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Figure S1. TG-DTA curve of ammonium metatungstate \((\text{NH}_4)_6\text{H}_2\text{W}_{12}\text{O}_{40}\) (a) and ammonium metatungstate \((\text{NH}_4)_6\text{H}_2\text{W}_{12}\text{O}_{40}\) infiltrated in the PMMA template (b) in air (heating rate: 10 K min\(^{-1}\))
Figure S2. SEM images of not well-ordered 3DOM WO$_3$ materials prepared using the PMMA colloidal crystal template; tungsten precursor: ammonium metatungstate, (a), tungsten precursor: tungsten(VI) chloride, (b), tungsten precursor: tungsten(V) ethoxide, (c) tungsten precursor: phosphotungstic acid, (d) and (e). PMMA sphere diameter was 253 nm. Calcination temperature was 773 K.
Figure S3. SEM images of PMMA colloidal crystal template. Diameter of PMMA: 492 nm (a), 253 nm (b), 181 nm (c), and 86 nm (d) (e).
Figure S4. TEM micrograph of 3DOM WO$_3$. PMMA diameter: 181 nm; calcination temperature: 773 K (a). TEM micrograph (center) and selected-area ED patterns of WO$_3$, PMMA diameter: 253 nm; calcination temperature: 773 K (b), PMMA diameter: 492 nm; calcination temperature: 873 K (c). Zones indicated by circles are selected areas.
Figure S5. SEM images of WO$_3$ materials prepared using a colloidal crystal template, PMMA diameter: 492 nm (a), 253 nm (b), 181 nm (c), and 86 nm (d). Calcination temperature was 773 K.
Figure S6. SEM images of WO₃ materials prepared using a colloidal crystal template, PMMA diameter: 492 nm (a), 253 nm (b), 181 nm (c), and 86 nm (d). Calcination temperature was 873 K.
Figure S7. Powder XRD of tungsten oxides prepared using a colloidal crystal template (diameter of PMMA: 253 nm). WCl₆ was used as the tungsten precursor, and calcined at 873 K (a), 773 K (b), and 673 K (c). W(OEt)₅ was used as the tungsten precursor, and calcined at 873 K (d), 773 K (e), and 673 K (f). Phosphotungstic acid (H₃PW₁₂O₄₀) was used as the tungsten precursor, and calcined at 873 K (g), 773 K (h), and 673 K (i). Ammonium metatungstate ((NH₄)₆H₂W₁₂O₄₀) was used as the tungsten precursor, and calcined at 873 K (j), 773 K (k), and 673 K (l).
Figure S8. TEM images of Pt-loaded 3DOM WO₃.
Figure S9. UV-Vis spectra of 3DOM WO$_3$ prepared using ammonium metatungstate (open symbols) and tungsten chloride (closed symbols) calcined at 673 K (circles), 773 K (squares), and 873 K (triangles).