

Accelerated and scalable synthesis of UiO-66(Zr) with the assistance of inorganic salt under solvent-free condition

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Table S1. N₂ sorption data of samples prepared with different molar ratios of Zr/Na at 130°C for 3 h.

Zr/Na (molar)	BET surface area (m²/g)	Langmuir surface area (m²/g)	Micropore volume (mL/g)	Average pore size (nm)
∞	354	462	0.14	1.16
8:1	379	519	0.16	0.63
4:1	969	1427	0.48	0.66
2:1	808	1205	0.40	0.66
1:1	624	836	0.27	0.63
3:2	651	882	0.29	0.65

Table S2. N₂ sorption data of samples prepared at different crystallization temperatures for 3 h.

Temperature (°C)	BET surface area (m²/g)	Langmuir surface area (m²/g)	Micropore volume (mL/g)	Average pore size (nm)
110	33	54	0.01	1.43
120	43	66	0.02	1.37
130	969	1427	0.48	0.66

Table S3. N₂ sorption data of samples prepared for different crystallization time at 130°C.

Crystallization time (h)	BET surface area (m²/g)	Langmuir surface area (m²/g)	Micropore volume (mL/g)	Average pore size (nm)
1	92	143	0.04	1.11
2	330	494	0.16	0.60
3	969	1427	0.48	0.66

Table S4. N₂ sorption data of samples prepared with the addition of different inorganic salts.

Inorganic salts	BET surface area (m²/g)	Langmuir surface area (m²/g)	Micropore volume (mL/g)	Average pore size (nm)
KCl	1101	1442	0.48	0.71
NH ₄ Cl	991	1259	0.42	0.68
NaI	826	1099	0.36	0.67
NaF	282	403	0.12	0.67

Table S5. Textural properties of UiO-66(Zr) obtained by different synthesis method.

Samples	BET surface area (m²/g)	Langmuir surface area (m²/g)	Micropore volume (mL/g)	Average pore size (nm)
UiO-66(Zr)-Solvent	1133	1479	0.51	0.67
UiO-66(Zr)-NaCl	969	1427	0.48	0.66

Table S6. N₂ sorption data of UiO-66(Zr) synthesized on small and large scales.

Samples	BET surface area (m²/g)	Langmuir surface area (m²/g)	Micropore volume (mL/g)	Average pore size (nm)
UiO-66(Zr)-NaCl (small)	969	1427	0.48	0.66
UiO-66(Zr)-NaCl (large)	1030	1335	0.46	0.66

Table S7. N₂ sorption data of UiO-66(Zr)-NH₂ and UiO-66(Zr)-NO₂ synthesized with the addition of NaCl.

Samples	BET surface area (m²/g)	Langmuir surface area (m²/g)	Micropore volume (mL/g)	Average pore size (nm)
UiO-66(Zr)-NH ₂ -NaCl	833	1060	0.36	0.64
UiO-66(Zr)-NO ₂ -NaCl	619	783	0.26	0.61

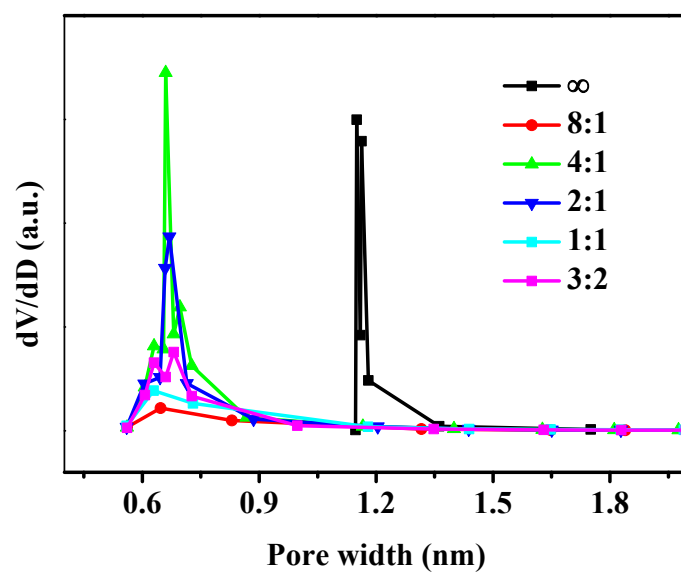


Fig. S1. Pore distribution curves of samples prepared with different molar ratios of Zr/Na at 130°C for 3 h.

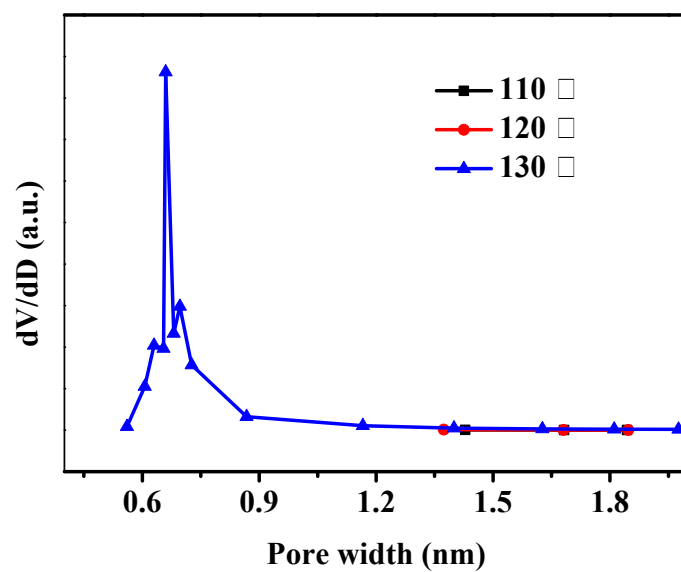


Fig. S2. Pore distribution curves of samples prepared at different crystallization temperatures for 3 h.

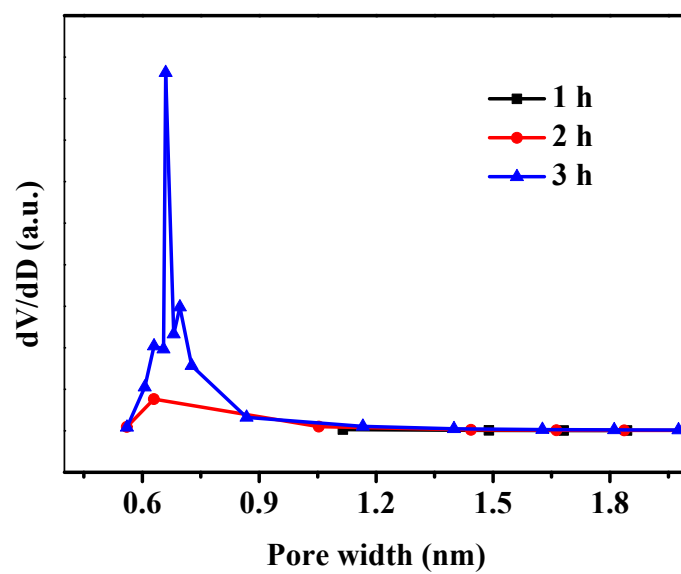


Fig. S3. Pore distribution curves of samples prepared for different crystallization time at 130°C.

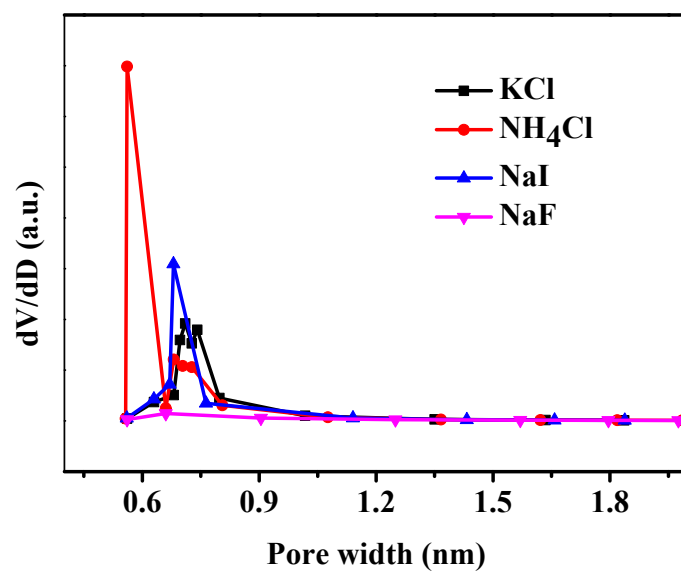


Fig. S4. Pore distribution curves of samples prepared with the addition of different inorganic salts.

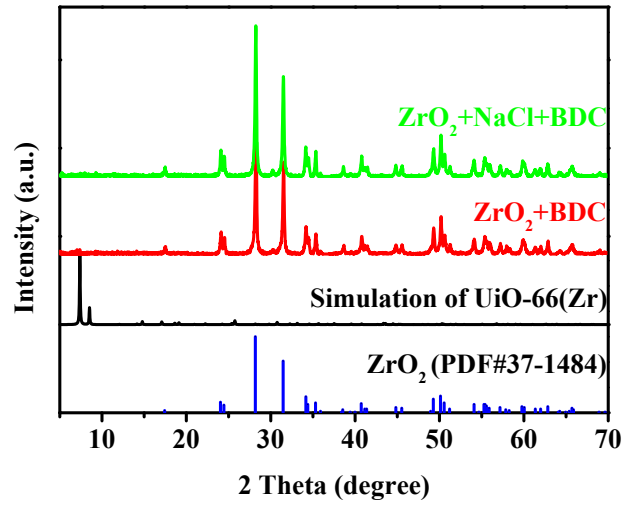


Fig. S5. PXRD patterns of different samples.

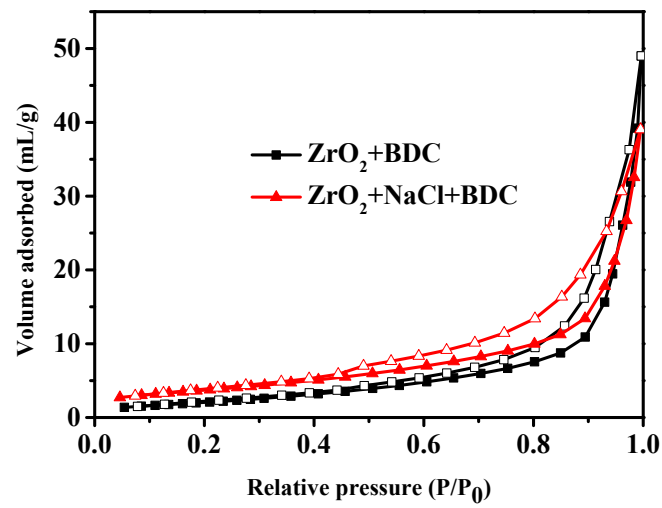


Fig. S6. N₂ sorption isotherms of different samples.

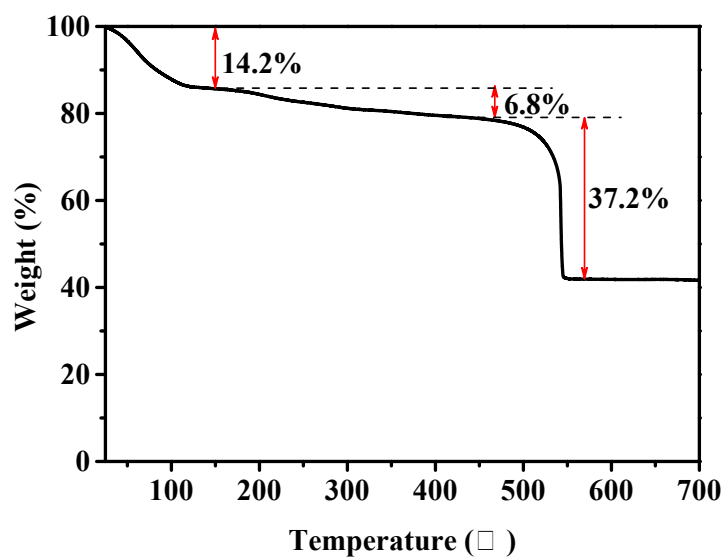


Fig. S7. TG curve of UiO-66(Zr)-NaCl.

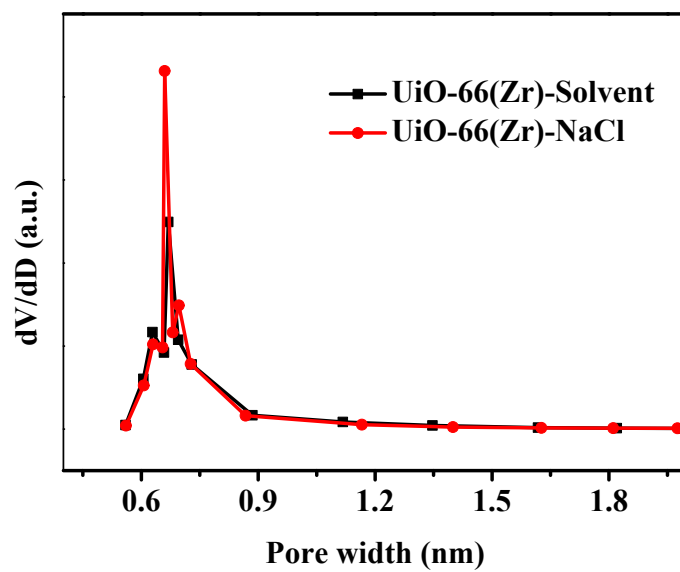


Fig. S8. Pore distribution curves of UiO-66(Zr)-NaCl and UiO-66(Zr)-Solvent

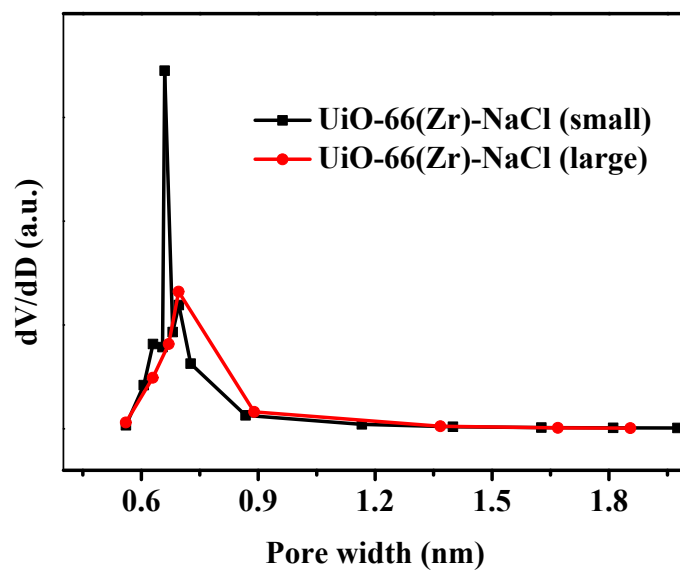


Fig. S9. Pore distribution curves of UiO-66(Zr)-NaCl synthesized on small and large scales.

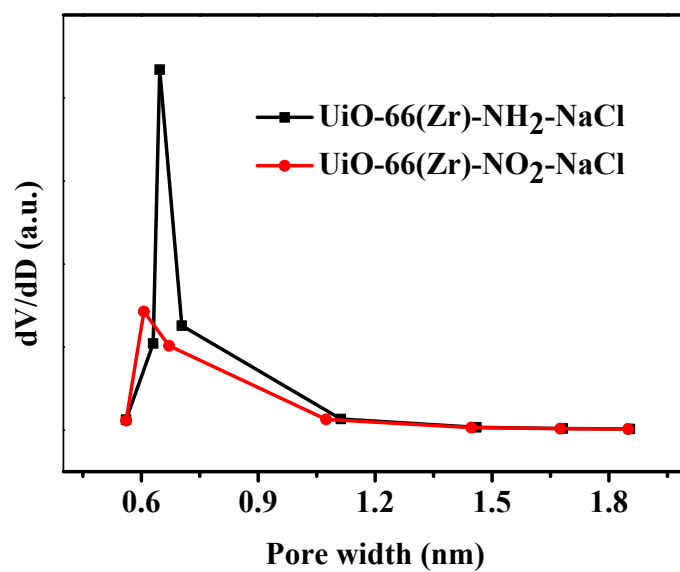


Fig. S10. Pore distribution curves of UiO-66(Zr)-NH₂ and UiO-66(Zr)-NO₂ synthesized with the addition of NaCl.

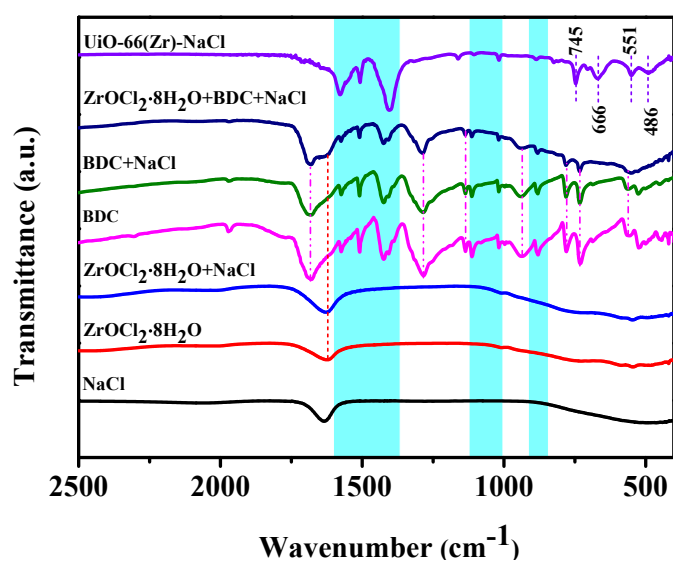


Fig. S11. FT-IR spectra of various samples.

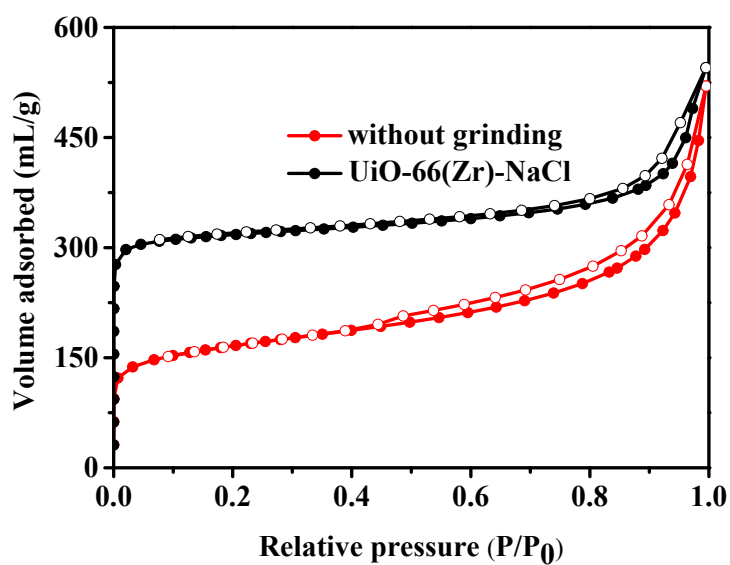


Fig. S12. N₂ sorption isotherms of the sample prepared without grinding in the presence of NaCl.