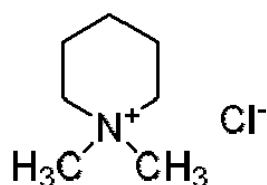


Supplementary Material

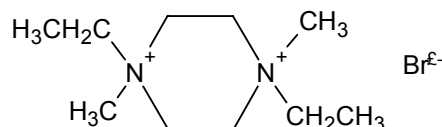
Template Control in Ionothermal Synthesis of Aluminophosphate Microporous Materials

Lei Liu, Xiping Li, Hong Xu, Jinping Li, Zhi Lin and Jinxiang Dong*

Synthesis of eutectic solvents (EU). The required amount of as bought pentaerythritol and quaternary ammonium salt was measured out and ground in a mortar. Melting points of the different EU are given in Table S1.



1,1-dimethylpiperidinium chloride
(DMPCI)



1,4-diethyl-1,4-dimethylpiperazinium
dibromide (DMEPBr)

Table S1. Melting points of the deep eutectic solvents and their constituent compounds

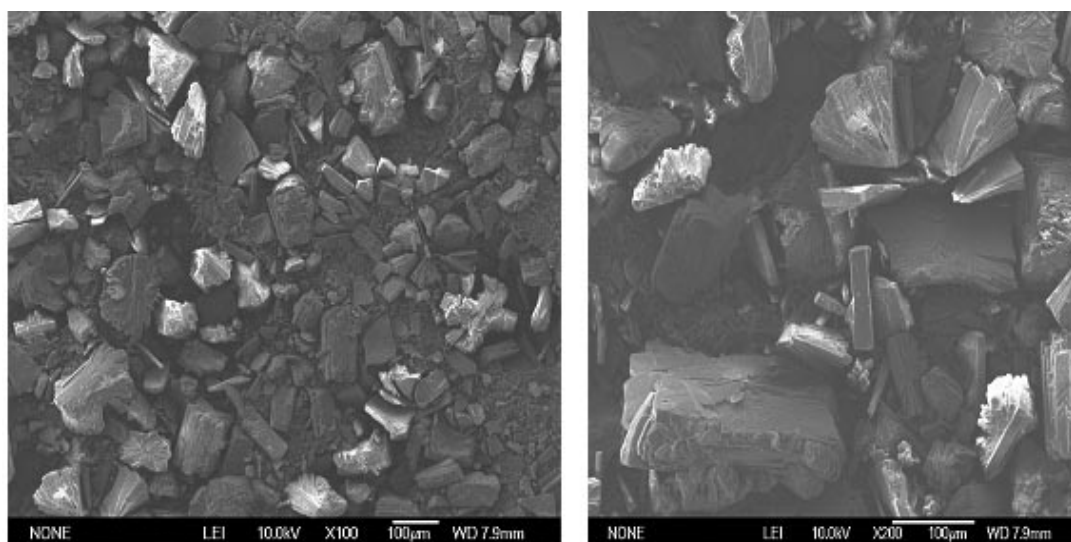
Hydrogen bond donor(g) Mp(°C)	Quaternary ammonium salt (g) Mp (°C)	EU Mp (°C)
Pentaerythritol (1.0) 253-258	choline chloride (3.0) 302-305	80
Pentaerythritol (2.7) 253-258	tetraethylammonium bromide (2.0) 285-290	94
Pentaerythritol (2.0) 253-258	1,4-diethyl-1,4-dimethylpiperazinium dibromide (2.5) 158-162	87
Pentaerythritol (2.0) 253-258	1,1-Dimethylpiperidinium chloride (2.2) 286-290	120

Table S2. Elemental analysis results for five synthesised samples

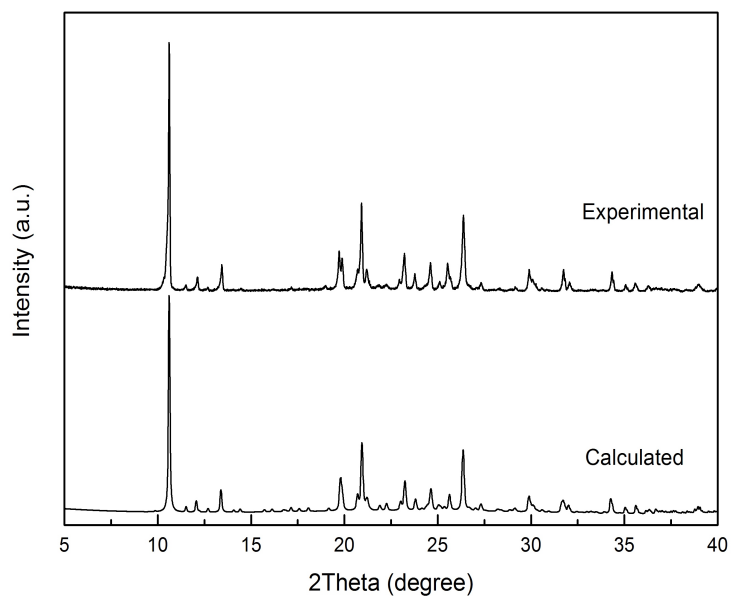
Samples	Elemental analysis results (wt %) ^a					
	C	H	N	Al	P	F
UiO-7	10.64 (9.82)	2.22(2.30)	2.40(2.30)	17.16(17.7)	19.57(20.3)	2.98(3.11)
AlPO ₄ -17	10.86(10.64)	2.40(2.18)	1.73(1.77)	17.75(18.1)	21.14(20.8)	2.56(2.41)
AlPO ₄ -22	8.47(9.4)	1.89(1.85)	1.38(1.6)	18.61(18.1)	23.34(22.5)	-
AlPO ₄ -5	6.90(7.0)	1.76(1.46)	0.98(1.02)	20.02(19.7)	22.33(22.6)	1.50(1.39)
SIZ-10	12.64(12.7)	2.75(2.55)	3.02(2.97)	16.88(17.2)	19.92(19.7)	3.81(4.03)

^aTheoretical value calculated from chemical formula in parenthesis for corresponding element.

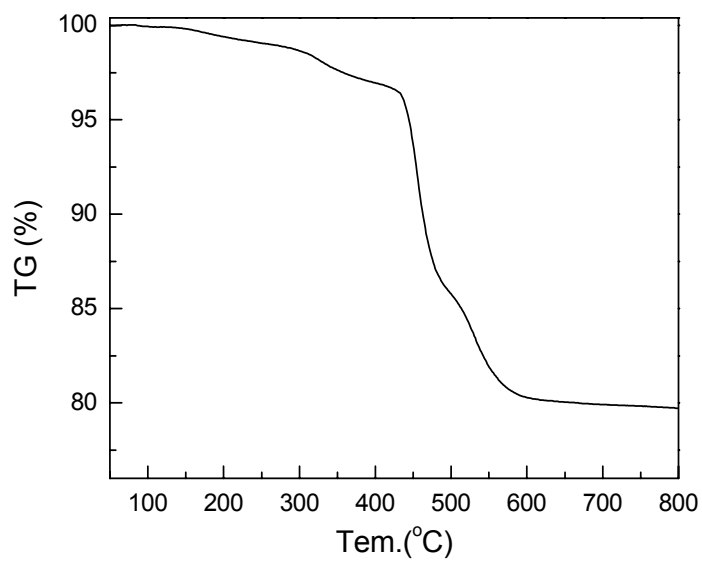
Characterisation details for the different aluminophosphate materials



(A)



(B)



(C)

Figure S1 Characterisation details for UiO-7 prepared with choline chloride containing EU. (A) SEM, (B) calculated and experimental XRD patterns and (C) TG

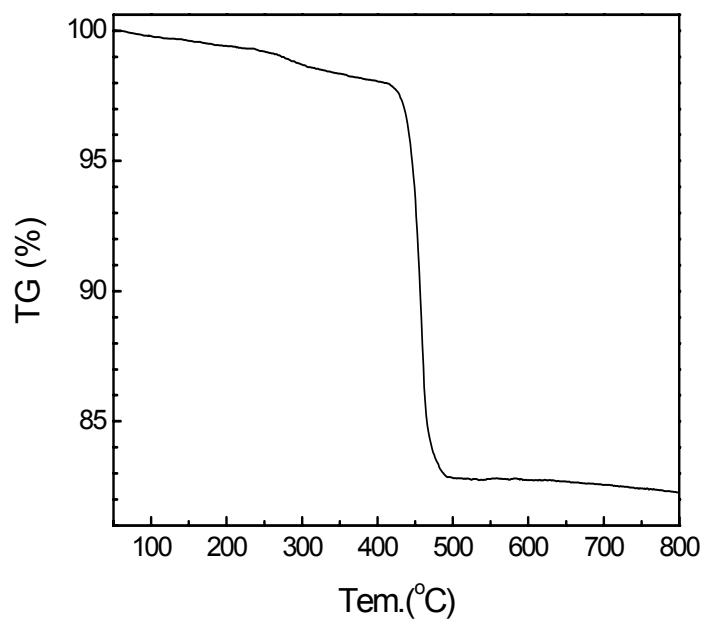


Figure S2 TG curve for AlPO₄-17 templated 1,1-dimethylpiperidinium chloride in the presence of HF.

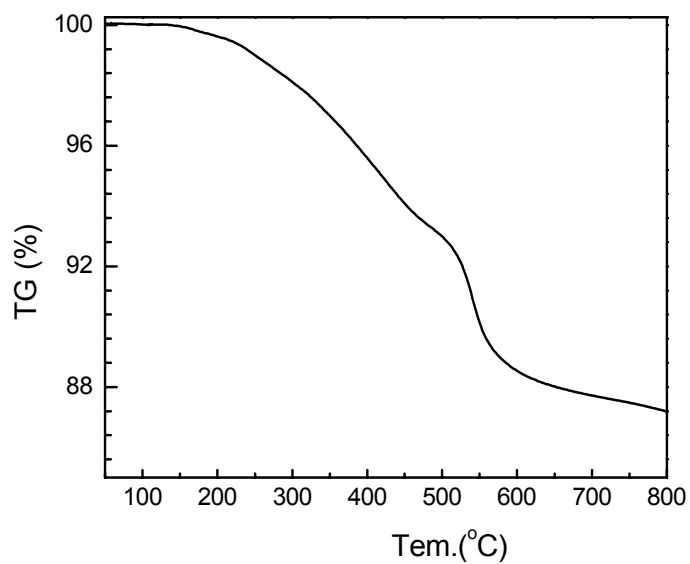
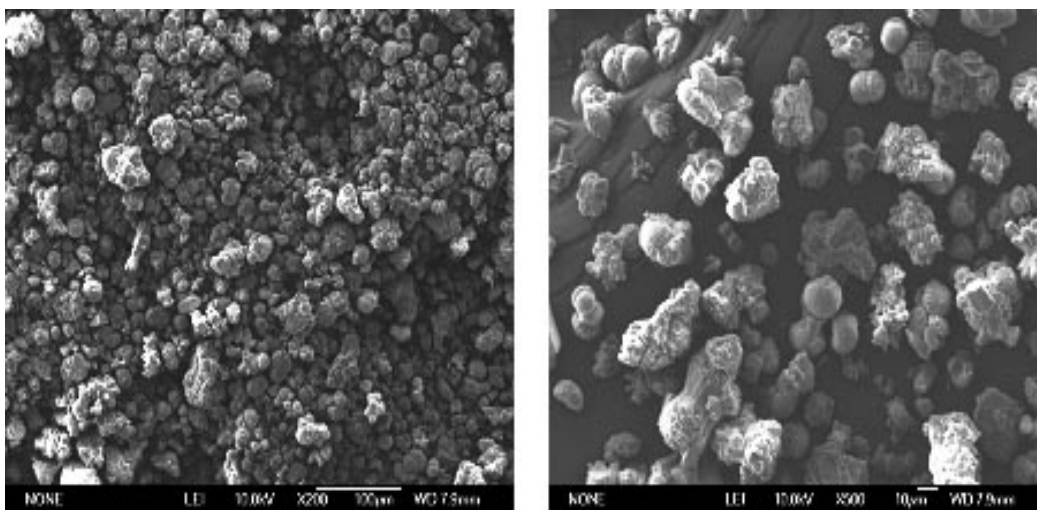
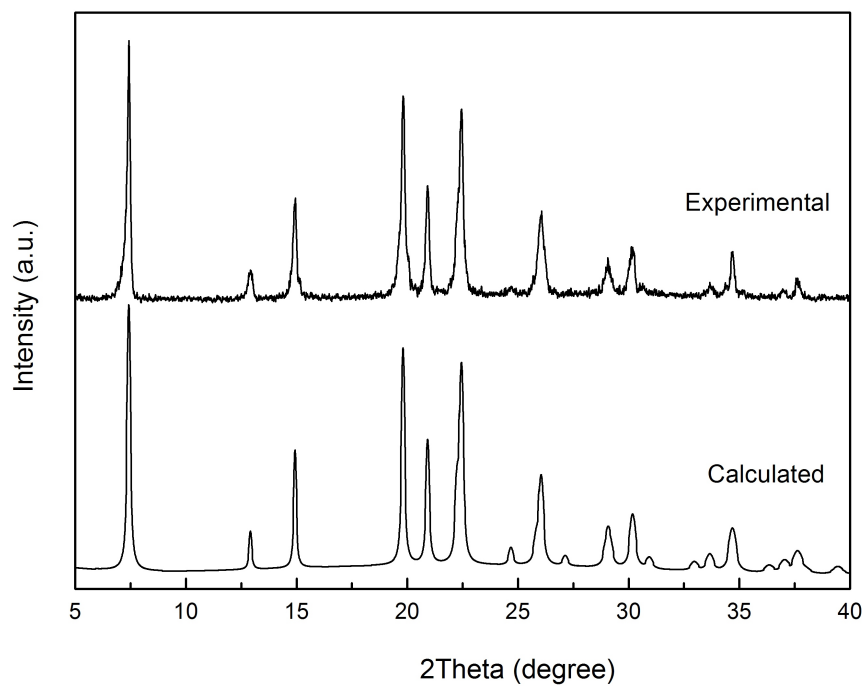


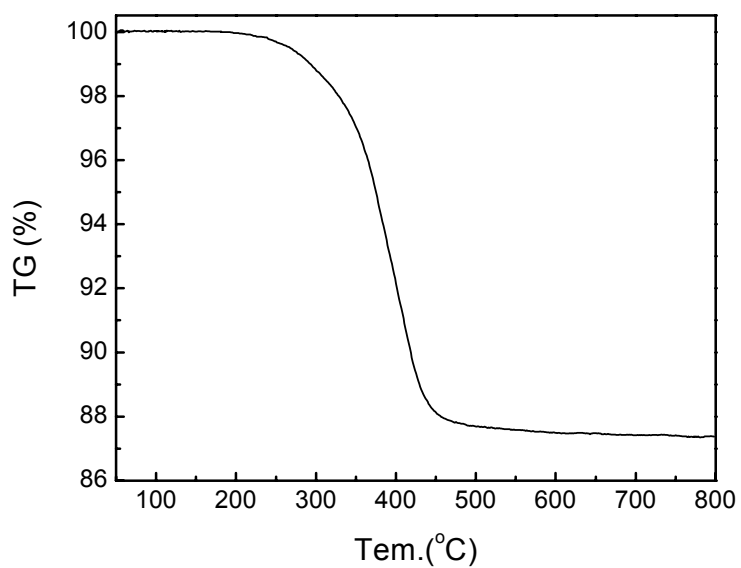
Figure S3 TG curve for AlPO₄-22 templated 1,1-dimethylpiperidinium chloride in the absence of HF



(A)

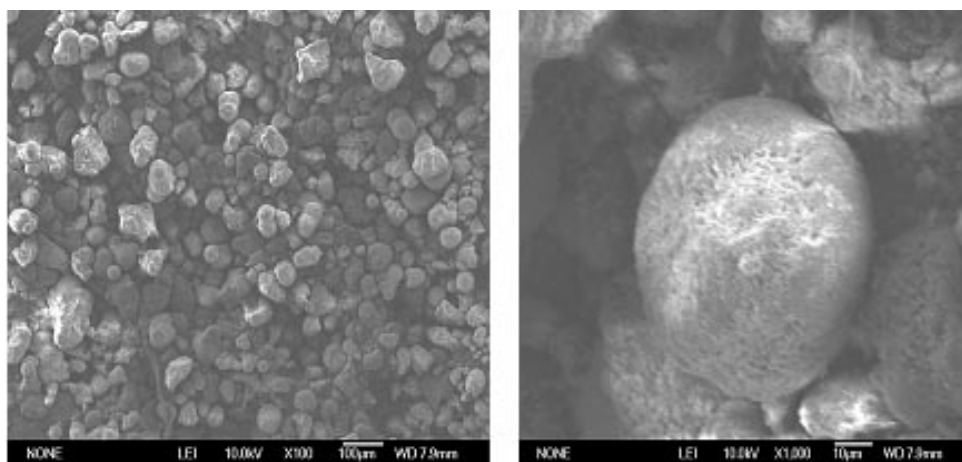


(B)

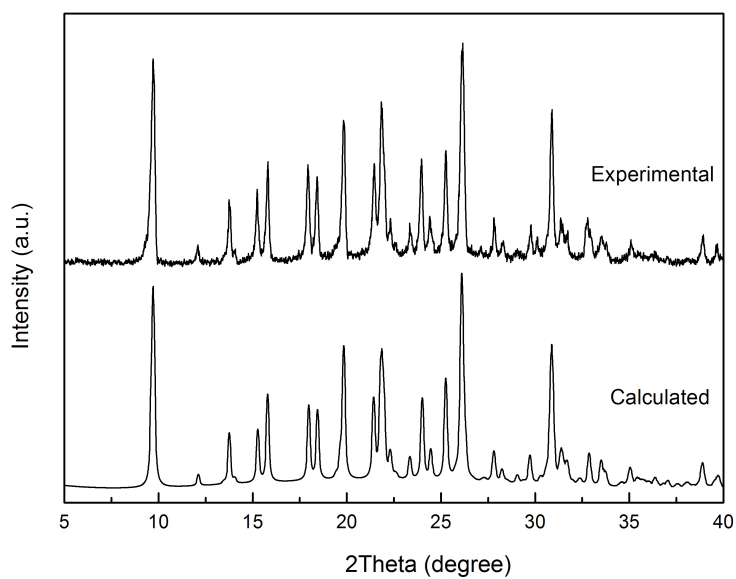


(C)

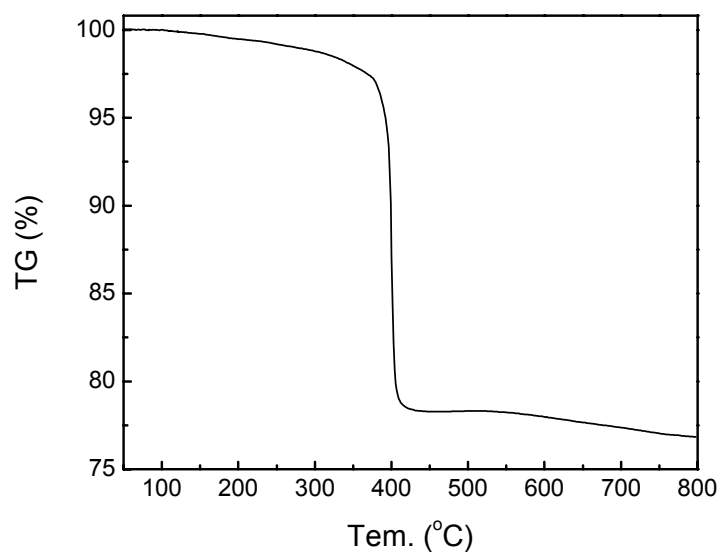
Figure S4 Characterisation details for $\text{AlPO}_4\text{-5}$ prepared with tetraethylammonium bromide containing EU. (A) SEM, (B) calculated and experimental XRD patterns and (C) TG



(A)



(B)



(C)

Figure S5 Characterisation details for SIZ-10 prepared with 1,4-diethyl-1,4-dimethylpiperazinium dibromide containing EU. (A) SEM, (B) calculated and experimental XRD patterns and (C) TG

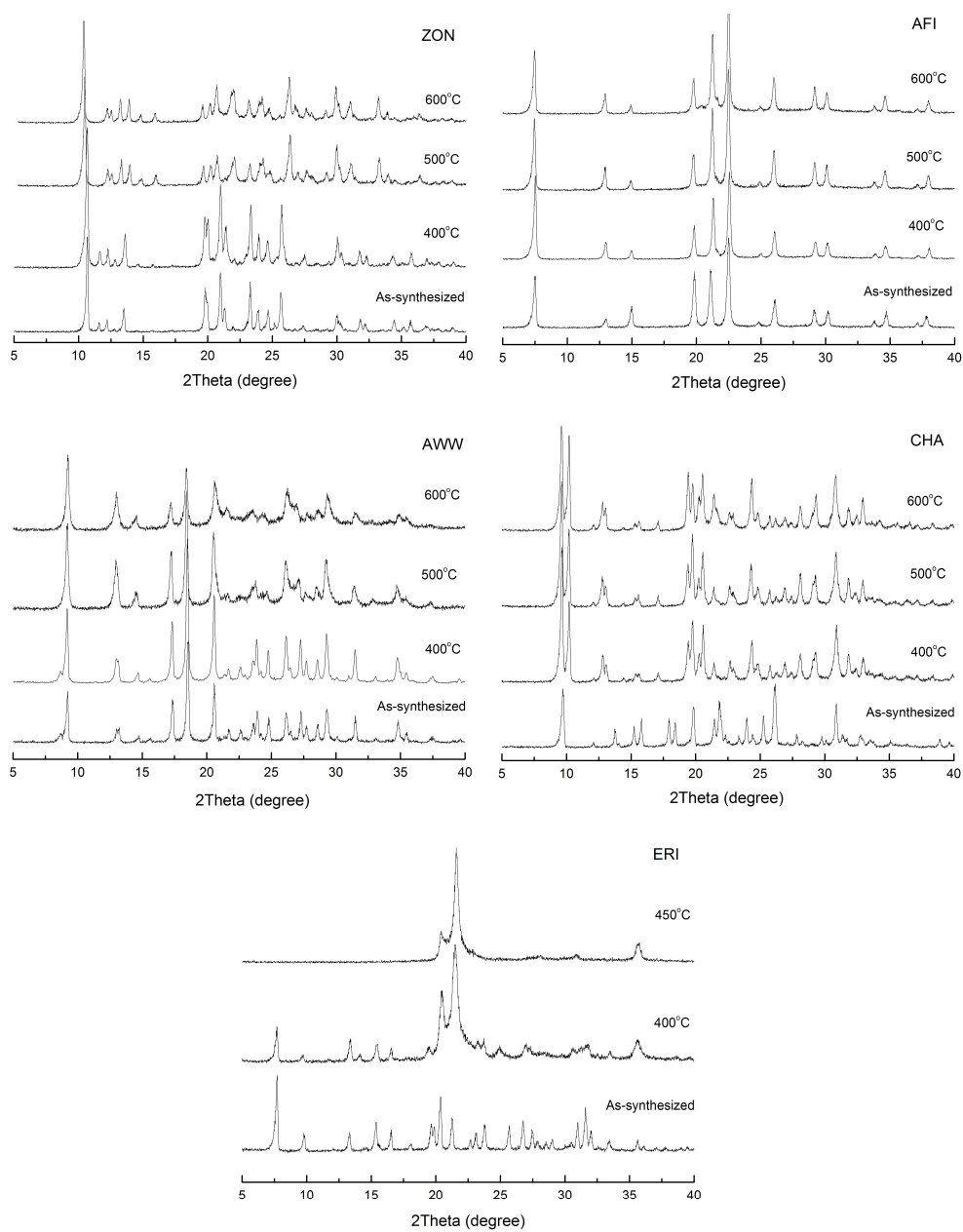


Figure S6 Powder XRD patterns of obtained samples after heat treated at different temperatures.