Supporting Information

Top-down Fabrication of Fluorine-doped Tin Oxide Nanopillar Substrates for Solar Water Splitting

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Nanosphere lithography

Table S1. Optimized compositions of polystyrene nanosphere solutions for spin-coating process

Sphere diameter (nm)	Mixture composition (µL)		
	10 wt% Nanosphere	Water	Surfactant
500	280	420	100
260	200	550	100

ALD of WO₃ Photoabsorber

Figure S2a shows that the growth rate depends on the BTBMW pulse time and that the dependence can be fitted by a Langmuir surface adsorption model. A BTBMW pulse time of 2 s was chosen to ensure high coverage of the W precursor on the substrate surface.
Figure S2b verifies that the film thickness increases linearly with deposition cycles.
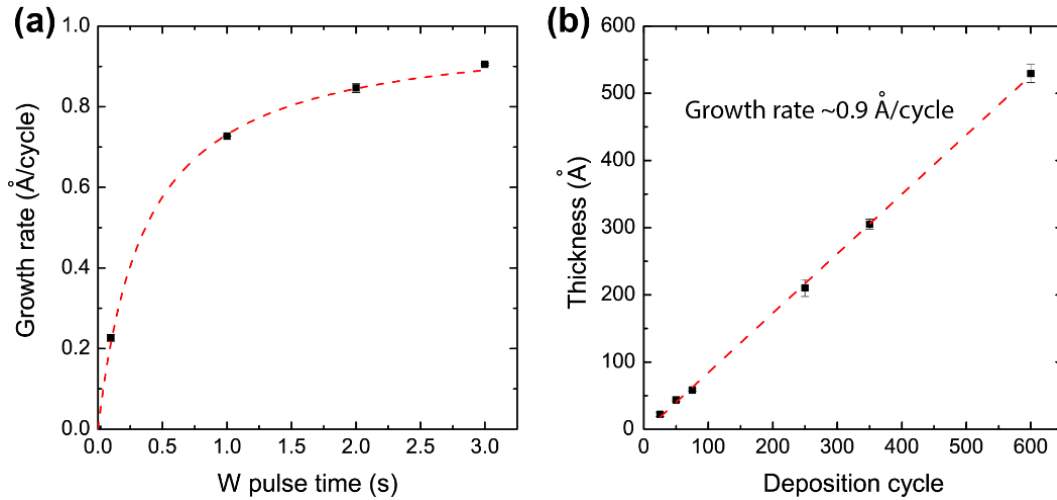
Figure S1. Saturation curve and linear growth rate of ALD WO₃ on Si substrate. (a) Growth rate of WO₃ as a function of BTBMW pulse time with a constant pulse of O_2 plasma counter reactant (20 s at 300 W) shows a saturation when BTBMW > 2 s. (b) With 2 s BTBMW and 20 s O_2 plasma, the thickness of WO₃ scales linearly with the number of ALD deposition cycle.