

Table 1 Effects in polarity of the addition of ionic liquids to acetonitrile.

Mixture (ACN + RTIL) ^a	Volume RTIL (μL)	$X_{RTIL/ACN} \times 10^{-4b}$	$\mu_{RTIL/Betaine}^c$	Wavelength (nm) ^d	$E_T(30)^e$	$E_T^N f$
ACN	-	-	-	626.1	45.67	0.462
[N _{1,8,8,8}][Cl]	2	0.98	4.48	626.0	45.67	0.462
	4	1.97	8.96	625.9	45.68	0.462
	6	2.96	13.44	624.8	45.76	0.465
	10	4.94	22.41	624.4	45.79	0.466
[N _{1,8,8,8}][DCA]	2	0.89	4.04	624.5	45.78	0.466
	4	1.78	8.08	624.5	45.78	0.465
	6	2.67	12.12	624.4	45.79	0.466
	10	4.45	20.20	623.1	45.89	0.469
[P _{6,6,6,14}][Cl]	2	0.74	3.35	624.8	45.76	0.465
	4	1.48	6.71	624.7	45.77	0.465
	6	2.22	10.06	624.3	45.80	0.466
[P _{6,6,6,14}][BF ₄]	2	0.71	3.22	626.1	45.67	0.462
	4	1.42	6.43	626.1	45.67	0.462
	6	2.13	9.65	625.0	45.75	0.464
	10	3.54	16.08	624.7	45.77	0.465
[P _{6,6,6,14}][NTf ₂]	2	0.60	2.71	624.7	45.77	0.465
	4	1.19	5.42	624.9	45.75	0.465
	6	1.79	8.14	625.5	45.71	0.463
	10	2.99	13.56	625.4	45.72	0.464
[P _{6,6,6,14}][DCA]	2	0.71	3.23	626.1	45.67	0.462
	4	1.42	6.46	626.1	45.67	0.462
	6	2.13	9.69	626.0	45.67	0.462
	10	3.56	16.15	624.7	45.77	0.465
[EMIM][NTf ₂]	2	1.69	7.69	537.5	53.19	0.694
	4	3.39	15.37	531.9	53.76	0.712
	6	5.08	23.06	531.5	53.79	0.713
	10	8.47	38.43	530.8	53.87	0.715
[EMIM][EtSO ₄]	2	2.27	10.32	625.9	45.68	0.462
	4	4.55	20.65	623.1	45.89	0.469
	6	6.82	30.97	621.2	46.02	0.473
	10	1.14	51.61	617.2	46.33	0.482
[EMIM][MDEGSO ₄]	2	1.62	7.36	623.9	45.83	0.467
	4	3.24	14.72	621.7	45.99	0.472
	6	4.87	22.09	618.3	46.25	0.480
	10	8.11	36.81	615.0	46.49	0.487
[C ₁₀ MIM][BF ₄]	2	1.51	6.84	577.0	49.55	0.582
	4	3.02	13.69	570.9	50.08	0.598
	6	4.52	20.53	561.9	50.88	0.623
	8	6.03	27.38	557.9	51.25	0.634
[C ₂ OHMIM][PF ₆]	2	2.36	10.73	570.3	50.14	0.600
	4	4.73	21.46	564.0	50.70	0.617
	6	7.09	32.19	557.4	51.29	0.636
	10	11.82	53.66	552.3	51.77	0.650
[C ₂ OHMIM][BF ₄]	2	2.66	12.06	624.4	45.79	0.466
	4	5.31	24.12	623.0	45.90	0.469
	6	7.97	36.18	621.4	46.01	0.473
	10	13.29	60.31	617.8	46.28	0.481
[(C ₆) ₄ DMG][Cl]	0.02	0.01	0.04	626.1	45.67	0.462
	0.07	0.03	0.14	626.3	45.65	0.462
	0.2	0.09	0.39	626.1	45.66	0.462
	0.3	0.13	0.58	625.9	45.68	0.462
	0.4	0.17	0.77	625.1	45.74	0.464
	0.5	0.21	0.96	624.7	45.77	0.465
	0.6	0.26	1.16	624.5	45.78	0.465

^a All ionic liquids were added pure to acetonitrile, with the exception of [(C₆)₄DMG][Cl], which was first diluted in acetonitrile and then added to the solution with Reichardt's dye. ^b Mole fraction of RTIL in acetonitrile. ^c Number of moles of RTIL per mole of betaine dye. ^d Wavelength refers to the value obtained after addition of the indicated quantity of RTIL. ^e Calculated by eq 1. ^f Calculated by equation 2.

Table 2 Effects in polarity of the addition of ionic liquids to ethanol.

Mixture (EtOH + RTIL) ^a EtOH	Volume RTIL (μ L)	$X_{\text{RTIL/EtOH}} \times 10^{-4}$ ^b	$\mu_{\text{RTIL/Betaine}}$ ^c	Wavelength (nm) ^d	$E_T(30)$ ^e	E_{Tf}^N
	-	-	-	550.5	51.94	0.655
[EMIM][EtSO ₄]	2	2.54	10.32	548.5	52.13	0.661
	4	5.08	20.65	548.5	52.13	0.661
	6	7.63	30.97	547.5	52.22	0.664
[EMIM][MDEGSO ₄]	2	1.81	7.36	547.5	52.22	0.664
	4	3.63	14.72	549.5	52.03	0.658
	6	5.44	22.09	546.5	52.32	0.667
[BMIM][PF ₆]	2	2.33	9.44	548.5	52.13	0.661
	4	4.65	18.89	548.5	52.13	0.661
	6	6.98	28.33	546.5	52.32	0.667
[BMIM][BF ₄]	2	2.41	9.78	548.5	52.13	0.661
	4	4.81	19.55	549.5	52.03	0.658
	6	7.22	29.33	547.5	52.22	0.664
	10	12.04	48.88	545.6	52.41	0.670
	12	14.44	58.66	547.0	52.27	0.666
	18	21.67	87.99	545.0	52.46	0.672
	20	24.07	97.77	542.3	52.73	0.680
[BMIM][NTf ₂]	2	1.68	6.83	549.0	52.08	0.660
	4	3.36	13.66	549.0	52.08	0.660
	6	5.05	20.49	548.5	52.13	0.661
	8	6.73	27.33	548.0	52.17	0.663
	10	8.41	34.16	546.0	52.36	0.669
	12	10.09	40.99	546.0	52.36	0.669
	14	15.14	61.48	544.0	52.56	0.675
[BMIM][DCA]	2	2.51	10.21	549.5	52.03	0.658
	4	5.03	20.42	549.5	52.03	0.658
	6	7.54	30.63	548.5	52.13	0.661
	12	15.08	61.25	546.0	52.36	0.669
	18	22.62	91.88	545.0	52.46	0.672
[C ₈ MIM][PF ₆]	2	1.76	7.16	550.5	51.94	0.655
	4	3.53	14.32	549.5	52.03	0.658
	6	5.29	21.47	548.0	52.17	0.663
[C ₈ MIM][BF ₄]	6	5.73	23.28	548.5	52.13	0.661
	12	11.46	46.56	547.0	52.27	0.666
	18	17.20	69.83	546.5	52.32	0.667
[C ₁₀ MIM][BF ₄]	2	1.69	6.84	548.5	52.13	0.661
	4	3.37	13.69	546.5	52.32	0.667
	6	5.06	20.53	545.5	52.41	0.670
	8	6.74	27.38	545.5	52.41	0.670
[C ₂ OHMIM][BF ₄]	3	5.94	24.12	551.0	51.89	0.654
	6	8.91	36.18	547.0	52.27	0.666
	8	11.88	48.25	546.0	52.36	0.669
	9	14.85	60.31	544.0	52.56	0.675
	12	17.82	72.37	542.0	52.75	0.681

^a All ionic liquids were added pure to ethanol ^b Mole fraction of RTIL in ethanol. ^c Number of moles of RTIL per mole of betaine dye. ^d Wavelength refers to the value obtained after addition of the indicated quantity of RTIL. ^e Calculated by eq 1. ^f Calculated by equation 2.

Table 3 Effects in polarity of the addition of ionic liquids to tetrahydrofuran, chloroform and isopropanol.

	Mixture (Solvent + RTIL)	Volume RTIL (μL)	$X_{\text{RTIL/Solvent}} \times 10^{-4}$	$\mu_{\text{RTIL/Betaine}}$	Wavelength (nm)	$E_T(30)$	E_T^N		
Tetrahydrofuran	THF	-	-	-	759.0	37.67	0.215		
	[BMIM][PF ₆]	2	3.23	9.44	647.1	44.19	0.416		
		4	6.47	18.89	640.7	44.62	0.430		
		6	9.70	28.33	638.2	44.80	0.435		
	[BMIM][BF ₄]	2	3.35	9.78	660.3	43.30	0.389		
		4	6.70	19.55	660.1	43.31	0.389		
		6	10.05	29.33	651.4	43.89	0.407		
		8	13.39	39.11	644.3	44.38	0.422		
		10	16.74	48.88	638.5	44.78	0.434		
		[C ₈ MIM][PF ₆]	2	2.45	7.16	655.4	43.62	0.399	
	4		4.90	14.32	647.7	44.15	0.415		
	6		7.35	21.47	643.3	44.45	0.424		
	Chloroform	[C ₁₀ MIM][BF ₄]	8	9.81	28.63	641.3	44.58	0.429	
			-	-	-	forms emulsion	703.2	40.66	0.307
			-	-	-	forms emulsion	-	-	-
[BMIM][PF ₆]		2	3.32	9.78	671.3	42.59	0.367		
		4	6.65	19.55	667.0	42.87	0.376		
		6	9.97	29.33	654.0	43.72	0.402		
		8	13.30	39.11	644.7	44.35	0.421		
		10	16.62	48.88	640.9	44.61	0.429		
		15	24.93	73.33	632.5	45.20	0.448		
[C ₈ MIM][PF ₆]		2	2.43	7.16	689.5	41.47	0.332		
		4	4.87	14.32	660.1	43.31	0.389		
		6	7.30	21.47	649.5	44.02	0.411		
		8	9.73	28.63	642.2	44.52	0.427		
		10	12.17	35.79	634.8	45.04	0.443		
		15	18.25	53.69	627.4	45.57	0.459		
Isopropanol	[C ₁₀ MIM][BF ₄]	-	-	-	forms emulsion	593.0	48.21	0.541	
		i-PrOH	-	-	-	588.3	48.60	0.552	
		[BMIM][PF ₆]	2	3.05	9.44	588.3	48.60	0.552	
		4	6.10	18.89	585.9	48.80	0.559		
		6	9.15	28.33	582.3	49.10	0.568		
		[BMIM][BF ₄]	2	3.16	9.78	590.5	48.42	0.547	
	4		6.31	19.55	588.2	48.61	0.553		
	6		9.47	29.33	583.5	49.00	0.565		
		10	15.79	48.88	578.4	49.43	0.578		
		[C ₈ MIM][PF ₆]	2	2.31	7.16	588.6	48.58	0.552	
			4	4.62	14.32	584.6	48.91	0.562	
	6		6.93	21.47	580.2	49.28	0.573		
		10	11.56	35.79	575.8	49.66	0.585		
		[C ₁₀ MIM][BF ₄]	2	2.21	6.84	587.3	48.68	0.555	
			4	4.42	13.69	582.1	49.12	0.568	
6	6.63		20.53	577.4	49.52	0.581			

^a All ionic liquids were added pure to the solvent. ^b Mole fraction of RTIL in solvent. ^c Number of moles of RTIL per mole of betaine dye. ^d Wavelength refers to the value obtained after addition of the indicated quantity of RTIL. ^e Calculated by eq 1. ^f Calculated by equation 2. ^g Maximum value of water content measured by Karl Fischer titration.

