# Hydrophobic $W_{18}O_{49}$ mesocrystal on hydrophilic PTFE membrane as efficient solar steam generation device under one sun

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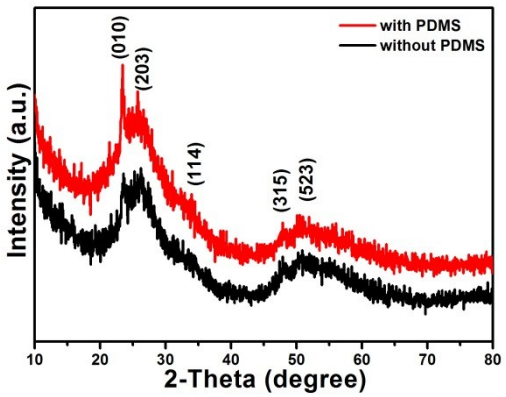


Fig. S1 XRD patterns of $W_{18}O_{49}$ mesocrystal with and without PDMS.

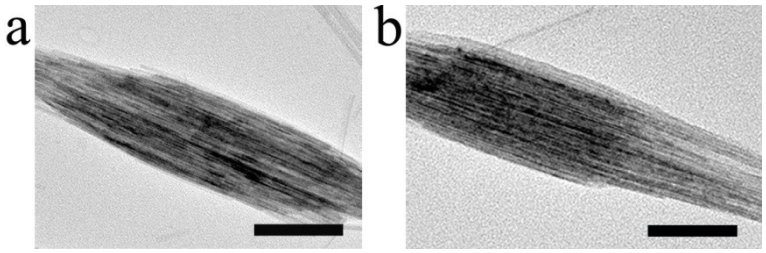


Fig. S2 TEM images of $W_{18}O_{49}$ mesocrystal without (a) and with (b) PDMS. All scale bars are 50 nm.

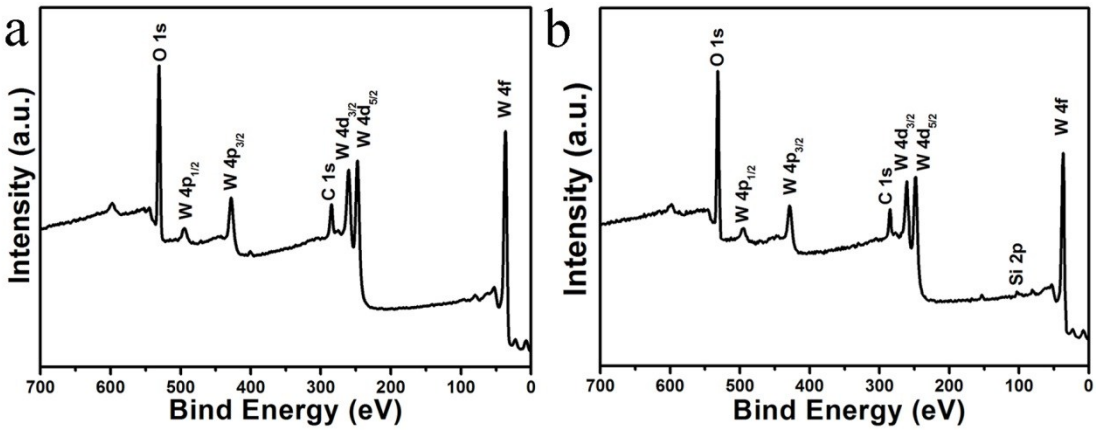


Fig. S3 XPS survey spectra of $W_{18}O_{49}$ mesocrystal (a) without and (b) with PDMS.

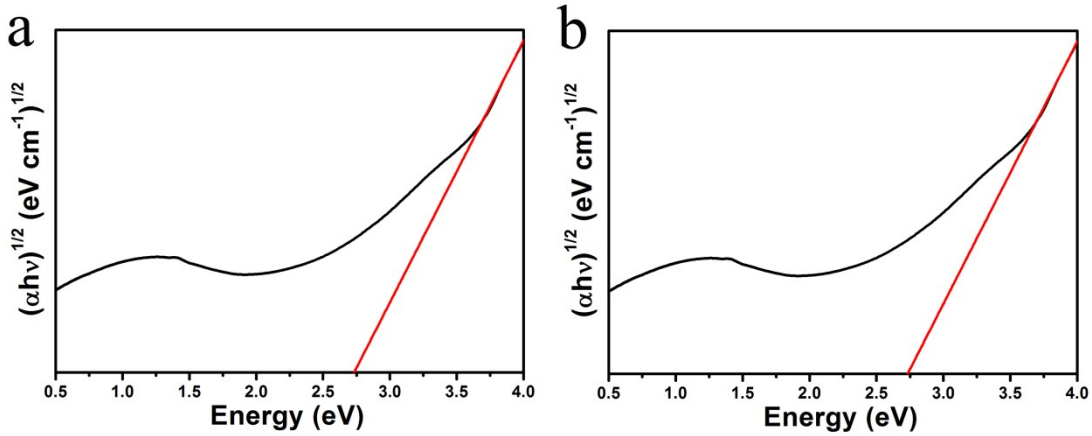


Fig. S4 Plots of $(\alpha h\nu)^{1/2}$ vs $h\nu$ of (a) $W_{18}O_{49}$ and (b) $W_{18}O_{49}$@PDMS mesocrystals

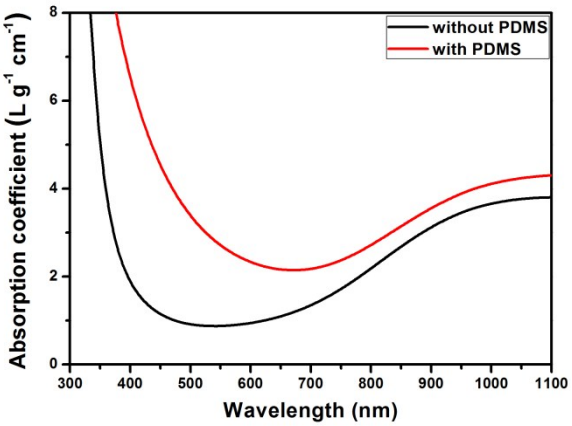


Fig. S5. The absorption coefficients of $W_{18}O_{49}$ and $W_{18}O_{49}$@PDMS mesocrystals.


Fig. S6 Dynamic wetting of water droplet on PTFE membrane.

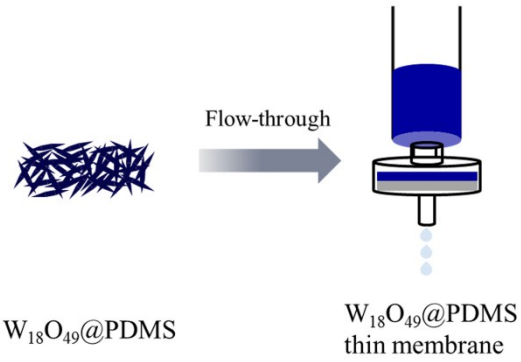


Fig. S7 The sketch of the design used to evaluate the prepared membrane.

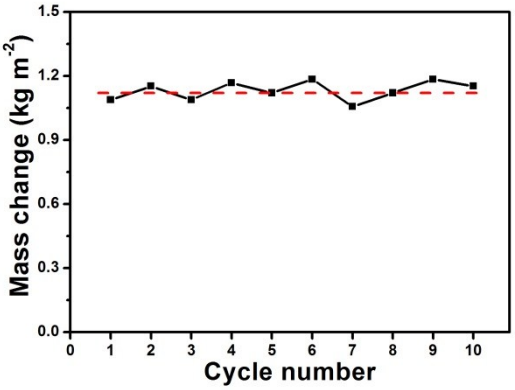


Fig. S8 The evaporation cycle performance of $W_{18}O_{49}$@PDMS mesocrystal membrane with *M/A*=9.83 g/m$^2$ under one sun irradiation for 3600s.

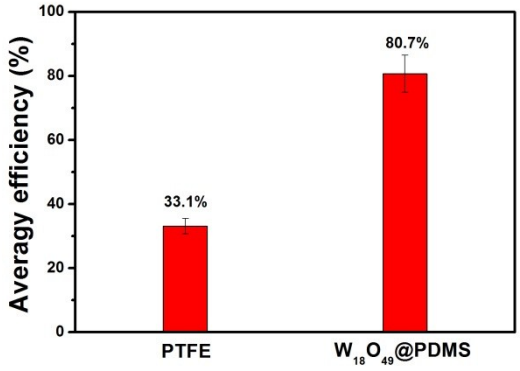


Fig. S9 Evaporation efficiency for PTFE membrane and $W_{18}O_{49}$@PDMS mesocrystal.