Supplementary Information

Ultrasound-assisted synthesis of ordered mesoporous silica FDU-12 with hollow structure

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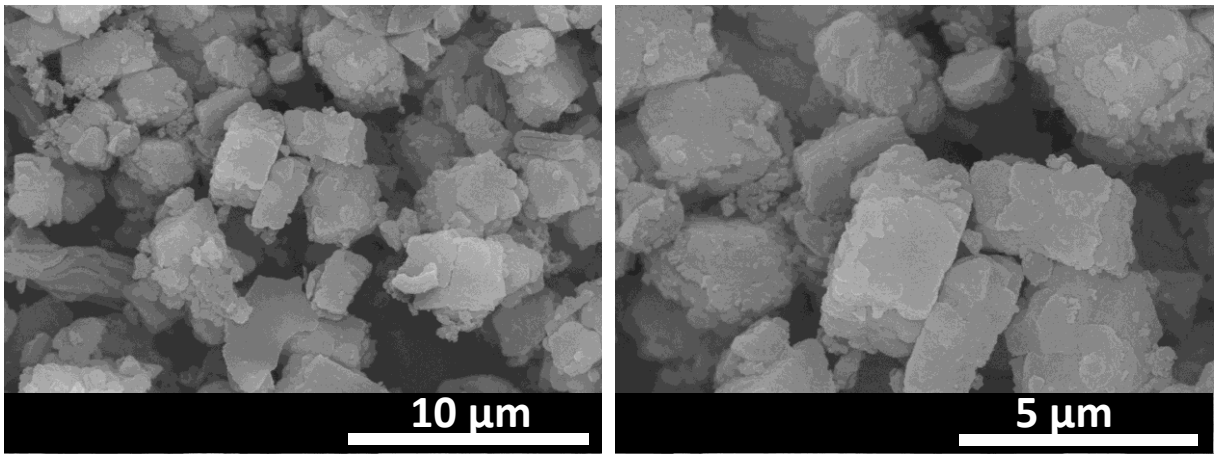

Fig. S1. SEM images of the reference material FDU-12 synthesized without ultrasound treatment.

Table S1 Textural properties of the synthesized samples

Samples	Surface area/$m^2 \cdot g^{-1}$	Pore volume/$cm^3 \cdot g^{-1}$	Pore size/nm
FDU-12-T	503	0.54	9.6
FDU-12-H	958	0.94	15.5

Table S2 Textural properties of the synthesized material with different HCl concentrations

HCl concentration	Surface area/$m^2 \cdot g^{-1}$	Pore volume/$cm^3 \cdot g^{-1}$	Pore size/nm
1.5 mol/L	620	0.68	22.8
2.0 mol/L	958	0.94	15.5
2.5 mol/L	704	0.70	15.0

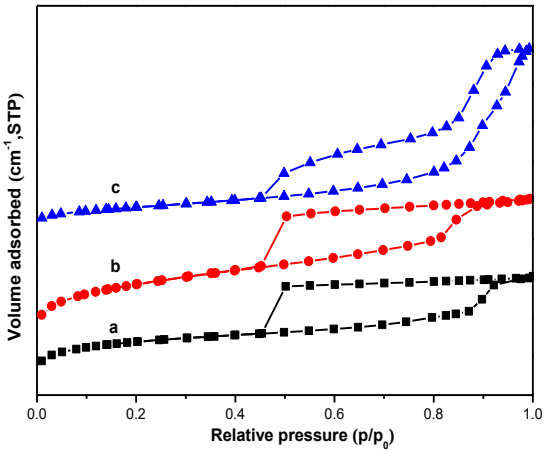

Fig. S2. Nitrogen sorption isotherm of the materials synthesized using TEOS/F127 molar ratios of (a) 232, (b) 252, (c) 272.

Table S3 Textural properties of the synthesized material with different molar ratios of TEOS/F127

n(TEOS/F127)	Surface area/$m^2 \cdot g^{-1}$	Pore volume/$cm^3 \cdot g^{-1}$	Pore size/nm
232	638	0.67	22.6
252	958	0.94	15.5
272	327	1.0	18.1

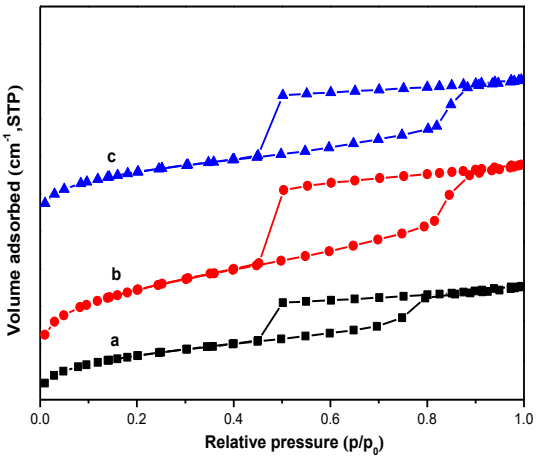

Fig. S3. Nitrogen sorption isotherm of synthesized material prepared by different molar ratios of TMB/F127 (a) 79; (b) 105; (c) 131.

Table S4 Textural properties of the synthesized material prepared by different molar ratio of TMB/F127

n(TMB/F127)	Surface area/$m^2 \cdot g^{-1}$	Pore volume/$cm^3 \cdot g^{-1}$	Pore size/nm
79	592	0.54	9.4
105	958	0.94	15.5
131	700	0.69	15.7

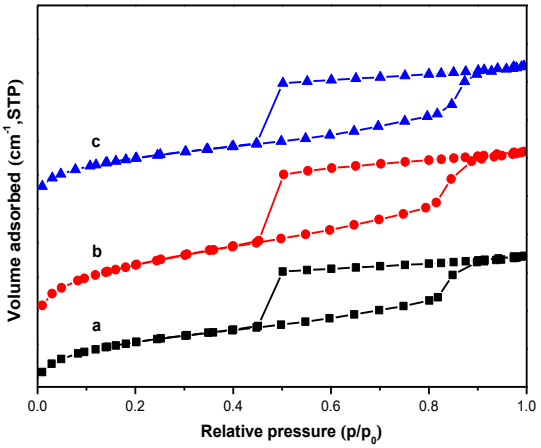

Fig. S4. Nitrogen sorption isotherm of the synthesized materials prepared by different molar ratios of KCl/F127 (a) 338; (b) 422; (c) 507.

Table S5 Textural properties of the synthesized material prepared by different molar ratio of KCl/F127

n(KCl/F127)	Surface area/$m^2 \cdot g^{-1}$	Pore volume/$cm^3 \cdot g^{-1}$	Pore size/nm
338	727	0.71	14.3
422	958	0.94	15.5
507	678	0.71	15.1

Chemical reagent

The following chemicals were used as reagents for material syntheses: Pluronic F127 ($EO_{106}PO_{70}EO_{106}$, Sigma-Aldrich), tetraethyl orthosilicate (TEOS, ⩾ 98%, Sinopharm Chemical Reagent Co., Ltd), hydrochloric acid (35 wt% HCl, Beijing Chemical Work), 1,3,5-trimethylbenzene (TMB, ⩾97%, Aladdin Industrial Corporation), potassium chloride (KCl, ⩾99.5%, Tianjin Guangfu Technology Development Co., Ltd) and deionized water. All reagents were used without further purification.