Electronic Supplementary Material (ESI) for Soft Matter.

Elettronic Supplementary Information

Dicationic Organic Salts: Gelators for Ionic Liquids

Francesca D'Anna,[a] Carla Rizzo,[a] Paola Vitale,[a] Giuseppe Lazzara,[b] Renato Noto[a]**

[a]Dipartimento STEBICEF, Sezione di Chimica, Università degli Studi di Palermo, Viale delle Scienze-Parco d'Orleans II, 90128 Palermo (Italy).

[b]Dipartimento di Fisica e Chimica, Università degli Studi di Palermo, Viale delle Scienze-Parco d'Orleans II, 90128 Palermo (Italy).

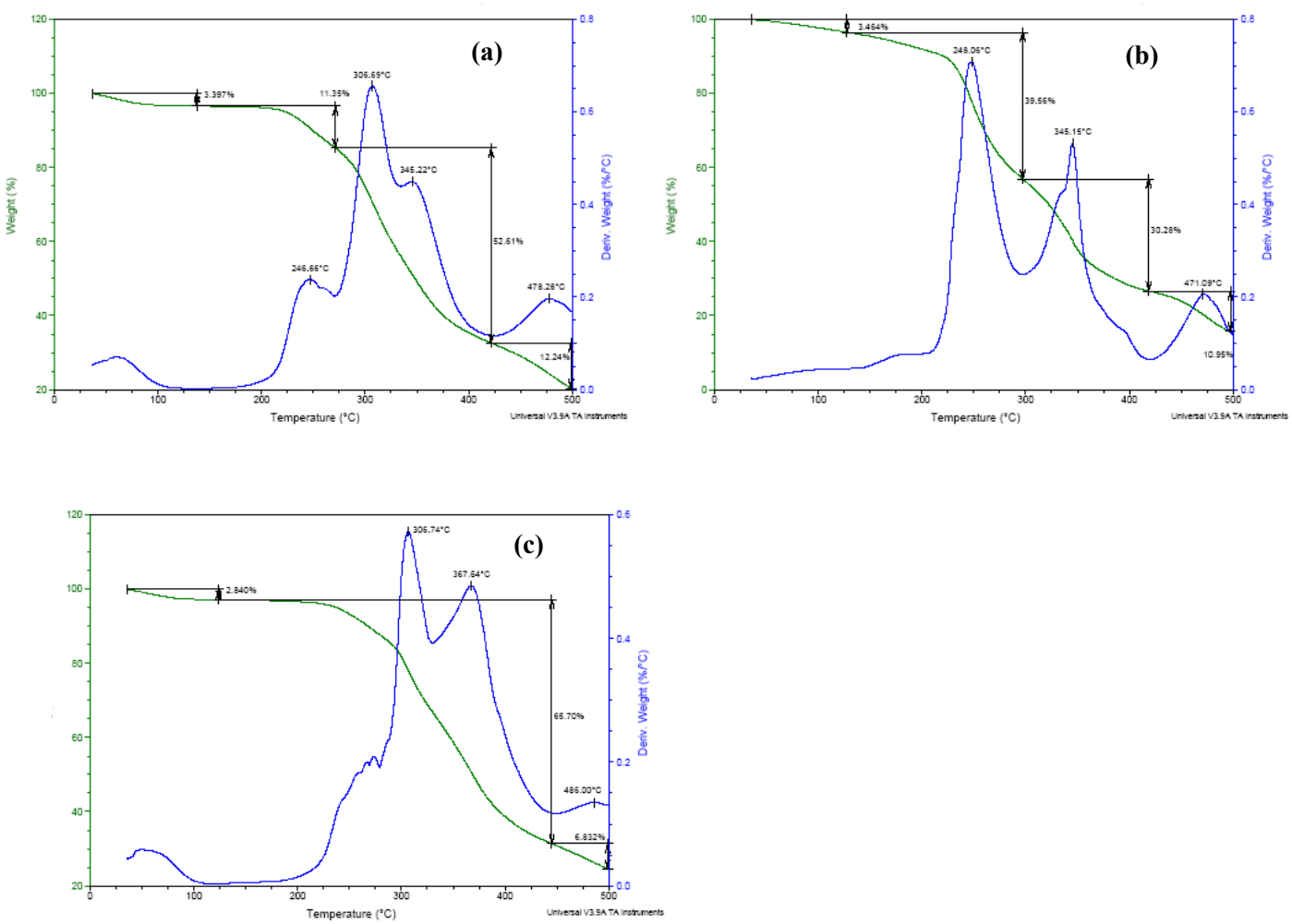

Figure S1. TGA tracks relevant to: (a) $[Pyrr][Br]_2$; (b) [Pyrr][1,5-NDS]; (c) [Pyrr][2,6-NDS].

Table S1. Decomposition temperatures and percentage of loss in weight in brackets collected by TGA measurements and relevant to the organic salts **2a-c.**

Organic Salt	T_{d1} (°C)	T_{d2} (°C)	T_{d3} (°C)
$[Pyrr][Br]_2$ (**2a**)	248 (39.5)	345 (30.3)	471 (11.0)
[Pyrr][1,5-NDS] (**2b**)	246 (11.3)	307 (52.7)	478 (12.4)
[Pyrr][2,6-NDS] (**2c**)		307 (65.0)	486

Table S2. Gelation tests for diimidazolium **1a-d** and dipyrrolidinium **2a-c** salts in different solvents.

	[Im][Br]$_2$		**[Im][1,5-NDS]**		**[Im][2,6-NDS]**		**[Pyrr][1,5-NDS]**		**[Pyrr][2,6-NDS]**	
Solvent	**Range[b]**		**Range**		**Range**		**Range**		**Range**	
Water	2%	P	2.6%	S	2.5%	I	2.4%	I	2.4%	I
Methanol	2%	SR	2-4.6%	SR	2.3%	SR	2%	SR	2.2%	SR
Ethanol	1%	S	2-4.2%	S	3.4%	S	2.7%	S	2.8%	I
i-Propanol	1%	S	1-2.5%	PS	2.8%	PS	2%	PS	2.2%	PS
t-Butanol	1%	S	0.5-2%	PS	2%	I	2.3%	I	2.3%	I
Pentanol	1%	S	2%	S	2%	PS	2.2%	PS	2%	PS
Hexanol	1%	S	2.6%	S	2%	PS	2%	PS	2.3%	PS
Ethylene Glycol	1%	S	2-5%	S	2.2%	S	2.1%	S	2%	S
Triethylene Glycol	1.6%	S	3-6%	S	2%	S	2.2%	S	2%	S
Glycerol	1-4%	S	3-5%	S	6-16%	PG	5-17%	PG	4-12%	PG
Dioxolane	1%	S	3%	I	2.2%	I	2%	I	2.3%	I
Acetone	2%	P	2.2%	I	2.4%	I	1.8%	I	2%	I
Acetonitrile	1%	S	1.8%	I	2.4%	I	2%	PS	2.2%	PS
Toluene	1.8%	I	2%	I	5%	I	2.2%	I	2.2%	I
Xylene	2%	I	2%	I	2.2%	I	2.2%	I	2.3%	I
Acetic acid	2%	S	2.4-3%	S	1.9%	S	1.8%	I	1.8%	I
Dioxane	8.4%	I	1.8%	I	2.8%	S	2.7%	I	2.5%	I
THF	3.9%	P	2%	I	2.2%	I	2.2%	I	2.3%	PS
DMSO	2%	SR	2%	SR	2.3%	SR	2.3%	SR	2.7%	SR
DMF	2.3%	SR	1.5%	SR	2%	SR	2.1%	SR	2.6%	SR

[a]S = soluble; PS = partially soluble; I = insoluble; PG = gel-like precipitate; P = precipitate; SR = soluble at room temperature. [b]investigated organogelator percentage range. [b](%, w/w, organogelator/solvent).

Table S3. Time and I_{RLS} intensity values[a] corresponding to gelation processes of **1a-d** in ILs solution.

Ionogel	[b]t_n (s)	[b]t_m (s)	[b]I_m (a.u)	[b]t_e (s)	[b]I_e (a.u)
[Im][Br]$_2$/[bEt_3N][NTf_2]				540	80
[Im][1,5-NDS]/[bEt_3N][NTf_2]				130	90
[Im][2,6-NDS]/[bEt_3N][NTf_2]	300	970	480	1390	435
[Im][2,6-NDC]/[bEt_3N][NTf_2]				260	640
[Im][2,6-NDC]/[bmpip][NTf_2]		55	260	1470	125

[a]Time and intensity values were reproducible within 5%.[b]t_n = nucleation time; t_m = fibrillar intermediate formation time; I_m = fibrillar intermediate formation intensity; t_e = gel formation time; I_e = gel formation intesity.

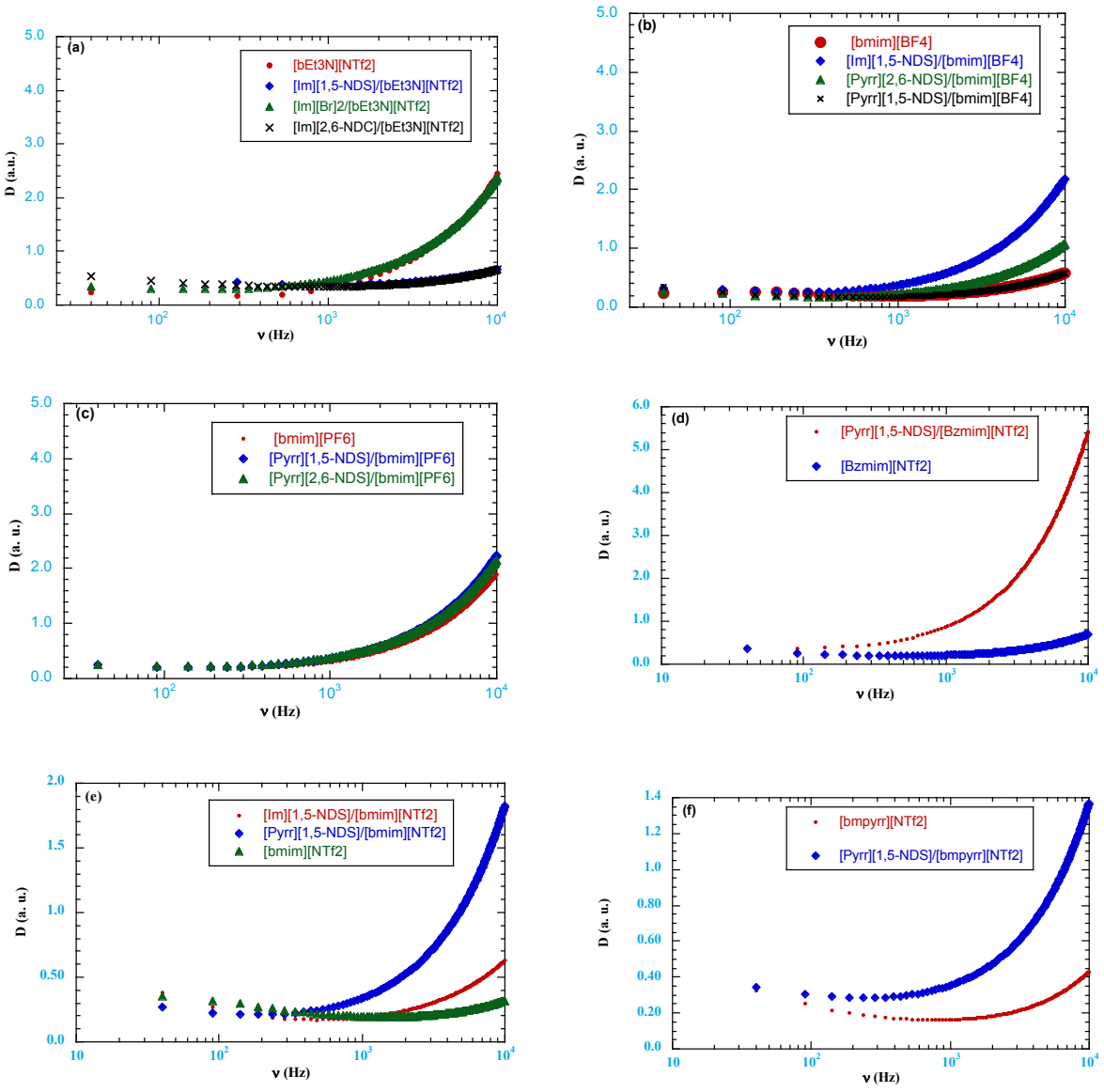

Figure S2. Ionogel dissipation factor (D) as function of ν.