Supporting Information

Formation of 3D Interconnectively Macro/mesoporous TiO₂ Sponges through Gelation of Lotus Root Starch Toward CO₂ Photoreduction into Hydrocarbon Fuels

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Loading the Co-catalysts: The Cu/Pt/TiO₂ sponge photocatalyst was prepared by a stepwise photodeposition technique. A Pt/TiO₂ was first prepared by the following procedures. 0.2 g photocatalyst, 40 mL distilled water, 15 mL CH₃OH and a given amount of H₂PtCl₆·6H₂O were placed in a glass vessel. The reactant solution was irradiated by a 300 W xenon arc lamp for 10 h with stirring. The obtained sample was recovered by filtration, followed by washing repeatedly with deionized water and drying over night at 60 °C. Then, the obtained Pt/TiO₂ was dispersed in an aqueous solution of CuSO₄. After evacuation, the suspension was exposed to irradiation with the 300W Xe lamp with stirring for 12 h to deposit Cu species onto the Pt/TiO₂. The obtained sample was washed thoroughly with deionized water and dried overnight at 60 °C.



Figure S1. FE-SEM images of pure LRS sponges prepared from different concentrations: a) 0.5 wt%, b) 1 wt%, c) 2 wt%, d) 5 wt%, e) 20 wt%, f) 30 wt%, g) 35 wt%, h) 40 wt%.



Figure S2. Typical XRD pattern of as-prepared 3D interconnectively macro/mesoporous TiO₂ sponges.



Figure S3. The high resolution XPS spectra of the sample, (a) Ti 2p , (b) O 1s.