SUPPLEMENTARY INFORMATION

Preparation of $V_xW_{1-x}O_2(M)@SiO_2$ ultrathin nanostructures with high optical performance and the optimization for smart window by etching

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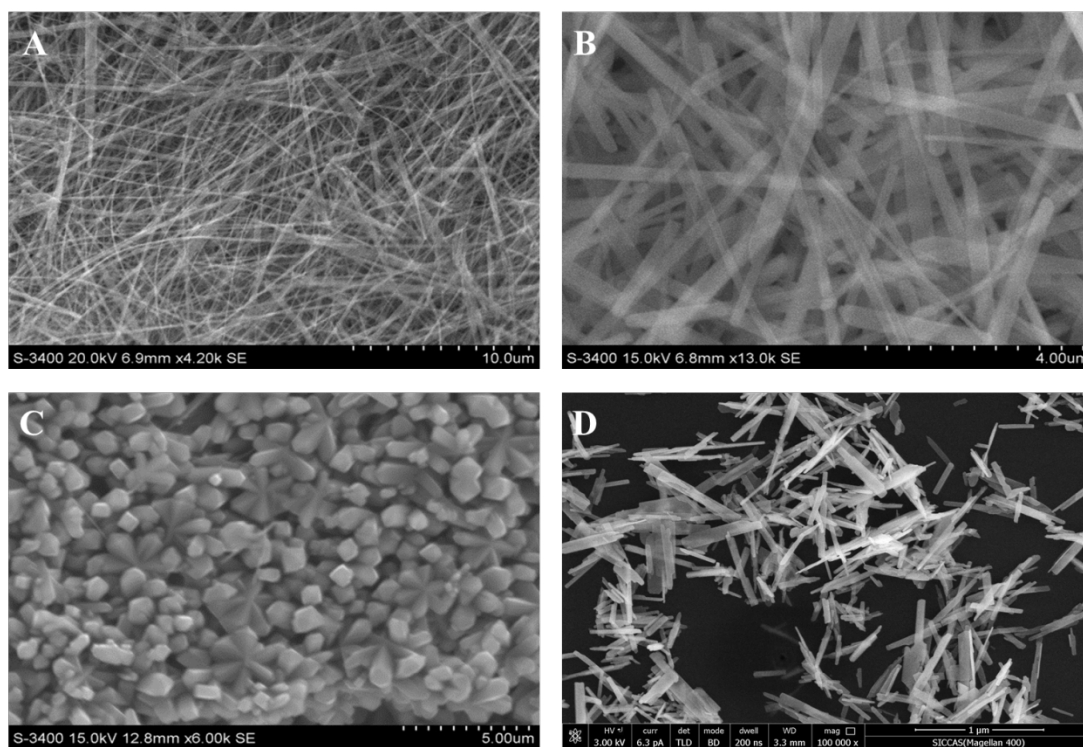
Supplementary Results:

Fig. S1. $VO_2(B)$ nanowires (A), nanoribbons (B), nanorods (C) and nanostructures (D) synthesized by the same hydrothermal procedure with different dispersant.
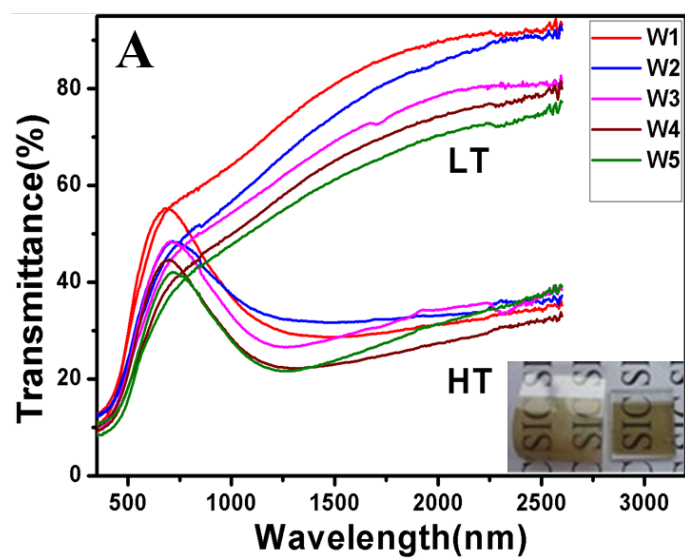
Fig. S2. Optical transmittance spectrum of $V_{1-x}W_xO_2@SiO_2$ at high and low temperature (W1, W2, W3, W4 and W5 expressed the various doping amount of 0 at%, 0.5 at%, 1 at%, 1.5 at%, 2 at%). The inset was the film image.

Table S1. DSC peak positions of the sample with various W doping.

Sample	Doping content (at%)	Endothermic peak (^{o}C)	Exothermic peak (^{o}C)
W1	0	68.5	55.8
W2	0.5	63.4	50.9
W3	1	50.5	30.8
W4	1.5	47.5	27.2
W5	2	29.2	23.3

Table S2. Optical properties of $V_{1-x}W_xO_2(M)@SiO_2$ nanoparticles (W1', W2', W3', W4' and W5' corresponding to the W1, W2, W3, W4 and W5 without coating).

Sample	T_{sol-L} (%)	T_{sol-H} (%)	ΔT_{sol} (%)	T_{lum-L} (%)	T_{lum-H} (%)	$\Delta T_{2000\ nm}$ (%)
W1	52.24	38.56	13.68	39.10	42.11	58.7
W2	45.69	35.26	10.43	33.62	35.57	52.4
W3	42.99	33.31	9.68	29.46	32.65	44.3
W4	38.96	30.14	8.82	27.32	29.30	46.9
W5	36.67	29.52	7.15	24.69	25.74	38.9
W1'	41.25	33.44	7.81	26.62	30.71	43.2
W2'	32.19	24.79	7.40	23.96	28.90	50.2
W3'	31.31	25.14	6.17	20.40	26.22	40.5
W4'	34.03	28.58	5.45	20.54	28.76	42.6
W5'	27.33	22.72	4.60	15.73	20.90	35.2