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Zirconium-promoted hydrothermal synthesis of hierarchical porous carbons with ordered cubic mesostructure under acidic aqueous condition

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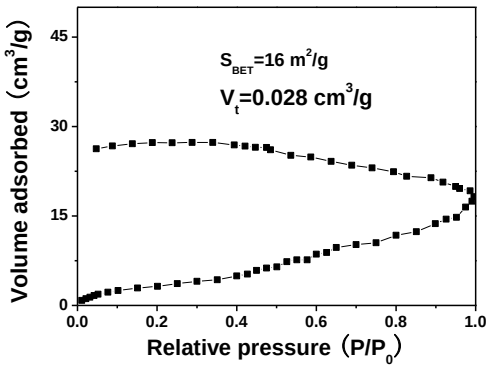

Fig. S1 Nitrogen adsorption-desorption isotherms of OMC1-0.04-2-400.

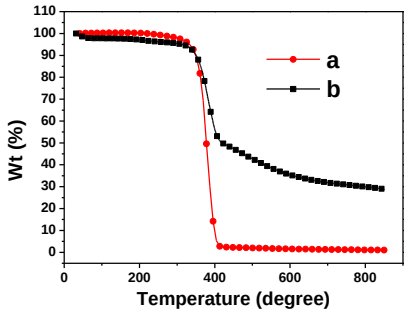

Fig. S2 TG curves of F127 (a) and the as-made OMC1-0.04-2-600 (b).

As shown in Fig. S2b, the weight loss of the as-made OMC1-0.04-2-600 can be divided into three stages. At the first stage between320 and 400 ℃, the weight loss reached to 45%, due to the decomposition of the surfactant F127 (in Fig. S2a). The second one between 400 and 600 was contributed much to the decomposition of the polymer framework. The weight loss above 600 ℃ was mainly due to the continuous decomposition of the carbon framework.

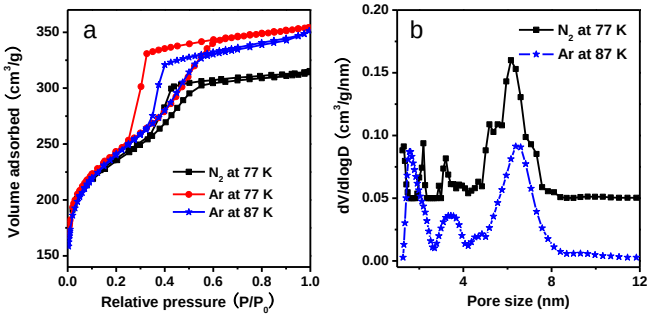

Fig. S3 Nitrogen (77 K)and Argon (87 and 77 K) sorption isotherms (a) and pore size distributions (b) calculated by the adsorption branch of the nitrogen (77 K) and argon (87K) sorption isotherms with cylindrical-spherical adsorption kernel of OMC1-0.04-2-600.

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Electronic Supplementary Information (ESI) available: [details of any supplementary information available should be included here]. See DOI: 10.1039/x0xx00000x

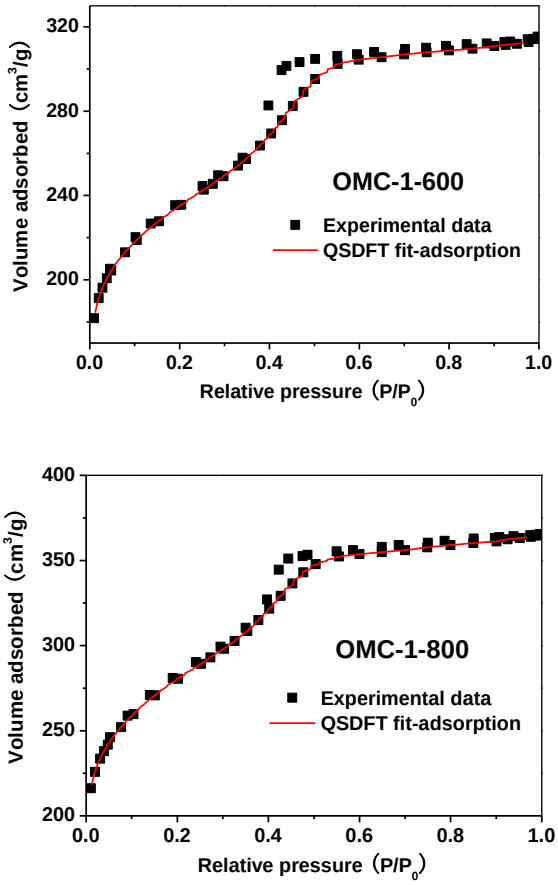

Fig. S4 Experimental nitrogen sorption isotherms with fit from QSDFT cylindrical-spherical adsorption model for the samples pyrolyzed at 600 and 800 ℃.

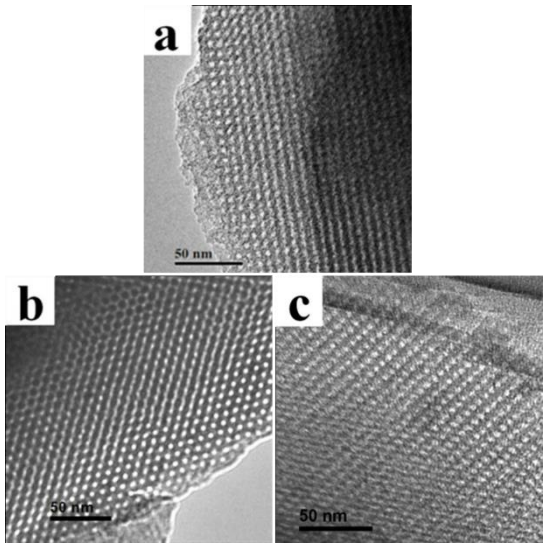

Fig.S5 TEM images viewed along: (a) [100], (b) [111], and (c) [110] directions for the sample synthesized in the absence of $ZrOCl_2 \cdot 8H_2O$ (from the top layer of the autoclave).

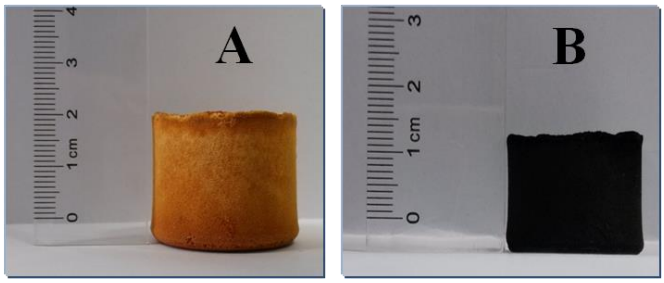

Fig.S6 Photographs of the synthesized polymer and carbon monoliths.

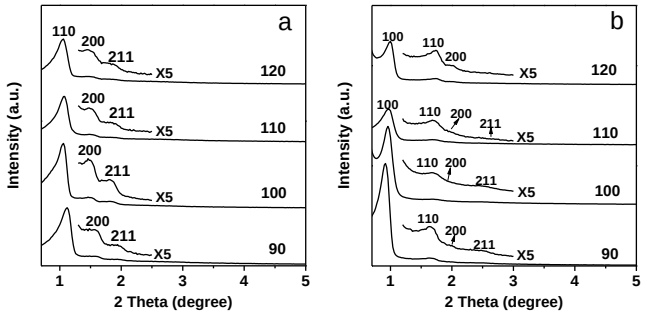

Fig.S7 XRD patterns of OMC1-0.04-2-600 (a) and OMC2-0.04-2-600 (b) synthesized at different temperatures.

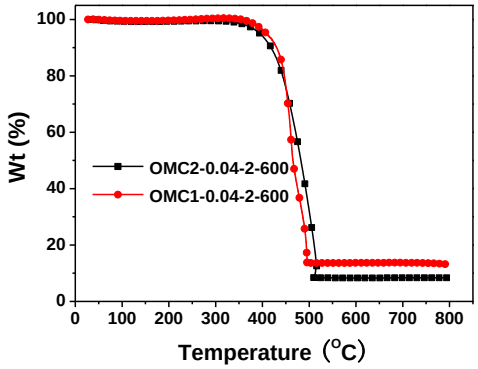

Fig.S8 TG curves of OMC1-0.04-2-600 and OMC2-0.04-2-600.

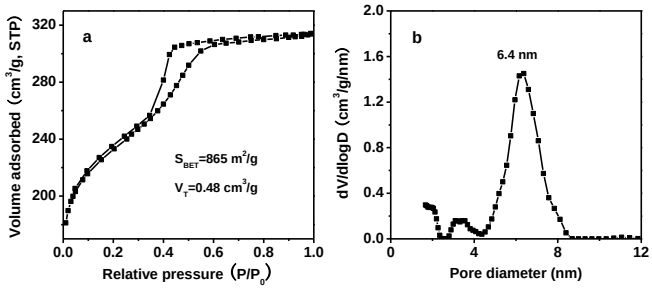

Fig.S9 Nitrogen sorption isotherms (a) and the corresponding pore size distributions (b) of sample OMC1-0.04-2-600 synthesized in large scale by a factor of 20.

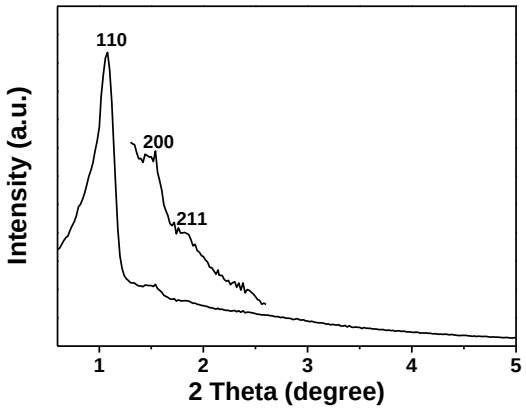

Fig.S10 The XRD pattern of OMC1-0.04-2-600 synthesized in large scale by a factor of 20.

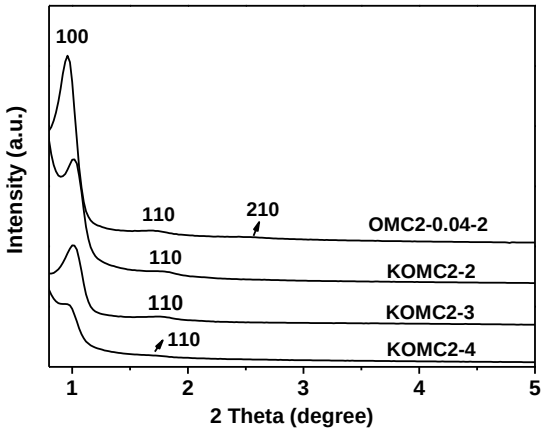

Fig. S11 XRD patterns of OMC2-0.04-2-600 and the activated samples with various KOH/carbon mass ratios.

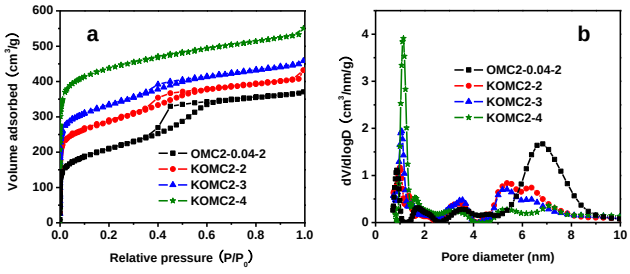

Fig. S12 Nitrogen sorption isotherms (a) and pore size distributions (b) of OMC2-0.04-2-600 and the activated samples with various KOH/carbon mass ratios.

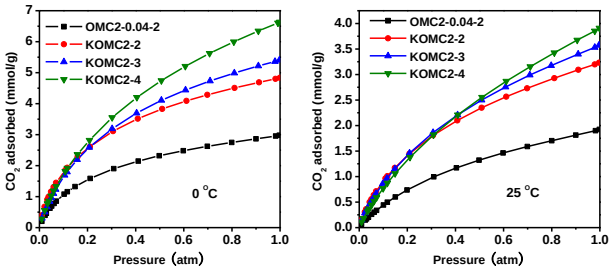

Fig. S13 CO_2 sorption isotherms of OMC2-0.04-2-600 and the activated samples with various KOH/carbon mass ratios.