Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supplementary Information

Vertically Distributed VO_2 Nanosheets on Hollow Spheres with Enhanced Thermochromic Properties

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Fig. S1

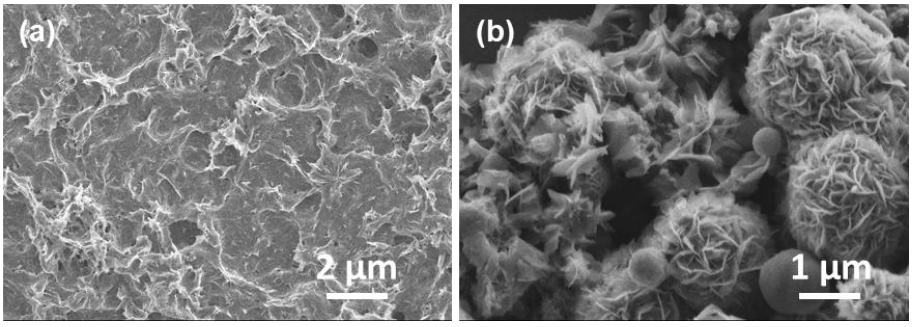

Fig. S1 SEM images of the samples with different volume percentage of C_2H_5OH (a) 0%, (b) 100%.

Fig. S2

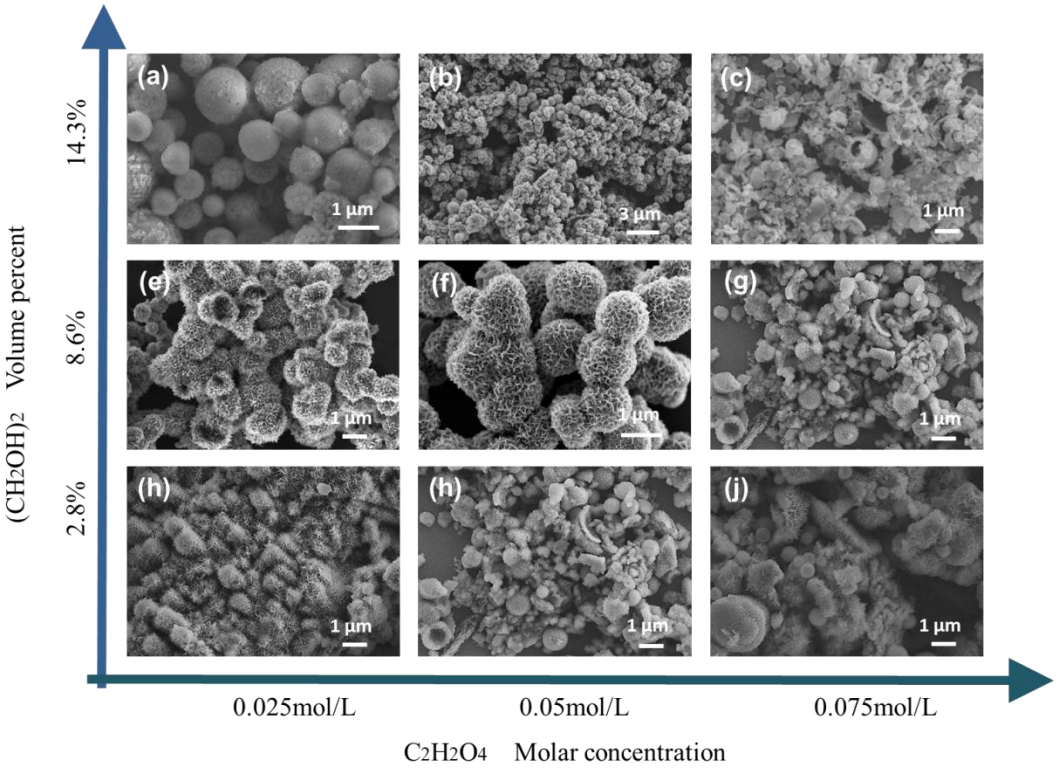

Fig. S2 SEM images of the samples with different concentration of $(CH_2OH)_2$ (EG) and $C_2H_2O_4$.

Fig. S3

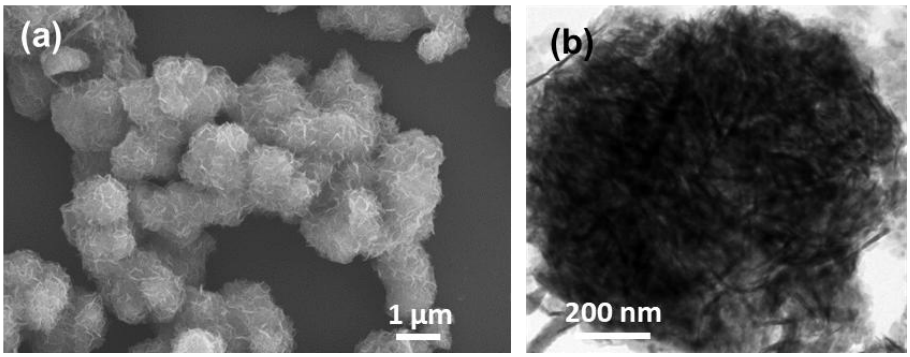

Fig. S3 SEM image (a) and TEM image (b) of the samples with aggregated nanosheets

Fig. S4

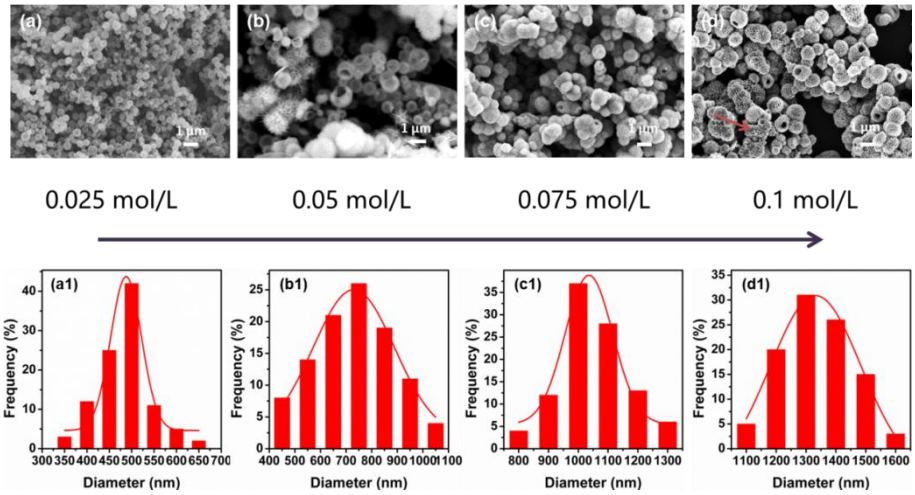

Fig. S4 (a-e) SEM images of VO_2 hollow microsphere grown in different precursor concentration. (a1-d1) The distribution of sphere diameter.

Fig. S5

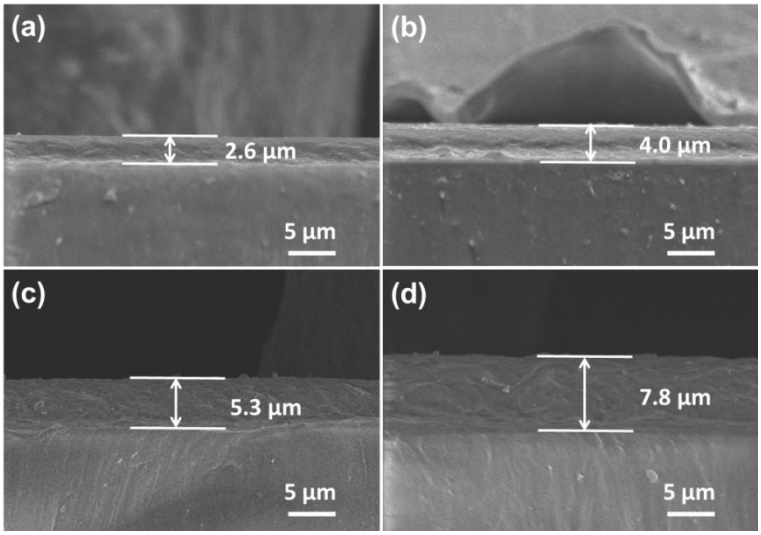

Fig. S5 SEM images of the cross-sections of the films with different thickness.

Fig. S6

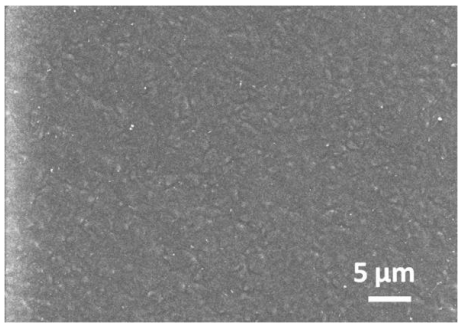

Fig. S6 SEM image of nanosheets-based film.

Fig. S7

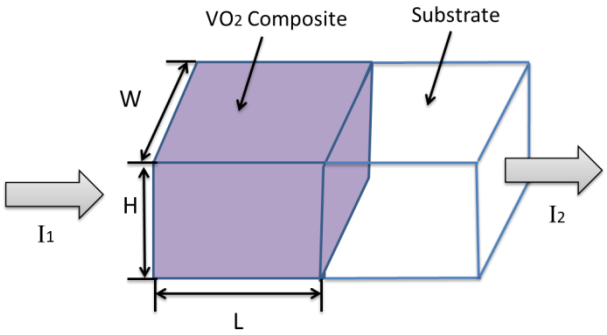

Fig. S7 Structral model for composites of VO_2 and substrate with the refractive index equal to 1.5. The thickness of the model (L) is 3 μm.

To simulate the transmittance of VO_2 composite, COMSOL Multiphysics software based finite element analysis (FEA) is used. Fig. S7 shows the structural model for composite film. The VO_2 hollow or solid spheres are embedded in a media with the refractive index equal to 1.5. The incident light waves are plane waves traveling perpendicular to the VO_2 composite film, as shown in Fig. S7. In our simulations, all material property parameters were taken from published literatures. The refractive indexs ($\tilde{n} = n + ik$) of VO_2 are taken from experimental spectroscopic data reported by Li. A constant of 1.51 is used for the glass substrate.