# Supporting information:

## Fabrication of highly ordered mesoporous silica with the assistance of phosphate

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### 1. Characterization

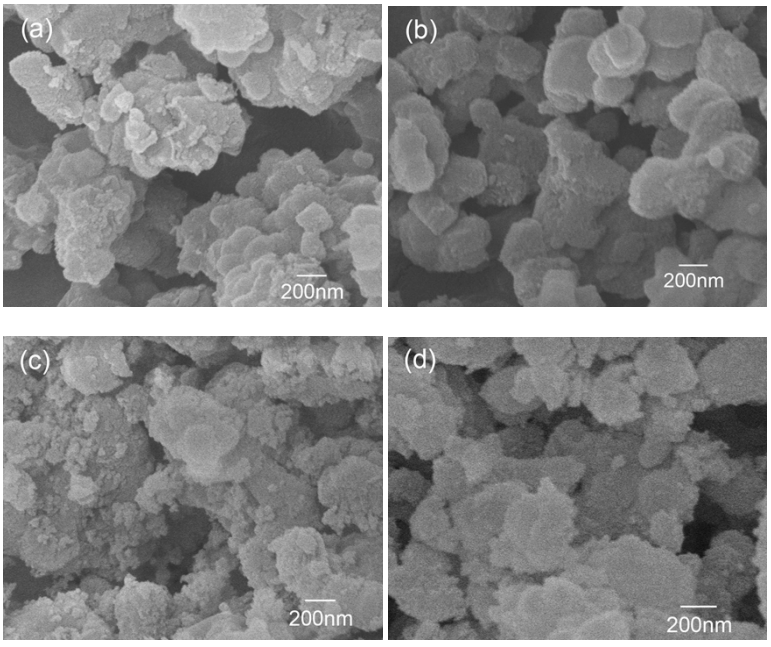
Transmission electron microscopy (TEM) images were obtained on a Hitachi H-7650 electron microscope operating at an accelerating voltage of 100 kV.

Scanning electron microscopy (SEM) images were obtained on a Hitachi S-4800 (Japan) electron microscope operating at an accelerating voltage of 10 kV.

SAXRD data were recorded on Rigaku D/MAX 2400 diffractometer equipped with a Cu Kα X-ray source operating at 40 kV and 50 mA.

Nitrogen sorption isotherms were obtained with a Quantachrome Nova volumetric adsorption analyzer at 77.3 K with samples out gassed at 150 °C for 12 h. Pore size distribution was calculated from the desorption isotherm using the BJH model and the BET surface area from the relative pressure of 0.057–0.346.

### 2. Results



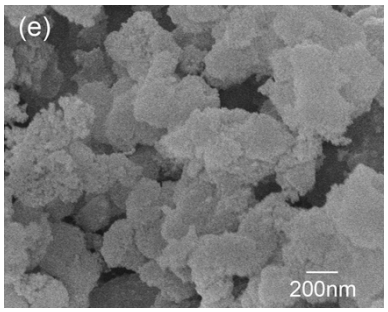



Fig. S1 SEM images of TPU-1(a), TPU-2(b), TPU-3(c), TPU-4(d) and TPU-5(e).

The SEM images in Fig. S1 show the morphologies of TPU samples. As seen that the morphology of mesoporous silica prepared at the PH of 6.42, 6.91 and 7.40 are irregular and aggregation of small particles. The SEM image (in Fig S1a) of TPU-1 prepared at PH of 5.51 shows its smaller particle size and worse dispersity than that of TPU-2. The results are corresponded to the investigations from their BET, BJH and TEM characterizations.

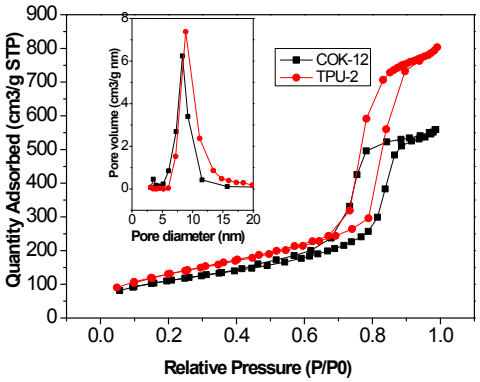



Fig. S2 Nitrogen adsorption and desorption isotherms and pore size distributions of TPU-2 and our prepared COK-12 derived from the desorption branch of isotherm using BJH calculations.

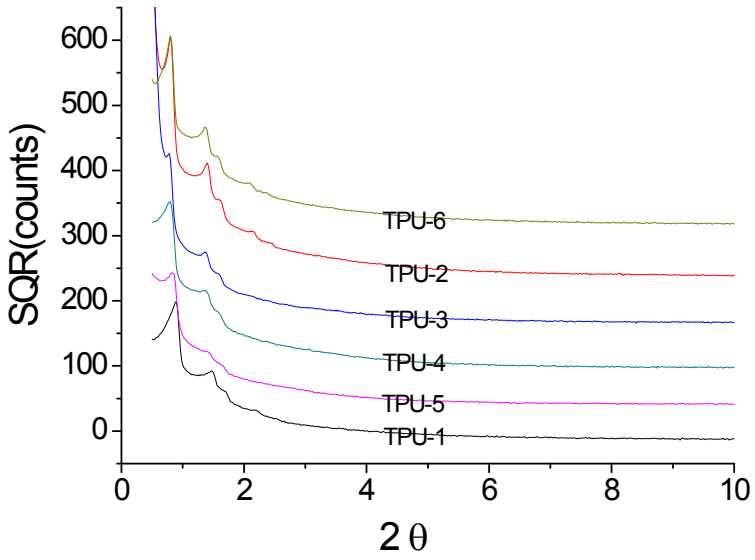



Fig. S3 SAXS patterns of TPU-1, TPU-2, TPU-3, TPU-4, TPU-5 and TPU-6.