Supporting Information

Dual Functionalized Imidazolium Ionic Liquids as Curing Agents for Epoxy Resin

zhiyi Jiang,[†,‡] Qingchen Wang,[‡] Long Liu,[‡,‖*] Yanqiang Zhang,[‡*] Fang Du,[§] Aimin Pang[§*]

[†]School of Chemical Engineering and Environment, China University of Petroleum 102249, Beijing

[‡]CAS Key Laboratory of Green Process and Engineering, Institute of Process Engineering, Chinese Academy of Sciences, Beijing 100190, China

[§]Science and Technology on Aerospace Chemical Power Laboratory, Hubei Institute of Aerospace Chemical hemotechnology, Xiangyang, Hubei 441003, China

[‖]Zhongke Langfang Institute of Process Engineering, Langfang 065001, China

E-mail: lliu@ipe.ac.cn, yqzhang@ipe.ac.cn, ppam@tom.com

List of Figures

Table S1. DSC data of ILs/TDE-85 blends as a function of IL content 3

Table S2. DSC data of ILs/TDE-85 blends as a function of heating rate 4

Figure S1. DSC curves of different ratios of TDE-85/ILs 5

Figure S2 DSC curves of ILs/TDE-85 systems at heating rates of 5, 10, 15 and 20 °C/min.....6

Figure S3.TG and the corresponding derivative thermogravimetric analysis (DTG) curves of the

TDE-85 cured with ILs. 7

Table S1. DSC data of ILs/TDE-85 blends as a function of IL content

Composition acronym	Mass Ratio	T_o (°C)	T_p (°C)	ΔH_R (J/g)
1a/TDE-85	10:100	213.57	257.31	640.49
	15:100	211.83	250.90	736.77
	20:100	212.02	249.19	697.37
	25:100	212.53	247.17	485.38
	30:100	184.28	245.63	268.70
2a/TDE-85	10:100	208.3	271.18	612.67
	15:100	202.77	259.76	679.76
	20:100	197.81	254.73	615.67
	25:100	200.87	250.93	462.95
	30:100	193.76	243.18	488.89
3a/TDE-85	10:100	215.73	281.78	603.44
	15:100	210.93	276.68	657.84
	20:100	208.10	270.76	745.31
	25:100	208.88	265.63	555.68
	30:100	206.35	260.43	553.32
1b/TDE-85	25:100	114.72	174.37	720.28
	30:100	158.87	165.13	852.09
	35:100	158.64	164.76	892.01
	40:100	158.89	165.47	927.99
	45:100	158.55	164.89	892.24
2b/TDE-85	5:100	148.30	155.94	126.69
	10:100	147.71	153.34	267.20
	15:100	147.13	153.86	304.25
	20:100	146.96	153.93	290.74
	25:100	146.73	154.14	284.31
3b/TDE-85	10:100	148.73	177.32	569.20
	15:100	149.27	175.41	690.26
	20:100	147.94	171.51	752.73
	25:100	146.01	168.28	830.81
	30:100	144.78	166.86	798.00

Table S2. DSC data of ILs/TDE-85 blends as a function of heating rate

Composition acronym	β (°C /min)	T_o (°C)	T_p (°C)	ΔH_R (J/g)
1a/TDE-85	5	147.69	153.36	483.17
	10	158.89	165.47	927.99
	15	165.65	172.90	860.75
	20	169.77	178.84	941.88
2a/TDE-85	5	160.78	244.97	610.45
	10	147.13	153.86	304.25
	15	208.75	271.23	673,21
	20	217.54	277.88	532.82
3a/TDE-85	5	193.60	254.91	634.4
	10	146.01	168.28	830.81
	15	151.56	176.23	818.05
	20	155.97	180.33	892.69
1b/TDE-85	5	147.69	153.36	783.17
	10	158.89	165.47	927.99
	15	165.65	172.90	860.75
	20	169.77	178.84	941.88
2b/TDE-85	5	136.43	140.95	305.97
	10	147.13	153.86	304.25
	15	152.11	161.40	252.40
	20	158.51	169.93	290.98
3b/TDE-85	5	137.89	157.25	634.40
	10	146.01	168.28	830.81
	15	151.56	176.23	818.05
	20	155.97	180.38	892.59

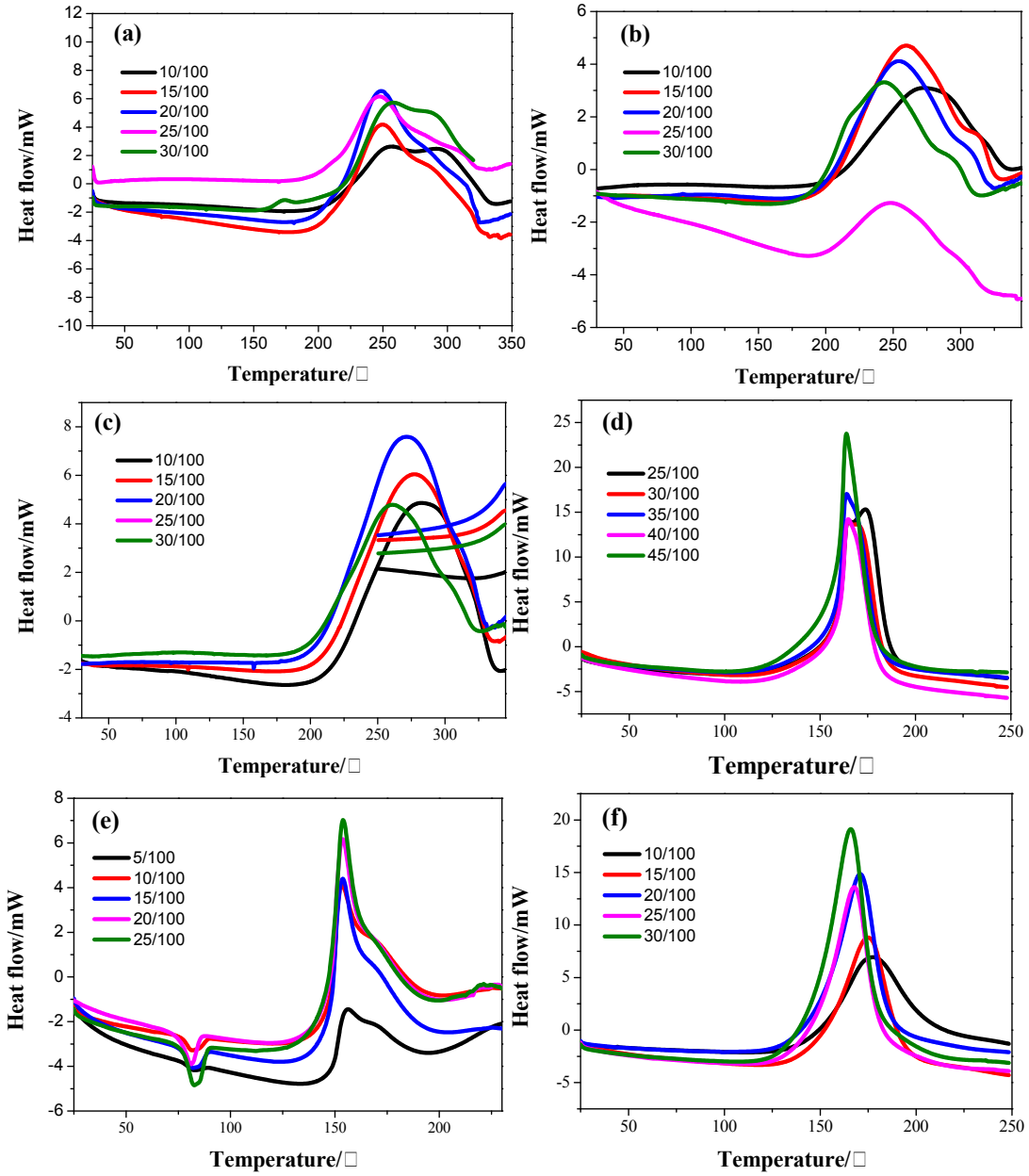

Figure S1. DSC curves of different ratios of ILs/TDE-85. (a) **1a**/TDE-85; (b) **2a**/TDE-85; (c) **3a**/TDE-85; (d) **1b**/TDE-85; (e) **2b**/TDE-85; (f) **3b**/TDE-85.

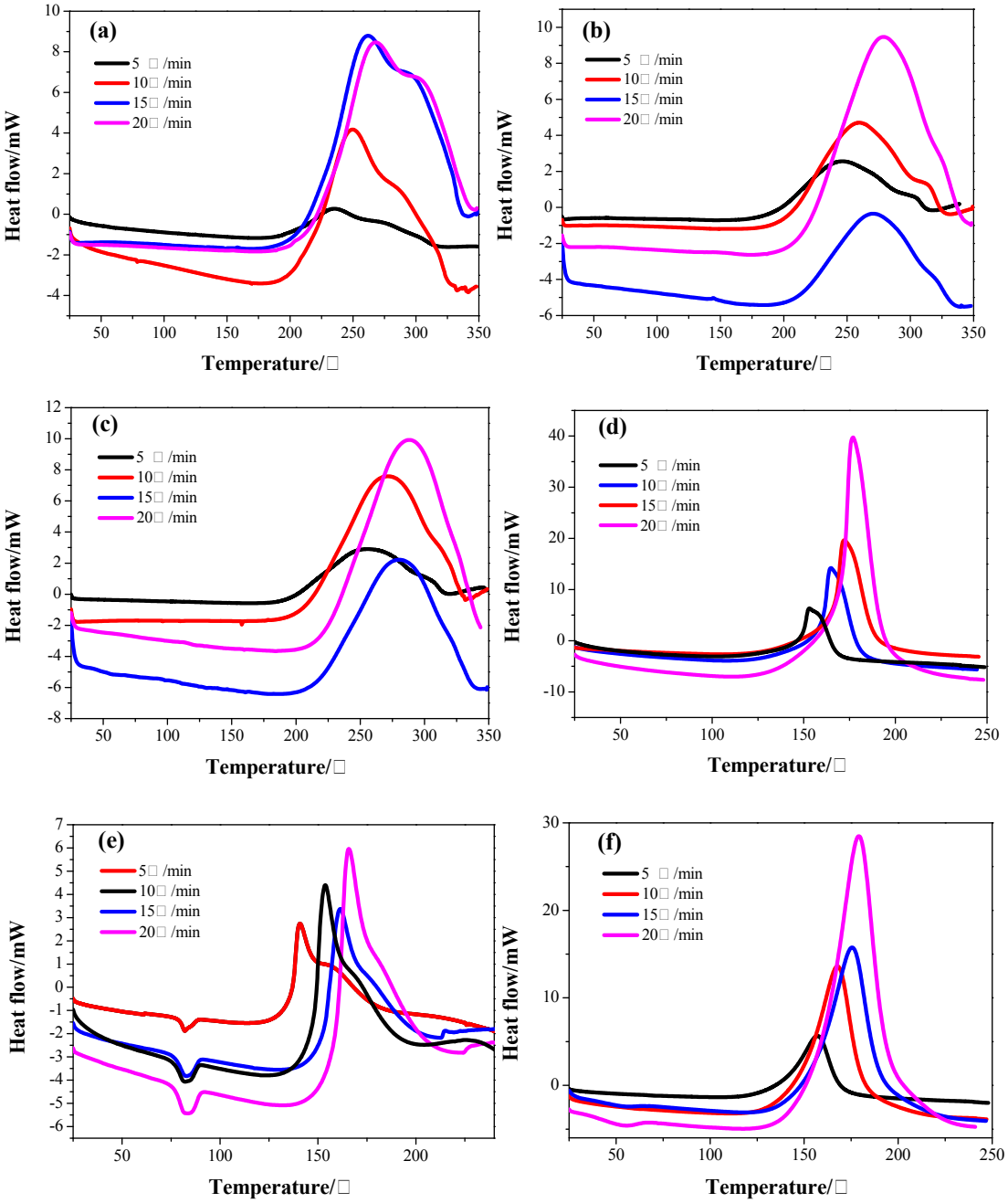

Figure S2. DSC curves of ILs/TDE-85 systems at heating rates of 5, 10, 15 and 20 °C/min under nitrogen atmosphere. (a) **1a**/TDE-85; (b) **2a**/TDE-85; (c) **3a**/TDE-85; (d) **1b**/TDE-85; (e) **2b**/TDE-85; (f) **3b**/TDE-85.

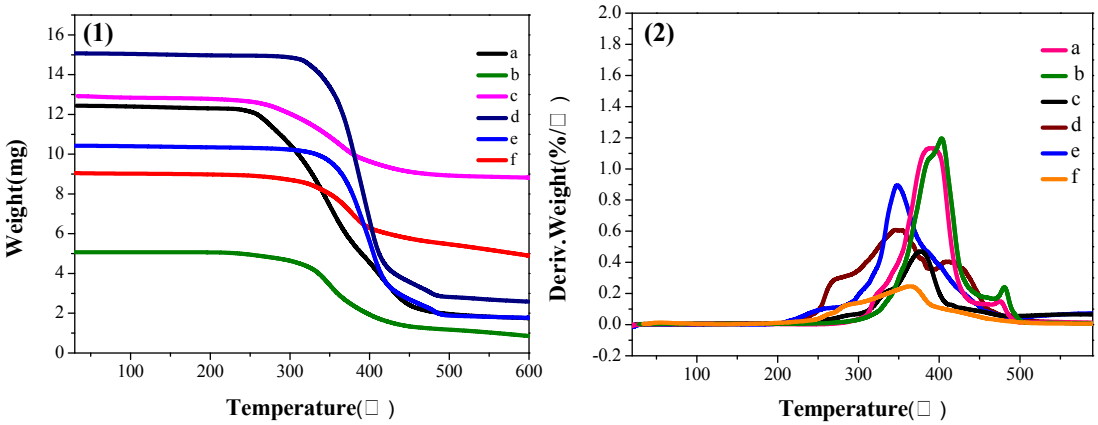

Figure S3. Results of Thermogravimetric Analysis (TG) curve (**1**) and derivative thermogravimetric (DTG) curve (**2**) measurements for epoxy resin cured with ILs:(a) **1a**/TDE-85, (b) **2a**/TDE-85, (c) **3a**/TDE-85, (d) **1b**/TDE-85, (e) **2b**/TDE-85, (f) **3b**/TDE-85.