Supporting Information

Pore structure controllable synthesis of mesoporous poly(ionic liquid)s by copolymerization of alkylvinylimidazolium salts and divinylbenzene

Xuping Feng, Chenjue Gao, Zengjing Guo, Yu Zhou*, Jun Wang*

State Key Laboratory of Materials-Oriented Chemical Engineering, College of Chemistry and Chemical Engineering, Nanjing Tech University, Nanjing 210009, China.
** Corresponding author. Tel: +86-25-83172264; E-mail: njutzhouyu@njtech.edu.cn (Y. Zhou), junwang@njtech.edu.cn (J. Wang); Tel: +(86) 25-83172264*

Table S1 Summary of the different experimental conditions employed in the dispersion polymerization of ionic liquids and DVB, the pore structure parameters and the N content of the obtained PIL products.

NO.	IL	solvent	Volume[a] (mL)	AIBN[b] (g)	S_{BET}[c] (m^2/g)	Vp[d] (cm^3/g)	Dp[e] (nm)	N[f] (%)
1	C4	MeOH	30	0.09	213	0.15	3.7	3.2
2	C4	EtOH	30	0.09	125	0.23	2.4	1.4
3	C4	MeCN	30	0.09	191	0.29	3.7	1.9
4	C4	MeCN/EA	15/15	0.09	341	0.61	13.9	5.0
5	C8	MeOH	30	0.09	33	0.05	3.7	5.6
6	C8	EtOH	30	0.09	41	0.08	3.7	1.6
7	C8	MeCN	30	0.09	192	0.47	3.7	1.9
8	C8	MeCN/EA	15/15	0.09	4	0.02	3.7	6.0
9	C12	MeOH	30	0.09	23	0.06	3.7	2.7
10	C12	EtOH	30	0.09	20	0.07	3.3	2.0
11	C12	MeCN	30	0.09	127	0.30	3.7	2.3
12	C12	MeCN/EA	15/15	0.09	3	0.02	3.7	5.4
13	C16	MeOH	30	0.09	9	0.03	2.7	2.6
14	C16	EtOH	30	0.09	13	0.05	2.4	2.3
16	C16	MeCN	30	0.09	5	0.01	2.4	1.5
17	C16	MeCN/EA	15/15	0.09	41	0.51	33	4.4

[a] solvent volume used in the synthesis; [b] the molar ratio of ionic liquid to AIBN; [c] BET surface area; [d] total pore volume; [e] BJH mesopore diameter calculated from the adsorption branch; [f] the nitrogen content in the finial PILs.

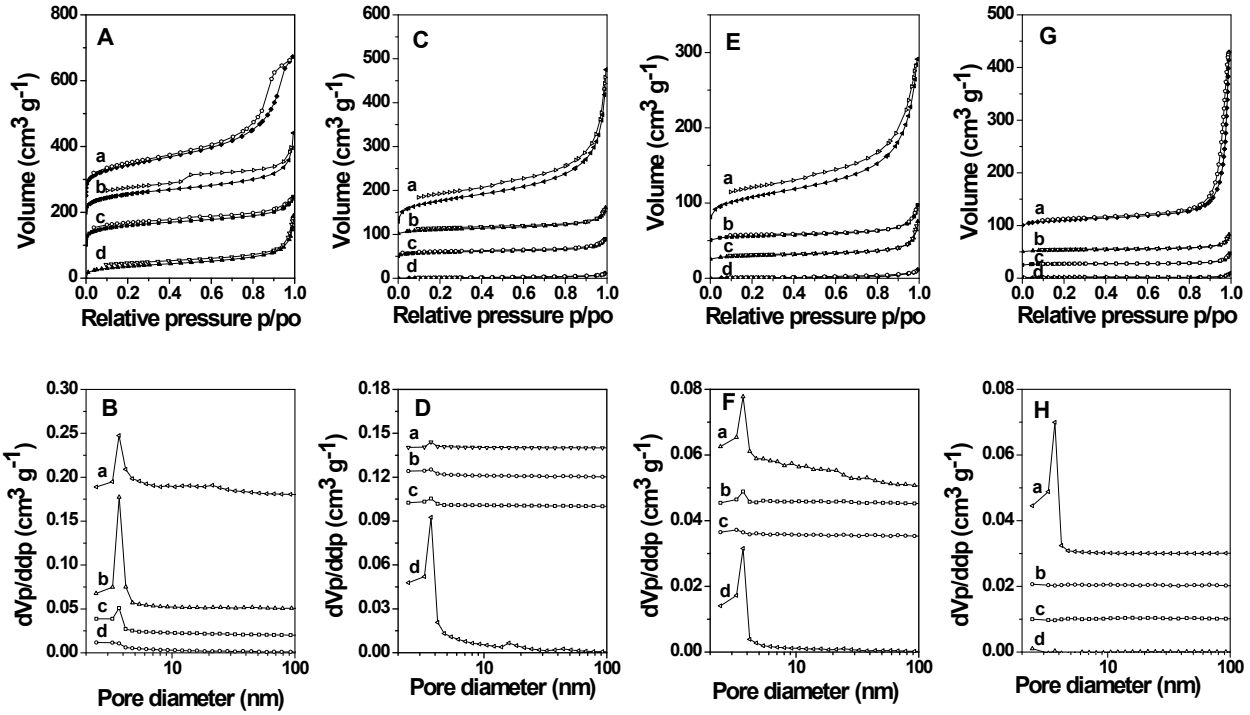

Figure S1 Nitrogen adsorption-desorption isotherms (A) and pore size distributions (B) of the poly(VI-C4--DVB) prepared in five kinds of solvent: (a) MeCN/EA (15/15), (b) MeCN, (c) MeOH and (d) EtOH. The adsorption isotherms for samples a, b and c are shifted by 250, 200 and 100 $cm^3 g^{-1}$. The pore size distribution curves for samples a, b and c are shifted by 0.04, 0.1 and 0.02 $cm^3 g^{-1}$. Nitrogen adsorption-desorption isotherms (C) and pore size distributions (D) of the poly(VI-C8--DVB) prepared in five kinds of solvent: (a) MeCN , (b) EtOH (c) MeOH and (d) MeCN/EA (15/15). The adsorption isotherms for samples a, b and c are shifted by 100, 100 and 50 $cm^3 g^{-1}$. The pore size distribution curves for samples a, b and c are shifted by 0.14, 0.12 and 0.1 $cm^3 g^{-1}$. Nitrogen adsorption-desorption isotherms (E) and pore size distributions (F) of the poly(VI-C8--DVB) prepared in five kinds of solvent: (a) MeCN, (b) MeOH, (c) EtOH and (d) MeCN/EA (15/15). The adsorption isotherms for samples a, b and c are shifted by 100, 50 and 25 $cm^3 g^{-1}$. The pore size distribution curves for samples a, b and c are shifted by 0.05, 0.1 and 0.035 $cm^3 g^{-1}$. Nitrogen adsorption-desorption isotherms (G) and pore size distributions (H) of the poly(VI-C16--DVB) prepared in five kinds of solvent: (a) MeCN/EA (15/15), (b) EtOH, (c) MeOH and (d) MeCN. The adsorption isotherms for samples a, b and c are shifted by 100, 50 and 25 $cm^3 g^{-1}$. The pore size distribution curves for samples b and c are shifted by 0.02 and 0.01 $cm^3 g^{-1}$.