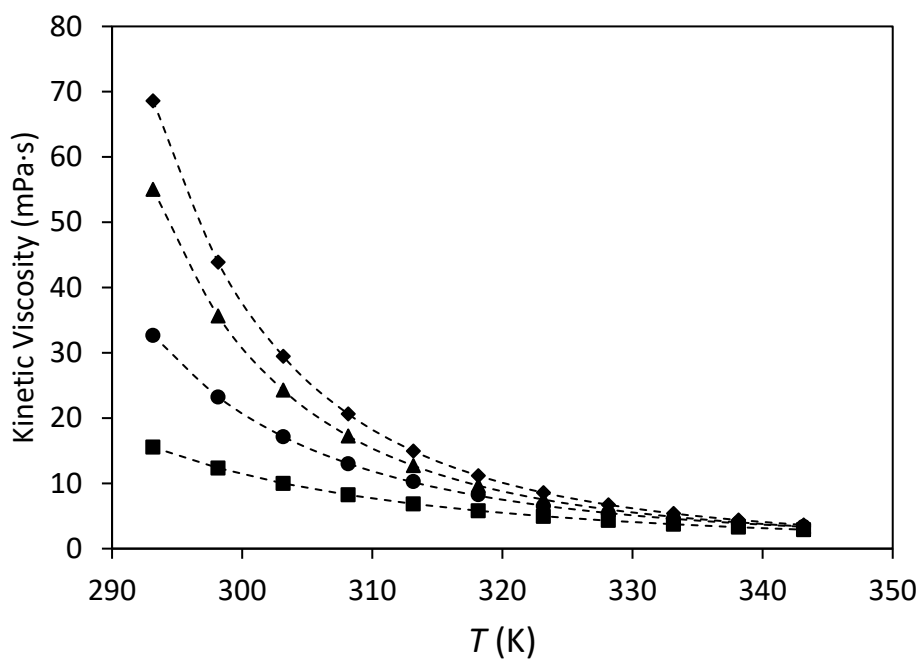
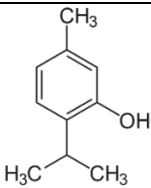
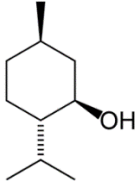
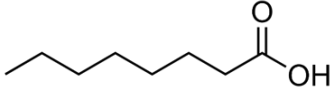
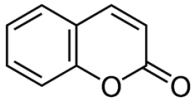
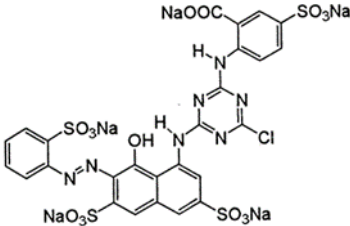
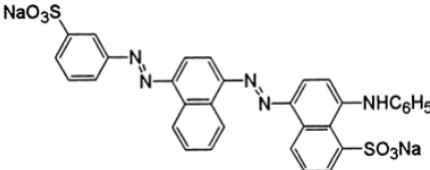
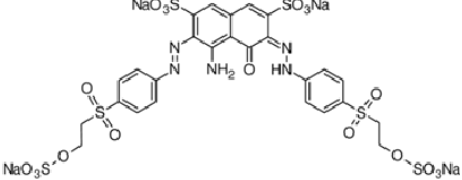


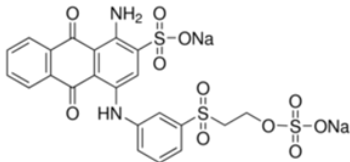
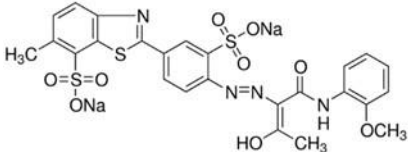
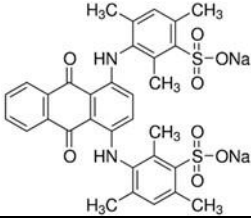
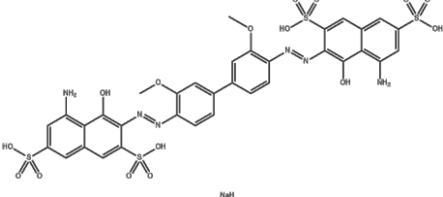
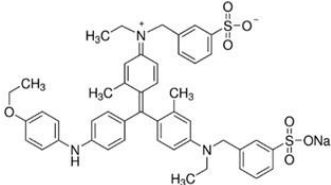
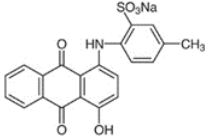
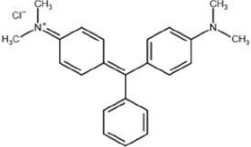
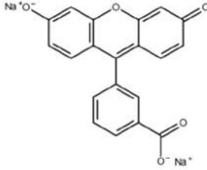
**Figure S1.** Density measured values for: T:D(1:1), (■); T:M(1:1), (▲); T:M(1:2), (◆) and T:C(2:1), (●); and linear regression (dashed lines) for the stable DESs.



**Figure S2.** Kinetic Viscosity measured values for: T:D(1:1), (■); T:M(1:1), (▲); T:M(1:2), (◆) and T:C(2:1), (●); and VFT modelling (dashed lines) for the stable DESs.

**Table S1.** Structures of chemicals.

Name	CAS number	Structure
Thymol	89-83-9	
Menthol	89-78-1	
Decanoic acid	334-48-5	
Coumarine	91-64-5	
Reactive Red 29	12226-09-4	
Acid Blue 113	3351-05-1	
Reactive Black 5	17095-24-8	

Remazol Brilliant Blue	2580-78-1	
Direct Yellow 27	10190-68-87	
Acid Blue 80	4474-24-2	
Direct Blue 15	2429-74-5	
Brilliant Blue G	6104-58-1	
Acid Violet 43	4430-18-6	
Malakita Green	CAS 2437-29-8	
Acid Yellow 73	518-47-8	

**Table S2.** Water content of the DES after saturation expressed as mass fraction.

DES	Water content (mass fraction)
T:D (1:1)	0.037
T:M (1:1)	0.022
T:M (1:2)	0.021
T:C (2:1)	0.027

**Table S3.** Density of the stable DES after hydration, at temperatures ranging from 293,15 K to 343,15 K. Results are expressed as g cm<sup>-3</sup>.

T (K)	T:D (1:1)	T:M (1:1)	T:M (1:2)	T:C (2:1)
293.15	0.9334	0.9370	0.9259	1.0504
298.15	0.9296	0.9333	0.9223	1.0465
303.15	0.9257	0.9295	0.9185	1.0425
308.15	0.9219	0.9255	0.9148	1.0386
313.15	0.9180	0.9217	0.9110	1.0347
318.15	0.9141	0.9179	0.9073	1.0307
323.15	0.9103	0.9141	0.9035	1.0266
328.15	0.9064	0.9102	0.8997	1.0227
333.15	0.9025	0.9064	0.8958	1.0187
338.15	0.8986	0.9025	0.8919	1.0147
343.15	0.8946	0.8986	0.8880	1.0107

**Table S4.** Rate of change (g cm<sup>-3</sup> K<sup>-1</sup>), y-intercept (g cm<sup>-3</sup>) and coefficient of determination for the linear adjustment of the density data.

	a	b	R <sup>2</sup>
T:D (1:1)	1.1610	-0.0008	0.9999
T:M (1:1)	1.1627	-0.0008	0.9999
T:M (1:2)	1.1519	-0.0008	0.9999
T:C (2:1)	1.2832	-0.0008	0.9999

**Table S5.** Kinetic viscosity of the stable DES after hydration, at temperatures ranging from 293.15 K to 343.5 K. Results are expressed as mPa·s.

T (K)	T:D (1:1)	T:M (1:1)	T:M (1:2)	T:C (2:1)
293.15	15.527	54.585	68.268	32.661
298.15	12.341	35.848	43.838	23.230
303.15	9.9886	24.756	29.574	17.137
308.15	8.2156	17.084	20.842	13.003
313.15	6.8546	12.639	14.973	10.263
318.15	5.7928	9.6282	11.224	8.2601
323.15	4.9519	7.5168	8.6627	6.4865
328.15	4.2772	5.9937	6.5782	5.3909
333.15	3.7291	4.8702	5.2827	4.5479
338.15	3.2789	4.0435	4.3144	3.8980
343.15	2.9055	3.3884	3.7394	3.3713

**Table S6.** Parameters for the adjustment of the kinetic viscosity data to a Volger-Fulcher-Tammann equation (VFT equation).

	$\mu_0$ (mPa s)	B	$T_0$ (K)	SD	Nº Datos
<b>T:D (1:1)</b>	0.0584	650.94	176.57	0.3039	11
<b>T:M (1:1)</b>	0.0496	530.71	217.46	0.7604	11
<b>T:M (1:2)</b>	0.0301	630.30	211.63	1.4442	11
<b>T:C (2:1)</b>	0.0632	544.17	206.04	0.9046	11

**Table S7.** Extraction efficiencies for all DESs and dyes under consideration at 50, 100, 200 and 500 mgL<sup>-1</sup>, in aqueous:organic ratio of 1:1.

		DES			
		T:D (1:1)	T:M (1:1)	T:M (1:2)	T:C (2:1)
Dye	Ci (mgL <sup>-1</sup> )	% E	% E	% E	% E
<b>Reactive Red 29</b>	50	16.6	13.4	3.8	5.5
	100	7.3	13.3	5.6	6.8
	200	9.7	9.6	< 3	8.0
	500	7.4	7.4	9.9	7.8
<b>Acid Blue 113</b>	50	13.3	5.9	4.0	4.1
	100	6.5	5.2	4.0	8.4
	200	4.6	< 3	7.6	5.1
	500	3.5	< 3	< 3	< 3
<b>Reactive Black 5</b>	50	4.7	< 3	< 3	< 3
	100	< 3	< 3	< 3	< 3
	200	< 3	< 3	< 3	< 3
	500	< 3	< 3	< 3	< 3
<b>Remazol Brilliant Blue</b>	50	7.3	6.3	17.3	25.1
	100	< 3	< 3	3.5	12.9
	200	< 3	< 3	< 3	5.9
	500	< 3	< 3	< 3	6.4
<b>Direct Yellow 27</b>	50	5.5	23.6	5.9	9.9
	100	< 3	15.5	1.8	9.8
	200	< 3	8.5	< 3	4.3
	500	< 3	8.4	< 3	< 3
<b>Acid Blue 80</b>	50	< 3	< 3	< 3	< 3
	100	< 3	< 3	< 3	< 3
	200	< 3	< 3	< 3	< 3
	500	< 3	< 3	< 3	< 3
<b>Direct Blue 15</b>	50	6.3	13.1	11.0	14.7
	100	9.1	< 3	< 3	< 3
	200	< 3	< 3	< 3	< 3
	500	< 3	< 3	< 3	< 3
<b>Brilliant Blue G</b>	50	84.9	67.7	80.8	89.3
	100	87.7	78.5	53.5	88.1
	200	86.7	52.1	31.8	91.6
	500	73.4	22.2	12.0	91.7

<b>Acid Violet 43</b>	<b>50</b>	26.8	< 3	4.5	22.3
	<b>100</b>	19.9	< 3	10.4	19.2
	<b>200</b>	16.5	< 3	< 3	15.9
	<b>500</b>	17.2	< 3	< 3	12.1
<b>Malakite Green</b>	<b>50</b>	99.9	93.8	80.5	96.2
	<b>100</b>	99.9	90.9	69.1	97.9
	<b>200</b>	99.9	88.1	61.5	98.9
	<b>500</b>	99.9	89.3	70.0	99.6
<b>Acid Yellow 73</b>	<b>50</b>	94.8	7.9	26.1	14.1
	<b>100</b>	96.2	7.0	20.3	19.9
	<b>200</b>	95.2	5.8	13.4	11.2
	<b>500</b>	94.5	< 3	< 3	< 3

**Table S8.** Cycle number, initial concentration  $C_0$ , final concentration  $C_f$ , extraction efficiency (%) and colour coordinates from the CIE 1976  $L^*a^*b^*$  system, for the extraction with T:D (1:1) for BBG, AY and MG at aqueous:organic ratio of 5:1, and AV aqueous:organic ratio of 1:1.

Dye	Cycle No.	$C_0$ (mg·L <sup>-1</sup> )	$C_f$ (mg·L <sup>-1</sup> )	EE (%)	Colour coordinates		
					L	a	b
BBG	1	113	13.1	88.4	73.94	-11.57	-16.45
BBG	2	13.1	6.30	49.6	83.69	-8.21	-10.10
BBG	3	6.30	6.30	0	87.77	-6.49	-8.42
AY73	1	109	6.30	94.3	95.43	-8.03	36.45
AY73	2	6.30	1.99	56.3	98.83	-1.76	6.46
MG	1	102	0.02	99.8	99.95	-0.05	-0.43
AV43	1	99.8	31.1	68.8	53.05	28.89	-62.50
AV43	2	31.1	5.86	81.0	85.74	3.37	-5.41
AV43	3	5.86	1.13	84.7	93.74	-0.06	-1.11

**Table S9.** Cycle number, initial concentration  $C_0$ , final concentration  $C_f$ , extraction efficiency (%) and colour coordinates from the CIE 1976  $L^*a^*b^*$  system, for the extraction with T:Cu (1:1) for BBG and MG at aqueous:organic ratio of 5:1, and AV at aqueous:organic ratio of 1:1.

Dye	Cycle No.	$C_0$ (mg·L <sup>-1</sup> )	$C_f$ (mg·L <sup>-1</sup> )	EE (%)	Colour coordinates		
					L	a	b
BBG	1	104	14.7	84.2	53.59	-18.65	-16.44
BBG	2	14.7	7.45	51.3	78.03	-12.93	-9.41
BBG	3	7.45	5.58	24.5	78.03	-12.93	-9.41
BBG	4	5.58	5.02	21.7	87.44	-7.49	-8.23
MG	1	102	0.400	99.6	99.49	-0.38	0.10
AV43	1	99.8	40.9	59.0	45.07	30.39	-71.43
AV43	2	40.9	10.7	73.9	92.51	3.48	-6.87
AV43	3	10.7	1.55	86.6	94.34	-0.12	0.97

**Table S10.** Cycle number, initial concentration  $C_0$ , final concentration  $C_f$ , extraction efficiency (%) and colour coordinates from the CIE 1976  $L^*a^*b^*$  system, for the extraction with DES T:M (1:1) for BBG at DES:aqueous phase ratio 1:5.

Dye	Cycle No.	$C_0$ (mg·L <sup>-1</sup> )	$C_f$ (mg·L <sup>-1</sup> )	EE (%)	Colour coordinates		
					L	a	b
BBG	1	98.7	26.7	72.9	32.11	-9.25	-14.77
BBG	2	26.7	17.3	39.5	48.22	-6.51	-6.79
BBG	3	17.3	10.4	39.7	71.14	-11.25	0.72
BBG	4	10.4	10.3	1.5	70.86	-10.95	0.65