Supporting Information

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Fig. S1. SEM image of the VO₂(D)-HCSMs (a) and their mapping images of V (b) and O (c).



Fig. S2. IR spectra of as-prepared VO₂(D)-HCSMs powder, MB, VO₂(D)-HCSMs loaded with MB and VO₂(D)-HCSMs after 4 cycles of MB adsorption and heat treatment at 250 °C for 4 h.



Fig. S3. XRD pattern of the C/VO_x nanoparticles formed by calcination of the $VO_2(D)$ -HCSMs after 4

cycles of adsorption.



Fig. S4 (a, b) SEM image of the C/VO_x nanoparticles. (c, d, e) element mapping images for V ,O, C.