

Supplementary Information for:

Low temperature electrical transport and photoresponsive properties of H-doped MoO₃ nanosheets

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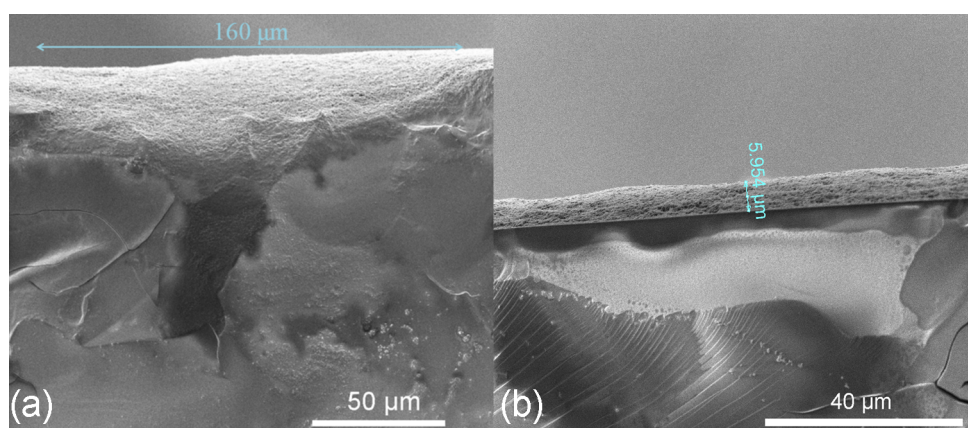


Figure S1. SEM images for the section of device.

A diamond cutter was used to cut the surface of an indium tin oxide (ITO) glass, then the ITO

was separated with a nonconducting gap into two pieces, thus each piece was adopted as an electrode. The SEM image for the section of the device (Figure S1a) shows that at the edge of the glass the length of the gap between the ITO is about 163.4 μm . 10 mg H-doping MoO_3 was dispersed in 3 mL ethanol under ultrasonication for about 10 minutes, then the gap was covered by dropping the dispersion on the surface of it. Each drop is about 50 μL and about 3 drops can cover the gap completely. After the dispersion drying in room temperature naturally, the gap and part of the ITO glass was covered by a film composited by H-doping MoO_3 . The SEM image (Figure S1b) shows that the thickness of film is about 5.954 μm . Thus the fabrication of photoresponse device was complete.

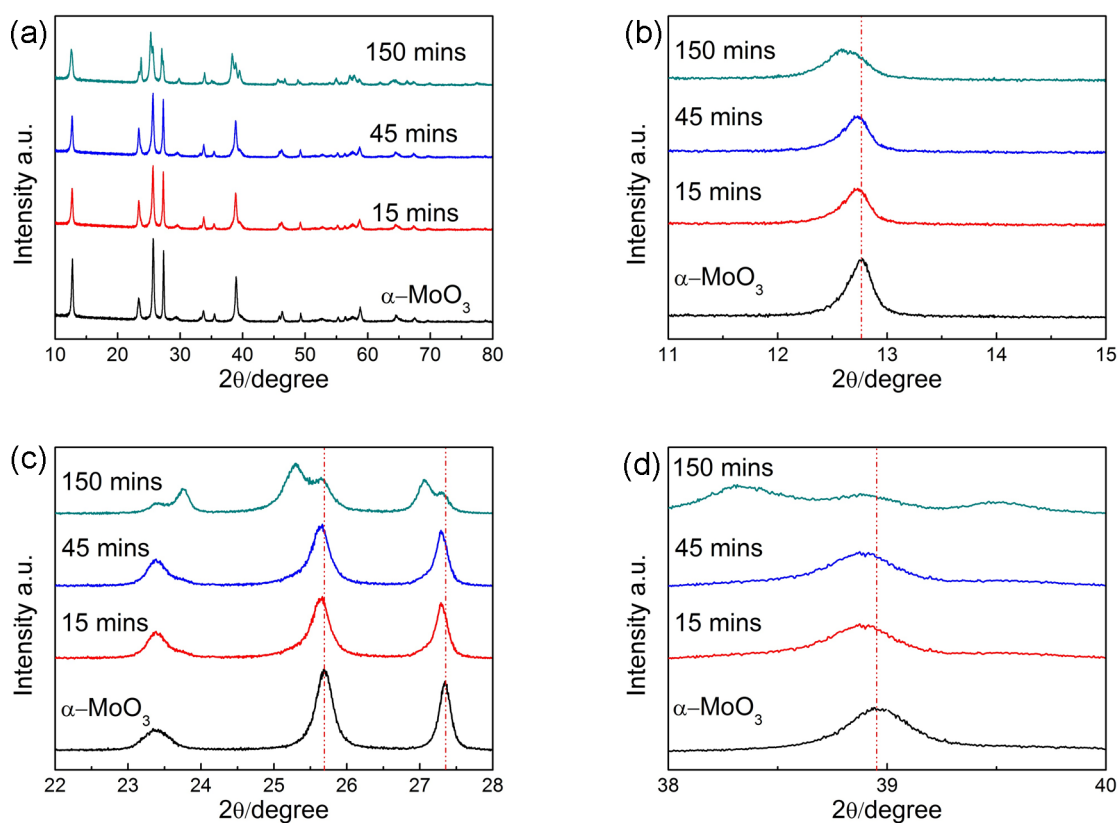


Figure S2. (a) XRD patterns of synthesized $\alpha\text{-MoO}_3$ nanosheets and H-doping MoO_3 for different doping time (15 mins, 45 mins and 150 mins), and (b), (c), (d) details of the moving of the (020), (040), (021), and (060) peak.

The four strongest peak: the (020) peak at 12.775° (Figure S2b), the (040) peak at 25.69° (Figure S2c), the (021) peak at 27.345° (Figure S2c) and the (060) peak at 38.94° (Figure S2d) are all move

to lower degree a little after H-doping. Those figures powerfully proved our conclusion that the H-doping process enlarges the lattice space of MoO_3 .