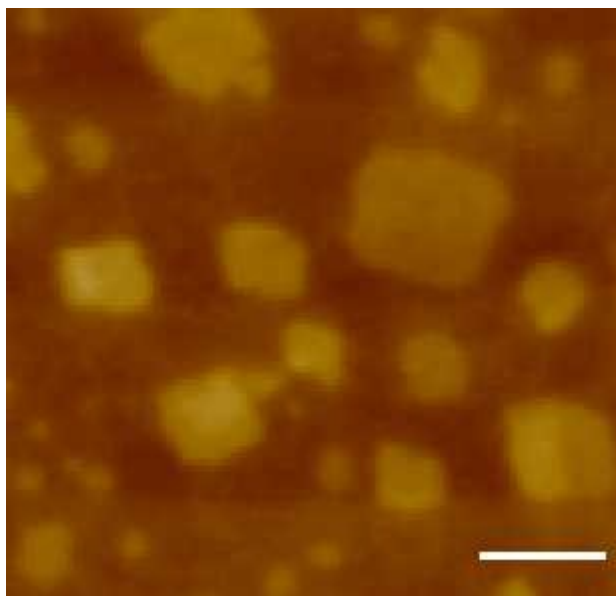
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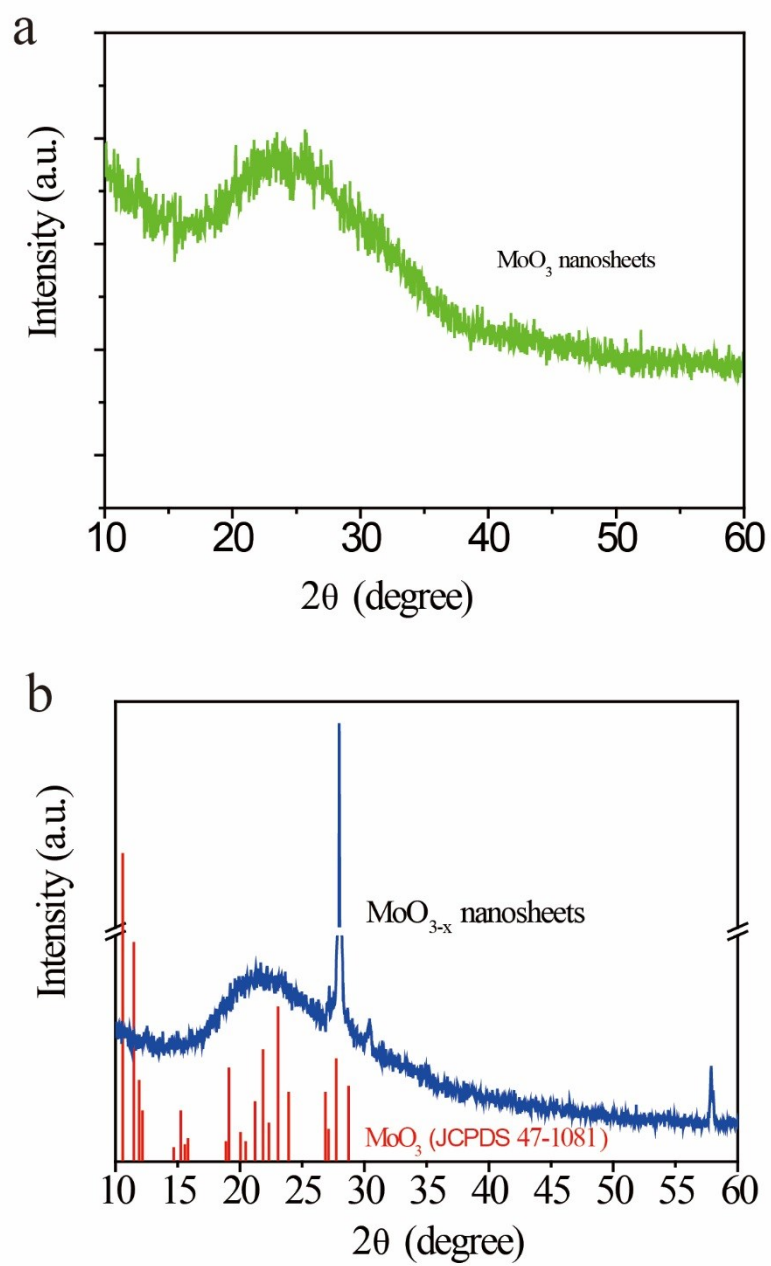
<sup>b</sup> School of National Defence Science & Technology, Southwest University of Science and Technology, Mianyang, 621010, P. R. China.



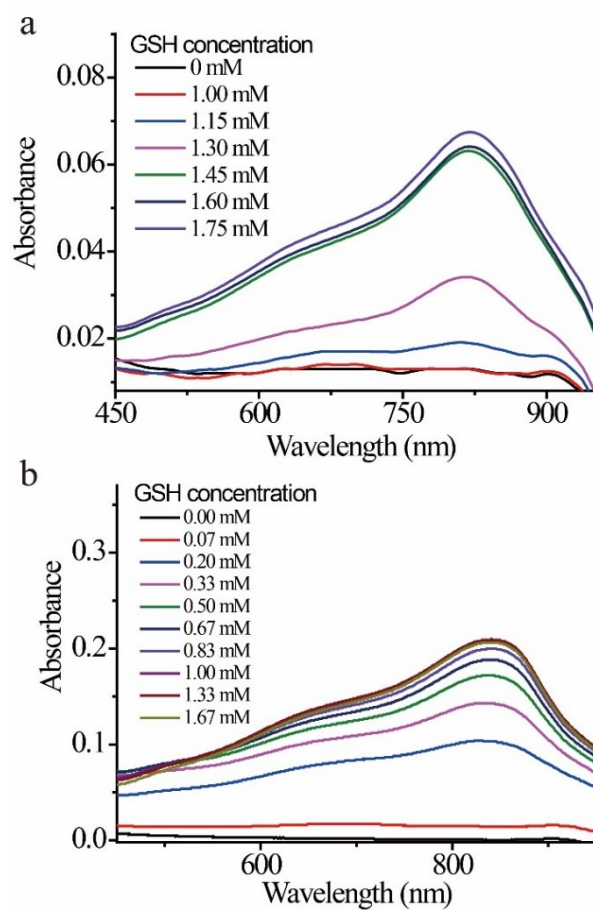
**Fig. S1.** AFM image and height profile of the MoO<sub>3</sub> nanosheets (scale bar, 500 nm).



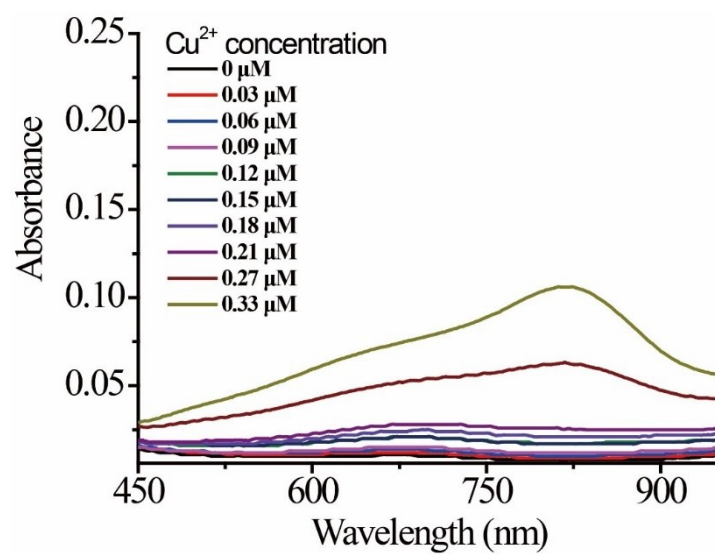
**Fig. S2.** AFM image of the plasmonic MoO<sub>3</sub> nanosheets (scale bar, 250 nm).



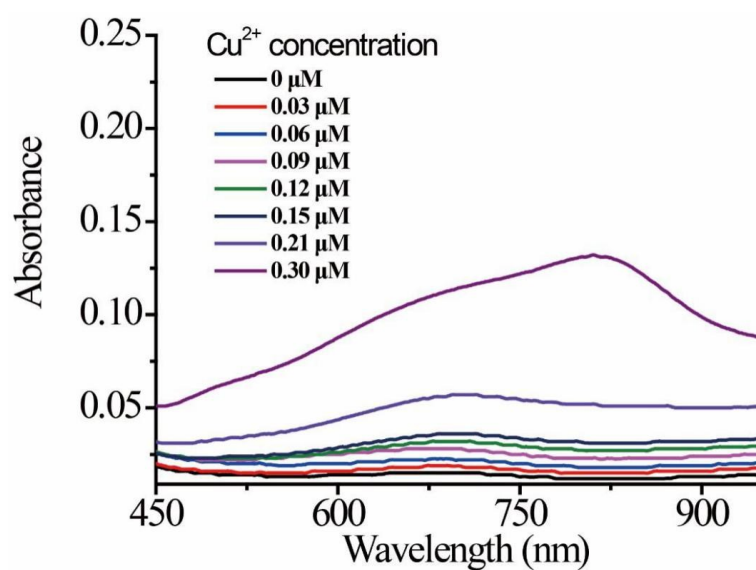
**Fig. S3.** XRD patterns of (a)  $\text{MoO}_3$  nanosheets, (b)  $\text{MoO}_{3-x}$  nanosheets and the standard card of  $\beta\text{-MoO}_3$ .



**Fig. S4.** UV-vis absorption of the mixture of GSH and MoO<sub>3</sub> nanosheets in the (a) absence and (b) presence of 10  $\mu\text{M}$  Cu<sup>2+</sup>.



**Fig. S5.** UV-vis absorption of the mixture of GSH and MoO<sub>3</sub> nanosheets at a concentration of 1.35 mM in the presence of Cu<sup>2+</sup> with different concentrations.



**Fig. S6.** UV-vis absorption of the mixture of GSH and MoO<sub>3</sub> nanosheets at a concentration of 1.8 mM in the presence of Cu<sup>2+</sup> with different concentrations.