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Electronic Supplementary Information (ESI)

Correlation of solute diffusion with dynamic viscosity in lithium salt added (choline chloride + glycerol) deep eutectic solvent

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Table S1: Linear regression analysis of density (ρ/g.cm^{-3}) vs T (K) data for LiCl-added Glyceline, Reline, and 1 wt% water in glycerol, respectively.

m_{LiCl} (mol.kg^{-1})	(-) Slope (g.cm^{-3}.K^{-1}) × 10^{-4}		
	Glyceline	**Reline[17]**	**1 wt% water in glycerol[19]**
0.00	6.12 ± 0.23	6.22 ± 0.21	6.78 ± 0.16
0.42	-	6.40 ± 0.20	-
0.50	6.14 ± 0.25	-	6.74 ± 0.19
0.83	-	6.21 ± 0.27	-
1.00	6.16 ± 0.26	-	6.69 ± 0.22
1.26	-	6.17 ± 0.29	-
1.50	6.16 ± 0.27	-	6.64 ± 0.25
1.67	-	6.17 ± 0.31	-
2.00	6.18 ± 0.28	-	6.60 ± 0.27
2.10	-	6.10 ± 0.33	-
2.50	6.19 ± 0.29	-	6.56 ± 0.30
3.00	6.22 ± 0.31	-	6.53 ± 0.32

Table S2: Linear regression analysis of density (ρ/g.cm^{-3}) vs m_{LiCl} (mol.kg^{-1}) data for LiCl-added Glyceline, Reline, and 1 wt% water in glycerol, respectively.

T (K)	Slope (g^2.cm^{-3}.mol^{-1})		
	Glyceline	**Reline[17]**	**1 wt% water in glycerol[19]**
298	16.20 ± 0.00$_1$	18.20 ± 0.00$_2$	16.70 ± 0.00$_1$
313	16.50 ± 0.00$_1$	18.20 ± 0.00$_2$	17.20 ± 0.00$_1$
328	16.40 ± 0.00$_1$	19.00 ± 0.00$_2$	17.50 ± 0.00$_1$
343	16.20 ± 0.00$_1$	18.90 ± 0.00$_2$	17.40 ± 0.00$_1$
358	16.00 ± 0.00$_1$	18.90 ± 0.00$_2$	17.20 ± 0.00$_1$

Table S3: Comparison of dynamic viscosity data obtained in this work with the data provided in the literature for Glyceline at different temperatures.

T (K)	This work	Literature[a]	Literature[b]
298	387.93	345.7	369
313	156.49	-	146
328	74.45	60.2	71.8
343	40.48	-	39.6
358	24.30	-	24.3

[a]S. Barik, M. Chakraborty and M. Sarkar, *J. Phys. Chem. B*, 2020, **124**, 2864–2878.
[b]V. Agieienko and R. Buchner, *J. Chem. Eng. Data*, 2021, **66**, 780–792.

Table S4: Recovered empirical VFT parameters from the analysis of ln (η/mPa.s) vs $1/T$ (K^{-1}) for LiCl-added Glyceline mixtures and corresponding activation energy of viscous flow ($E_{a,\eta}$) at 298 K.

m_{LiCl} **(mol.kg^{-1})**	**(-)** A	B	T_0 **(K)**	R^2	$E_{a,\eta}$ **(kJ.mol^{-1})**
0.0	2.71	1108.43	170.38	0.999	50.18 ± 1.05
0.5	3.01	1273.87	164.60	0.999	52.79 ± 1.12
1.0	2.83	1284.88	169.45	0.999	57.33 ± 1.15
1.5	3.04	1399.62	168.75	0.998	61.78 ± 0.95
2.0	2.92	1403.77	174.52	0.998	67.88 ± 1.01
2.5	3.38	1596.43	169.71	0.999	71.53 ± 1.30
3.0	3.70	1738.34	168.71	0.998	76.68 ± 1.70

Table S5: Comparison of activation energy of viscous flow ($E_{a,\eta}$) for LiCl-added Glyceline, Reline, and 1 wt% water in glycerol, respectively, at 298 K.

m_{LiCl} (mol.kg^{-1})	$E_{a,\eta}$ (kJ.mol^{-1})		
	Glyceline	**Reline[17]**	**1 wt% water in glycerol[19]**
0.00	50.18 ± 1.05	52.87 ± 1.89	51.73 ± 1.44
0.42	-	57.30 ± 1.84	-
0.50	52.79 ± 1.12	-	53.32 ± 1.48
0.83	-	57.82 ± 1.86	-
1.00	57.33 ± 1.15	-	54.81 ± 1.49
1.26	-	58.78 ± 0.63	-
1.50	61.78 ± 0.95	-	55.33 ± 0.97
1.67	-	64.61 ± 0.64	-
2.00	67.88 ± 1.01	-	55.62 ± 0.80
2.10	-	68.40 ± 0.67	-
2.50	71.53 ± 1.30	-	57.27 ± 0.54
3.00	76.68 ± 1.70	-	57.30 ± 0.76

Table S6: Linear regression analysis of ln (η/mPa.s) vs m_{LiCl} (mol.kg^{-1}) data for LiCl-added Glyceline, Reline, and 1 wt% water in glycerol, respectively.

T (K)	Slope (mol^{-1}.kg)		
	Glyceline	**Reline[17]**	**1 wt% water in glycerol[19]**
298	1.21 ± 0.15	-	-
313	1.08 ± 0.11	-	0.68 ± 0.01
328	0.96 ± 0.11	1.41 ± 0.13	0.63 ± 0.01
343	0.85 ± 0.10	1.26 ± 0.10	0.59 ± 0.02
358	0.76 ± 0.10	1.10 ± 0.09	0.54 ± 0.02

Table S7: Recovered excited-state intensity decay parameters for pyrene (10 μM; excitation with 340 nm Nano-LED; emission collected at 373 nm) dissolved in LiCl-added Glyceline. Errors associated with decay times are ≤ ±2%.

T (K)	m_{LiCl} (mol.kg^{-1})	0.0	0.5	1.0	1.5	2.0	2.5	3.0
298	τ_1	88.0	87.3	86.2	81.2	5.27	79.5	79.9
	(α_1)	(1.5)	(3.0)	(0.6)	(1.3)	(0.3)	(2.6)	(2.8)
	τ_2	195	195	187	183	181	181	179
	(α_2)	(98.5)	(97.0)	(99.4)	(98.7)	(99.7)	(97.4)	(97.2)
	χ^2	1.07	1.08	1.05	1.09	1.11	1.10	1.07
313	τ_1	84.2	80.8	81.6	82.4	79.6	76.78	79.1
	(α_1)	(1.3)	(3.0)	(0.3)	(1.2)	(2.4)	(1.9)	(1.8)
	τ_2	184	184	175	171	173	169	166
	(α_2)	(98.7)	(97.0)	(99.7)	(98.8)	(97.6)	(98.1)	(98.2)
	χ^2	1.09	1.03	1.08	1.07	1.13	1.09	1.13
328	τ_1	81.4	80.7	78.5	78.7	72.9	77.6	74.5
	(α_1)	(1.3)	(4.0)	(1.1)	(0.7)	(2.5)	(1.9)	(1.7)
	τ_2	173	175	165	161	162	159	155
	(α_2)	(98.7)	(96.0)	(98.9)	(99.3)	(97.5)	(98.1)	(98.3)
	χ^2	1.07	1.08	1.05	1.07	1.16	1.10	1.14
343	τ_1	77.3	73.0	72.5	72.9	68.9	72.0	70.7
	(α_1)	(1.8)	(1.1)	(1.3)	(1.1)	(2.6)	(1.1)	(1.9)
	τ_2	163	158	156	150	152	147	146
	(α_2)	(98.2)	(98.9)	(98.7)	(98.9)	(97.4)	(98.9)	(98.1)
	χ^2	1.03	1.05	1.06	1.06	1.13	1.14	1.13
358	τ_1	72.8	67.4	69.5	70.7	67.0	74.5	69.1
	(α_1)	(1.8)	(1.9)	(0.3)	(2.0)	(3.4)	(1.0)	(1.3)
	τ_2	151	148	144	142	144	137	135
	(α_2)	(98.2)	(98.1)	(99.7)	(98.0)	(96.6)	(99.0)	(98.7)
	χ^2	1.05	1.09	1.05	1.11	1.15	1.05	1.12

Table S8: Recovered excited-state intensity decay parameters for pyrene (10 μM; excitation with 340 nm Nano-LED; emission collected at 373 nm) dissolved in the LiCl-added Glyceline at varying quencher (CH_3NO_2) concentration. Errors associated with decay times are ≤ ±2%.

***T* (K) = 298**

[CH_3NO_2] (M)	m_{LiCl} **(mol.kg^{-1})**	**0.0**	**0.5**	**1.0**	**1.5**	**2.0**	**2.5**	**3.0**
0.00	**τ_1**	88.0	87.3	86.2	81.2	5.27	79.5	79.9
	(α_1)	(1.5)	(3.0)	(0.6)	(1.3)	(0.3)	(2.6)	(2.8)
	τ_2	195	195	187	183	181	181	179
	(α_2)	(98.5)	(97.0)	(99.4)	(98.7)	(99.7)	(97.4)	(97.2)
	χ^2	1.07	1.08	1.05	1.09	1.11	1.10	1.07
0.05	**τ_1**	58.9	15.3	19.4	10.5	25.9	3.95	2.20
	(α_1)	(8.4)	(1.8)	(1.8)	(1.0)	(1.8)	(0.5)	(0.6)
	τ_2	124	127	142	149	164	163	163
	(α_2)	(91.6)	(98.2)	(98.2)	(99.0)	(98.2)	(99.5)	(99.4)
	χ^2	1.03	1.08	1.14	1.11	1.12	1.12	1.05
0.11	**τ_1**	16.2	28.9	19.8	25.3	24.4	22.5	8.01
	(α_1)	(3.2)	(7.2)	(3.4)	(3.4)	(2.3)	(2.6)	(1.7)
	τ_2	80.5	98.3	114	128	150	152	150
	(α_2)	(96.8)	(92.8)	(96.6)	(96.6)	(97.7)	(97.4)	(98.3)
	χ^2	1.03	1.08	1.08	1.08	1.20	1.14	1.14
0.16	**τ_1**	7.67	13.6	12.1	19.8	13.8	10.8	3.47
	(α_1)	(2.8)	(4.9)	(3.7)	(4.7)	(2.2)	(2.2)	(2.3)
	τ_2	59.9	76.3	93.2	112	137	138	139
	(α_2)	(97.2)	(95.1)	(96.3)	(95.3)	(97.8)	(97.8)	(97.7)
	χ^2	1.13	1.03	1.02	1.16	1.18	1.20	1.17
0.21	**τ_1**	5.77	10.2	8.70	19.5	17.0	13.9	3.00
	(α_1)	(3.8)	(5.2)	(4.2)	(6.7)	(4.1)	(3.5)	(3.0)
	τ_2	48.0	60.7	78.8	100	120	128	131
	(α_2)	(96.2)	(94.8)	(95.8)	(93.3)	(95.9)	(96.5)	(97.0)
	χ^2	1.07	1.11	1.06	1.18	1.11	1.15	1.19

0.27	**τ$_1$**	5.39	7.49	11.6	15.8	17.3	14.8	2.92
	(α$_1$)	(5.0)	(5.7)	(6.9)	(7.1)	(5.4)	(4.4)	(3.9)
	τ$_2$	39.4	52.3	69.2	88.5	109	120	123
	(α$_2$)	(95.0)	(94.3)	(93.1)	(92.9)	(94.6)	(95.6)	(96.1)
	χ^2	1.14	1.02	1.09	1.20	1.09	1.14	1.17
0.32	**τ$_1$**	5.76	3.96	7.83	13.8	15.3	12.7	2.68
	(α$_1$)	(6.9)	(5.0)	(6.4)	(7.2)	(5.9)	(5.0)	(4.6)
	τ$_2$	33.7	43.3	60.3	79.2	99.7	113	114
	(α$_2$)	(93.1)	(95.0)	(93.6)	(92.8)	(94.1)	(95.0)	(95.4)
	χ^2	1.00	1.23	1.16	1.19	1.10	1.19	1.22
0.37	**τ$_1$**	4.82	4.26	7.48	10.2	9.66	11.3	2.45
	(α$_1$)	(7.6)	(5.8)	(7.7)	(7.6)	(5.1)	(5.3)	(3.6)
	τ$_2$	28.8	38.2	53.8	69.2	90.2	105	108
	(α$_2$)	(92.4)	(94.2)	(92.3)	(92.4)	(94.9)	(94.7)	(96.4)
	χ^2	1.12	1.11	1.18	1.27	1.19	1.16	1.20

T **(K) = 313**

m_{LiCl} **(mol.kg^{-1})** **[CH_3NO_2] (M)**		**0.0**	**0.5**	**1.0**	**1.5**	**2.0**	**2.5**	**3.0**
0.00	**τ$_1$**	84.2	80.8	81.6	82.4	79.6	76.78	79.1
	(α$_1$)	(1.3)	(3.0)	(0.3)	(1.2)	(2.4)	(1.9)	(1.8)
	τ$_2$	184	184	175	171	173	169	166
	(α$_2$)	(98.7)	(97.0)	(99.7)	(98.8)	(97.6)	(98.1)	(98.2)
	χ^2	1.09	1.03	1.08	1.07	1.13	1.09	1.13
0.05	**τ$_1$**	7.58	26.1	15.7	9.32	56.9	7.47	4.23
	(α$_1$)	(1.1)	(4.8)	(2.0)	(1.2)	(8.7)	(0.9)	(0.7)
	τ$_2$	76.0	86.7	103	114	137	140	142
	(α$_2$)	(98.9)	(95.2)	(98.0)	(98.8)	(91.3)	(99.1)	(99.3)
	χ^2	1.01	0.98	1.02	1.07	1.12	1.09	1.08
0.11	**τ$_1$**	8.23	7.21	11.5	10.7	8.93	15.7	6.08
	(α$_1$)	(3.5)	(3.1)	(3.7)	(2.8)	(1.6)	(2.4)	(1.7)

	τ_2	46.0	54.9	71.7	85.1	112	118	118
	(α_2)	(96.5)	(96.9)	(96.3)	(97.2)	(98.4)	(97.6)	(98.3)
	χ^2	1.06	1.01	1.03	1.06	1.06	1.06	1.16
	τ_1	5.82	6.87	8.04	12.8	8.23	17.2	3.41
	(α_1)	(4.6)	(5.1)	(4.9)	(5.5)	(2.2)	(4.5)	(3.0)
0.16	**τ_2**	32.3	41.2	54.1	69.1	96.0	101	104
	(α_2)	(95.4)	(94.9)	(95.1)	(94.5)	(97.8)	(95.5)	(97.0)
	χ^2	1.04	1.01	1.05	1.12	1.09	1.10	1.15
	τ_1	5.20	4.51	6.35	7.98	10.4	11.6	1.89
	(α_1)	(7.6)	(5.5)	(6.4)	(5.7)	(4.3)	(4.9)	(3.8)
0.21	**τ_2**	25.5	31.6	43.3	56.3	77.2	88.6	93.0
	(α_2)	(92.4)	(94.5)	(93.6)	(94.3)	(95.7)	(95.1)	(96.2)
	χ^2	1.05	1.10	1.05	1.09	1.11	1.13	1.15
	τ_1	4.20	3.62	4.87	6.87	7.87	15.8	2.88
	(α_1)	(8.7)	(6.2)	(6.3)	(6.2)	(5.0)	(8.3)	(5.0)
0.27	**τ_2**	20.4	26.4	35.3	47.4	64.9	80.6	83.4
	(α_2)	(91.3)	(93.8)	(93.7)	(93.8)	(95.0)	(91.7)	(95.0)
	χ^2	1.12	1.05	1.14	1.12	1.15	1.13	1.20
	τ_1	4.69	3.58	5.06	4.84	6.62	6.49	2.59
	(α_1)	(15.3)	(9.4)	(8.9)	(6.7)	(5.9)	(5.0)	(6.1)
0.32	**τ_2**	17.7	22.3	30.3	41.1	56.9	69.0	74.3
	(α_2)	(84.7)	(90.6)	(91.1)	(93.3)	(94.1)	(95.0)	(93.9)
	χ^2	1.21	1.14	1.13	1.15	1.14	1.16	1.26
	τ_1	3.68	3.69	4.27	6.51	5.86	5.76	2.35
	(α_1)	(14.2)	(12.5)	(10.8)	(10.8)	(6.8)	(6.0)	(5.7)
0.37	**τ_2**	14.8	19.7	27.1	36.7	51.4	62.6	65.7
	(α_2)	(85.8)	(87.5)	(89.2)	(89.2)	(93.2)	(94.0)	(94.3)
	χ^2	1.20	1.13	1.19	1.09	1.17	1.16	1.15

T (K) = 328

$[CH_3NO_2]$ (M)	m_{LiCl} (mol.kg^{-1})	0.0	0.5	1.0	1.5	2.0	2.5	3.0
	τ_1	81.4	80.7	78.5	78.7	72.9	77.6	74.5
	(α_1)	(1.3)	(4.0)	(1.1)	(0.7)	(2.5)	(1.9)	(1.7)
0.00	τ_2	173	175	165	161	162	159	155
	(α_2)	(98.7)	(96.0)	(98.9)	(99.3)	(97.5)	(98.1)	(98.3)
	χ^2	1.07	1.08	1.05	1.07	1.16	1.10	1.14
	τ_1	4.58	6.98	7.06	6.01	7.21	19.3	3.78
	(α_1)	(1.2)	(2.0)	(1.7)	(1.3)	(1.2)	(2.2)	(0.8)
0.05	τ_2	47.0	53.4	68.7	78.4	94.4	111	116
	(α_2)	(98.8)	(98.0)	(98.3)	(98.7)	(98.8)	(97.8)	(99.2)
	χ^2	1.07	1.01	0.99	1.04	1.06	1.07	1.06
	τ_1	5.28	4.63	5.25	7.69	10.6	8.23	7.71
	(α_1)	(4.3)	(3.9)	(3.2)	(3.3)	(2.6)	(2.1)	(2.8)
0.11	τ_2	26.4	31.6	41.6	52.5	76.4	81.1	84.2
	(α_2)	(95.7)	(96.1)	(96.8)	(96.7)	(97.4)	(97.9)	(97.2)
	χ^2	1.15	1.08	1.01	1.05	1.06	1.04	1.10
	τ_1	4.78	4.44	5.09	6.82	6.39	11.7	2.39
	(α_1)	(8.2)	(6.5)	(6.2)	(6.1)	(3.2)	(5.9)	(3.8)
0.16	τ_2	18.6	22.9	30.4	39.4	62.4	65.0	68.3
	(α_2)	(91.8)	(93.5)	(93.8)	(93.9)	(96.8)	(94.0)	(96.2)
	χ^2	1.03	1.09	1.06	1.04	1.01	1.06	1.15
	τ_1	4.29	3.63	3.23	5.61	6.13	6.73	1.18
	(α_1)	(14.9)	(9.8)	(7.4)	(7.7)	(5.2)	(5.6)	(4.9)
0.21	τ_2	14.4	17.8	23.5	31.1	45.5	52.3	55.8
	(α_2)	(85.1)	(90.2)	(92.6)	(92.3)	(94.8)	(94.4)	(95.1)
	χ^2	1.06	1.20	1.02	1.11	1.10	1.09	1.24
	τ_1	3.11	4.06	5.00	3.93	5.54	5.19	2.24
0.27	(α_1)	(12.9)	(15.1)	(13.6)	(7.8)	(7.9)	(6.4)	(6.6)
	τ_2	11.1	14.7	19.7	25.4	36.6	44.0	48.4

	(α_2)	(87.1)	(84.9)	(86.4)	(92.2)	(92.1)	(93.6)	(93.4)
	χ^2	1.12	1.10	1.10	1.16	1.13	1.03	1.16
	τ_1	2.26	3.26	3.14	3.33	3.36	3.06	1.88
	(α_1)	(13.3)	(17.4)	(12.9)	(9.5)	(6.8)	(5.7)	(8.2)
0.32	**τ_2**	8.93	12.2	16.2	21.8	30.2	38.0	41.9
	(α_2)	(86.7)	(82.6)	(87.1)	(90.5)	(93.2)	(94.3)	(91.3)
	χ^2	1.09	1.17	1.04	1.08	1.06	1.10	1.25
	τ_1	1.79	2.26	2.77	2.78	2.74	3.62	1.56
	(α_1)	(12.8)	(14.9)	(14.5)	(11.7)	(7.7)	(9.3)	(7.6)
0.37	**τ_2**	7.38	10.1	14.0	18.7	26.1	34.0	36.3
	(α_2)	(87.2)	(85.1)	(85.5)	(88.3)	(92.3)	(90.7)	(92.4)
	χ^2	0.93	1.19	1.03	1.22	1.25	1.14	1.17

T (K) = 343

[CH_3NO_2] (M)	m_{LiCl} **(mol.kg^{-1})**	**0.0**	**0.5**	**1.0**	**1.5**	**2.0**	**2.5**	**3.0**
	τ_1	77.3	73.0	72.5	72.9	68.9	72.0	70.7
	(α_1)	(1.8)	(1.1)	(1.3)	(1.1)	(2.6)	(1.1)	(1.9)
0.00	**τ_2**	163	158	156	150	152	147	146
	(α_2)	(98.2)	(98.9)	(98.7)	(98.9)	(97.4)	(98.9)	(98.1)
	χ^2	1.03	1.05	1.06	1.06	1.13	1.14	1.13
	τ_1	4.29	4.54	3.31	3.54	8.52	8.30	5.39
	(α_1)	(2.2)	(2.1)	(1.5)	(1.4)	(2.1)	(1.8)	(1.3)
0.05	**τ_2**	29.1	35.5	44.2	51.3	65.1	79.1	88.1
	(α_2)	(97.8)	(97.9)	(98.6)	(98.6)	(97.9)	(98.2)	(98.7)
	χ^2	1.03	1.11	1.04	1.06	1.08	1.07	1.05
	τ_1	3.42	4.34	5.29	4.36	5.29	5.37	5.11
	(α_1)	(5.7)	(6.7)	(7.3)	(3.8)	(2.7)	(2.7)	(3.1)
0.11	**τ_2**	16.9	20.8	25.7	31.5	48.6	51.9	54.0
	(α_2)	(94.3)	(93.3)	(92.7)	(96.2)	(97.3)	(97.3)	(96.9)
	χ^2	1.12	1.17	1.05	1.15	1.09	1.04	1.06

0.16	τ_1	3.27	3.28	3.99	2.68	5.02	3.60	2.09
	(α_1)	(11.2)	(8.8)	(10.1)	(5.9)	(4.2)	(4.1)	(5.5)
	τ_2	11.2	14.1	18.1	22.3	37.7	37.0	41.0
	(α_2)	(88.8)	(91.2)	(89.9)	(94.1)	(95.8)	(95.9)	(94.5)
	χ^2	1.14	1.23	1.02	1.15	1.09	1.07	1.18
0.21	τ_1	1.68	2.92	3.12	2.49	3.31	4.52	2.79
	(α_1)	(7.4)	(14.6)	(12.3)	(8.0)	(5.6)	(7.2)	(8.0)
	τ_2	8.00	10.7	13.5	17.3	25.4	29.9	33.3
	(α_2)	(92.6)	(85.4)	(87.7)	(92.0)	(94.4)	(92.8)	(92.0)
	χ^2	1.08	1.03	1.16	1.16	1.10	1.08	1.19
0.27	τ_1	2.16	2.09	2.61	2.81	4.00	2.40	1.65
	(α_1)	(12.7)	(13.9)	(13.3)	(12.2)	(10.6)	(7.1)	(9.4)
	τ_2	6.53	8.44	10.7	14.2	20.6	24.0	27.1
	(α_2)	(87.3)	(86.1)	(86.7)	(87.8)	(89.4)	(92.9)	(90.6)
	χ^2	1.07	1.07	1.09	1.21	1.14	1.07	1.26
0.32	τ_1	0.91	0.92	1.77	1.57	2.98	2.61	1.59
	(α_1)	(10.6)	(10.4)	(14.4)	(9.9)	(12.3)	(9.4)	(11.8)
	τ_2	5.2	6.6	9.0	11.6	17.0	21.5	23.3
	(α_2)	(89.4)	(89.6)	(85.6)	(90.1)	(87.7)	(90.6)	(88.2)
	χ^2	0.99	0.99	1.22	1.28	1.07	1.13	1.16
0.37	τ_1	1.07	1.13	1.39	1.87	2.26	2.38	1.80
	(α_1)	(12.8)	(14.2)	(14.5)	(15.4)	(13.0)	(11.6)	(11.1)
	τ_2	4.52	5.55	7.38	10.4	14.4	18.3	20.3
	(α_2)	(87.2)	(85.8)	(85.5)	(84.6)	(87.0)	(88.4)	(88.9)
	χ^2	0.88	0.96	1.11	1.28	1.23	1.30	1.26

T (K) = 358

m_{LiCl} (mol.kg^{-1}) / [CH_3NO_2] (M)		0.0	0.5	1.0	1.5	2.0	2.5	3.0
0.00	τ_1	72.8	67.4	69.5	70.7	67.0	74.5	69.1
	(α_1)	(1.8)	(1.9)	(0.3)	(2.0)	(3.4)	(1.0)	(1.3)
	τ_2	151	148	144	142	144	137	135
	(α_2)	(98.2)	(98.1)	(99.7)	(98.0)	(96.6)	(99.0)	(98.7)
	χ^2	1.05	1.09	1.05	1.11	1.15	1.05	1.12
0.05	τ_1	3.42	4.14	3.33	3.17	6.01	4.08	4.23
	(α_1)	(3.8)	(3.2)	(2.5)	(2.1)	(2.7)	(1.6)	(1.4)
	τ_2	19.5	23.6	29.0	33.6	43.8	54.4	62.1
	(α_2)	(96.2)	(96.8)	(97.5)	(97.9)	(97.3)	(98.4)	(98.6)
	χ^2	1.18	1.17	1.09	1.09	1.03	1.09	1.11
0.11	τ_1	4.39	4.22	3.81	4.48	4.05	3.86	3.14
	(α_1)	(15.4)	(12.5)	(8.5)	(7.7)	(4.0)	(3.4)	(3.5)
	τ_2	11.0	13.5	15.8	20.0	30.8	33.0	33.0
	(α_2)	(84.6)	(87.5)	(91.5)	(92.3)	(96.0)	(96.6)	(96.5)
	χ^2	1.10	1.10	1.09	1.06	1.04	1.09	1.11
0.16	τ_1	2.17	2.18	2.91	2.83	3.69	3.13	2.26
	(α_1)	(12.7)	(9.1)	(12.7)	(9.4)	(6.9)	(6.1)	(8.2)
	τ_2	7.16	8.48	10.9	13.4	22.5	22.3	24.9
	(α_2)	(87.3)	(90.9)	(87.3)	(90.6)	(93.1)	(93.9)	(91.8)
	χ^2	0.94	1.00	0.94	1.10	1.15	1.03	1.25
0.21	τ_1	1.35	1.14	1.92	1.86	2.35	2.59	1.93
	(α_1)	(8.9)	(9.5)	(12.1)	(10.2)	(8.7)	(8.8)	(10.4)
	τ_2	5.16	6.08	7.89	10.2	15.2	17.4	19.2
	(α_2)	(91.1)	(90.5)	(87.9)	(89.8)	(91.3)	(91.2)	(89.6)
	χ^2	0.89	0.99	1.14	1.29	1.16	1.15	1.37
0.27	τ_1	1.36	0.98	1.81	1.49	2.49	2.03	1.54
	(α_1)	(17.0)	(10.6)	(17.3)	(12.8)	(13.9)	(10.7)	(13.4)
	τ_2	4.14	4.83	6.34	8.29	12.0	13.8	15.8

	(α_2)	(83.0)	(89.4)	(82.7)	(87.2)	(86.1)	(89.3)	(86.6)
	χ^2	0.93	1.07	1.16	1.26	1.23	1.18	1.11
	τ_1	1.09	0.95	1.43	1.43	1.45	1.89	1.23
	(α_1)	(16.4)	(14.3)	(17.2)	(17.1)	(12.5)	(12.7)	(11.4)
0.32	**τ_2**	3.33	4.15	5.31	7.13	9.57	12.2	13.3
	(α_2)	(83.6)	(85.7)	(82.8)	(82.9)	(87.5)	(87.3)	(88.6)
	χ^2	0.97	1.08	1.03	1.25	1.25	1.36	1.32
	τ_1	0.63	1.31	1.09	1.12	1.74	1.38	1.36
	(α_1)	(14.6)	(26.2)	(19.8)	(18.4)	(17.2)	(13.5)	(12.6)
0.37	**τ_2**	2.79	3.78	4.58	5.89	8.28	9.90	10.4
	(α_2)	(85.4)	(73.8)	(80.2)	(81.6)	(82.8)	(86.5)	(87.4)
	χ^2	1.07	0.91	1.15	1.21	1.43	1.42	1.45

Table S9: Linear regression analysis of k_q ($M^{-1}.s^{-1}$) vs m_{LiCl} ($mol.kg^{-1}$) data for pyrene in LiCl-added Glyceline.

T (K)	Slope ($kg.L.mol^{-2}.s^{-1}$)	R^2
298	0.22 ± 0.03	0.944
313	0.47 ± 0.06	0.939
328	0.91 ± 0.12	0.920
343	1.54 ± 0.17	0.916
358	2.34 ± 0.25	0.883

Table S10: Recovered excited-state intensity decay parameters for pyrene (10 μM; excitation with 340 nm Nano-LED; emission collected at 373 nm) dissolved in the LiCl-added choline chloride : ethylene glycol (1 : 2) DES at varying quencher (CH_3NO_2) concentration at 358 K. Errors associated with decay times are ≤ ±2%.

[CH_3NO_2] (M)	m_{LiCl} **(mol.kg^{-1})**	**0.0**	**0.5**	**1.0**	**1.5**	**2.0**	**2.5**	**3.0**
0.00	**τ$_1$**	52.1	66.9	69.9	70.9	49.4	49.0	48.7
	(α$_1$)	(1.2)	(2.7)	(2.2)	(2.5)	(0.7)	(0.2)	(0.9)
	τ$_2$	147	147	144	146	142	140	139
	(α$_2$)	(98.8)	(97.3)	(97.8)	(97.5)	(99.3)	(99.3)	(99.1)
	χ^2	1.10	1.10	1.06	1.08	0.99	0.98	1.06
0.05	**τ$_1$**	1.60	2.14	1.82	2.49	3.64	2.88	1.72
	(α$_1$)	(3.6)	(4.7)	(3.1)	(3.0)	(4.4)	(2.8)	(1.9)
	τ$_2$	9.78	11.2	14.0	17.5	19.8	24.1	32.3
	(α$_2$)	(96.4)	(95.3)	(96.9)	(97.0)	(95.6)	(97.2)	(98.1)
	χ^2	1.26	1.16	1.04	1.17	0.98	1.10	0.99
0.11	**τ$_1$**	1.88	1.30	1.80	1.33	1.91	3.03	2.70
	(α$_1$)	(12.4)	(5.8)	(7.8)	(4.9)	(6.7)	(8.7)	(5.3)
	τ$_2$	5.01	5.59	7.39	8.72	10.2	13.5	18.5
	(α$_2$)	(87.6)	(94.2)	(92.2)	(95.1)	(93.3)	(91.3)	(94.7)
	χ^2	0.98	1.15	1.18	1.02	1.21	1.08	1.07
0.16	**τ$_1$**	0.43	0.85	1.09	1.28	1.11	1.50	1.71
	(α$_1$)	(7.8)	(10.8)	(7.6)	(9.8)	(8.5)	(8.5)	(7.1)
	τ$_2$	3.13	3.76	4.76	6.00	6.71	8.86	12.47
	(α$_2$)	(92.2)	(89.2)	(92.4)	(90.2)	(91.5)	(91.5)	(92.9)
	χ^2	0.99	0.97	0.96	1.03	1.05	1.16	1.16
0.21	**τ$_1$**	0.63	1.06	1.16	1.10	0.75	1.42	1.65
	(α$_1$)	(11.5)	(13.5)	(14.6)	(13.0)	(11.1)	(12.3)	(10.2)
	τ$_2$	2.42	2.72	3.66	4.46	5.00	7.01	9.51
	(α$_2$)	(88.5)	(86.5)	(85.4)	(87.0)	(88.9)	(87.7)	(89.8)
	χ^2	1.12	1.21	0.81	1.00	1.23	1.01	1.05
0.27	**τ$_1$**	0.43	1.23	0.82	0.84	0.80	0.87	1.04

	(α_1)	(16.5)	(35.7)	(16.6)	(15.9)	(15.3)	(14.5)	(12.0)
	τ_2	1.91	2.45	2.92	3.64	4.20	5.31	7.58
	(α_2)	(83.5)	(64.3)	(83.4)	(84.1)	(84.7)	(14.5)	(88.0)
	χ^2	1.17	1.08	0.85	1.04	1.20	85.52	1.04
	τ_1	0.57	0.45	0.35	0.91	0.62	0.52	0.71
	(α_1)	(21.8)	(17.6)	(15.4)	(22.1)	(16.4)	(14.0)	(12.4)
0.32	**τ_2**	1.61	1.84	2.30	3.12	3.35	4.27	6.23
	(α_2)	(78.2)	(82.4)	(84.6)	(77.9)	(83.6)	(86.0)	(87.6)
	χ^2	1.16	1.05	1.12	1.14	1.17	1.32	1.11
	τ_1	0.48	0.65	0.29	0.21	0.37	0.23	0.47
	(α_1)	(25.9)	(25.1)	(20.0)	(18.7)	(17.1)	(17.8)	(14.8)
0.37	**τ_2**	1.42	1.57	1.95	2.37	2.80	3.49	4.83
	(α_2)	(74.1)	(74.9)	(80.0)	(81.3)	(82.9)	(82.2)	(85.2)
	χ^2	1.14	1.08	1.02	1.10	1.14	1.20	1.19

Table S11: Stern-Volmer dynamic quenching constant, K_D (M^{-1}), obtained from the linear regression analysis of τ_0/τ vs [CH_3NO_2] data and estimated bimolecular quenching rate constant k_q ($M^{-1}.s^{-1}$) for pyrene-nitromethane fluorophore-quencher pair in choline chloride : ethylene glycol (1 : 2) DES at different LiCl concentrations and 358 K.

m_{LiCl} **(mol.kg^{-1})**	K_D **(M^{-1})**	k_q **($M^{-1}.s^{-1}$) × 10^8**	R^2
0.0	280.3 ± 4.5	19.00 ± 1.05	0.999
0.5	246.7 ± 4.2	16.80 ± 0.95	0.999
1.0	188.8 ± 3.1	13.10 ± 0.89	0.994
1.5	148.0 ± 2.9	10.10 ± 0.70	0.998
2.0	129.5 ± 2.8	9.10 ± 0.62	0.995
2.5	99.0 ± 2.5	7.00 ± 0.60	0.988
3.0	68.3 ± 1.5	4.90 ± 0.50	0.984

Table S12: Recovered excited-state intensity decay parameters for pyrene (10 μM; excitation with 340 nm Nano-LED; emission collected at 373 nm) dissolved in the LiCl-added choline chloride : methyl urea (1 : 2) DES at varying quencher (CH_3NO_2) concentration at 358 K. Errors associated with decay times are ≤ ±2%.

[CH_3NO_2] (M)	m_{LiCl} **(mol.kg^{-1})**	**0.0**	**0.5**	**1.0**	**1.5**	**2.0**	**2.5**	**3.0**
0.00	τ_1	1.87	1.53	1.59	0.39	0.58	1.09	0.53
	(α_1)	(0.6)	(0.5)	(0.8)	(1.6)	(1.2)	(0.8)	(1.3)
	τ_2	142	140	140	138	136	133	139
	(α_2)	(99.4)	(99.5)	(99.2)	(98.4)	(98.8)	(99.2)	(98.4)
	χ^2	0.99	1.01	0.97	1.06	1.06	1.02	1.04
0.05	τ_1	1.88	1.91	1.82	0.62	0.69	0.49	0.68
	(α_1)	(5.6)	(5.9)	(5.3)	(5.8)	(3.5)	(4.1)	(3.6)
	τ_2	17.9	20.8	28.7	30.8	38.7	47.0	52.8
	(α_2)	(94.4)	(94.1)	(94.7)	(94.2)	(96.5)	(95.9)	(96.4)
	χ^2	1.10	1.06	1.02	1.05	1.07	1.06	1.13
0.11	τ_1	1.66	1.77	1.86	0.76	1.25	0.54	0.39
	(α_1)	(10.7)	(12.2)	(11.2)	(11.0)	(7.6)	(6.7)	(7.8)
	τ_2	9.42	11.1	15.0	15.3	22.1	29.5	36.4
	(α_2)	(89.3)	(87.8)	(88.8)	(89.0)	(92.4)	(93.3)	(92.2)
	χ^2	1.07	1.09	1.08	1.07	1.17	1.19	1.19
0.16	τ_1	1.45	1.52	1.50	0.71	0.78	0.27	0.11
	(α_1)	(16.6)	(18.5)	(15.3)	(14.3)	(12.4)	(13.5)	(24.9)
	τ_2	6.12	7.57	9.47	11.2	15.3	18.9	24.3
	(α_2)	(83.4)	(81.5)	(84.7)	(85.7)	(87.6)	(86.5)	(75.1)
	χ^2	0.95	1.01	1.05	1.06	1.03	1.10	1.05
0.21	τ_1	1.04	1.10	1.18	0.53	0.69	0.15	0.08
	(α_1)	(19.5)	(21.8)	(19.2)	(19.4)	(14.1)	(28.3)	(40.5)
	τ_2	4.60	5.63	6.99	7.75	11.2	14.9	18.4
	(α_2)	(80.5)	(78.2)	(80.8)	(80.6)	(85.9)	(71.7)	(59.5)
	χ^2	0.95	1.02	1.08	1.08	1.04	0.98	1.06
0.27	τ_1	1.01	0.87	0.88	0.45	0.69	0.08	0.05

	(α_1)	(22.5)	(23.3)	(21.6)	(20.1)	(17.4)	(42.8)	(55.2)
	τ_2	3.58	4.39	5.63	6.13	9.48	10.8	15.0
	(α_2)	(77.5)	(76.7)	(78.4)	(79.9)	(82.6)	(57.2)	(44.8)
	χ^2	0.99	1.04	1.13	1.10	1.12	1.12	1.02
	τ_1	0.92	0.71	0.69	0.35	0.62	0.06	0.04
	(α_1)	(25.6)	(25.8)	(23.2)	(22.1)	(19.8)	(45.2)	(60.2)
0.32	τ_2	2.91	3.71	4.67	5.01	7.77	9.08	11.7
	(α_2)	(74.4)	(74.2)	(76.8)	(77.9)	(80.2)	(54.8)	(39.8)
	χ^2	0.98	1.05	1.10	1.07	1.10	1.05	1.13
	τ_1	0.81	0.59	0.52	0.30	0.52	0.05	0.04
	(α_1)	(29.8)	(28.6)	(25.3)	(24.3)	(21.6)	(50.1)	(62.3)
0.37	τ_2	2.46	3.21	4.03	4.20	6.23	7.88	9.93
	(α_2)	(70.2)	(71.4)	(74.7)	(75.7)	(78.4)	(49.9)	(37.7)
	χ^2	1.00	1.03	1.08	1.08	1.13	1.20	1.10

Table S13: Stern-Volmer dynamic quenching constant, K_D (M^{-1}), obtained from the linear regression analysis of τ_0/τ vs [CH_3NO_2] data and estimated bimolecular quenching rate constant k_q ($M^{-1}.s^{-1}$) for pyrene-nitromethane fluorophore-quencher pair in choline chloride : methyl urea (1 : 2) DES at different LiCl concentrations and 358 K.

m_{LiCl} **(mol.kg^{-1})**	K_D **(M^{-1})**	k_q **($M^{-1}.s^{-1}$) × 10^8**	R^2
0.0	146.9 ± 2.5	10.37 ± 0.91	0.995
0.5	113.7 ± 2.3	8.14 ± 0.85	0.999
1.0	89.9 ± 1.7	6.40 ± 0.76	0.996
1.5	82.1 ± 1.3	5.94 ± 0.55	0.996
2.0	52.8 ± 0.5	3.87 ± 0.54	0.990
2.5	41.4 ± 0.4	3.11 ± 0.40	0.989
3.0	30.3 ± 0.4	2.19 ± 0.45	0.996

Table S14: Recovered excited-state intensity decay parameters for pyrene (10 μM; excitation with 340 nm Nano-LED; emission collected at 373 nm) dissolved in the LiCl-added choline chloride : phenol (1 : 2) DES at varying quencher (CH_3NO_2) concentration at 358 K. Errors associated with decay times are ≤ ±2%.

[CH_3NO_2] (M)	m_{LiCl} (mol.kg^{-1})	0.0	0.5	1.0	1.5	2.0	2.5	3.0
0.00	**τ$_1$**	1.13	44.5	44.8	1.14	LiCl is not soluble		
	(α$_1$)	(0.4)	(0.3)	(1.5)	(0.9)			
	τ$_2$	94.0	105	111	114			
	(α$_2$)	(99.6)	(99.7)	(98.5)	(99.1)			
	χ^2	1.00	1.04	1.03	0.98			
0.05	**τ$_1$**	1.01	1.07	1.47	1.01			
	(α$_1$)	(6.6)	(4.7)	(7.1)	(10.5)			
	τ$_2$	7.42	8.23	9.99	9.90			
	(α$_2$)	(93.4)	(95.3)	(92.9)	(89.5)			
	χ^2	1.02	1.12	1.02	1.00			
0.11	**τ$_1$**	0.87	0.89	0.95	0.74			
	(α$_1$)	(11.1)	(10.9)	(13.2)	(19.4)			
	τ$_2$	3.64	4.27	4.36	4.94			
	(α$_2$)	(88.9)	(89.1)	(86.8)	(80.6)			
	χ^2	0.87	0.86	1.09	0.94			
0.16	**τ$_1$**	0.55	0.90	0.37	0.57			
	(α$_1$)	(13.5)	(20.7)	(14.5)	(25.5)			
	τ$_2$	2.44	2.93	2.80	3.19			
	(α$_2$)	(86.5)	(79.3)	(85.5)	(74.5)			
	χ^2	0.94	0.89	1.02	0.86			
0.21	**τ$_1$**	0.54	0.45	0.38	0.56			
	(α$_1$)	(21.3)	(20.3)	(23.2)	(34.5)			
	τ$_2$	1.83	2.07	2.14	2.51			
	(α$_2$)	(78.7)	(79.7)	(76.8)	(65.5)			
	χ^2	1.02	1.01	0.97	0.85			
0.27	**τ$_1$**	0.49	0.31	0.48	0.36			

	(α_1)	(29.8)	(25.7)	(32.4)	(34.9)
	τ_2	1.51	1.62	1.72	1.87
	(α_2)	(70.2)	(74.3)	(67.6)	(65.1)
	χ^2	1.00	0.99	0.97	1.04
	τ_1	0.42	0.25	0.42	0.25
	(α_1)	(32.8)	(29.7)	(40.1)	(37.8)
0.32	**τ_2**	1.26	1.34	1.41	1.53
	(α_2)	(67.2)	(70.3)	(59.9)	(62.2)
	χ^2	1.01	1.02	1.00	1.01
	τ_1	0.35	0.19	0.37	0.17
	(α_1)	(35.1)	(33.7)	(48.3)	(50.2)
0.37	**τ_2**	1.07	1.14	1.19	1.27
	(α_2)	(64.9)	(66.3)	(51.7)	(49.8)
	χ^2	1.05	0.98	0.99	1.03

Table S15: Stern-Volmer dynamic quenching constant, K_D (M^{-1}), obtained from the linear regression analysis of τ_0/τ vs [CH_3NO_2] data and estimated bimolecular quenching rate constant k_q ($M^{-1}.s^{-1}$) for pyrene-nitromethane fluorophore-quencher pair in choline chloride : phenol (1 : 2) DES at different LiCl concentrations and 358 K.

m_{LiCl} **(mol.kg^{-1})**	K_D **(M^{-1})**	k_q **($M^{-1}.s^{-1}$) × 10^8**	R^2
0.0	232.4 ± 4.1	24.70 ± 1.04	0.999
0.5	239.3 ± 4.3	22.70 ± 1.03	0.996
1.0	241.8 ± 5.2	21.20 ± 1.02	0.997
1.5	227.8 ± 4.5	19.90 ± 1.06	0.993

Table S16: Recovered anisotropy decay parameters for perylene (5 μM; excitation with 405 nm Nano-LED; emission collected at 445 nm) dissolved in the LiCl-added Glyceline system at different temperatures and LiCl concentrations.

***T* (K) = 298**

m_{LiCl} (mol.kg^{-1})	r_0	θ (ns)	χ^2
0.0	$0.287 \pm 0.000_2$	5.17 ± 0.03	1.20
0.5	$0.298 \pm 0.001_1$	7.51 ± 0.02	1.32
1.0	$0.311 \pm 0.001_2$	9.67 ± 0.02	1.16
1.5	$0.315 \pm 0.000_9$	$13.0 \pm 0.0_5$	1.16
2.0	$0.320 \pm 0.001_1$	$17.5 \pm 0.0_4$	1.22
2.5	$0.326 \pm 0.000_8$	$26.6 \pm 0.0_5$	1.13
3.0	$0.329 \pm 0.001_3$	$37.6 \pm 0.0_4$	1.15

***T* (K) = 313**

m_{LiCl} (mol.kg^{-1})	r_0	θ (ns)	χ^2
0.0	$0.269 \pm 0.000_3$	2.48 ± 0.01	1.25
0.5	$0.274 \pm 0.000_2$	3.38 ± 0.02	1.28
1.0	$0.284 \pm 0.001_2$	4.67 ± 0.02	1.34
1.5	$0.289 \pm 0.000_8$	6.56 ± 0.03	1.35
2.0	$0.294 \pm 0.000_5$	8.78 ± 0.02	1.21
2.5	$0.307 \pm 0.001_4$	$11.8 \pm 0.0_4$	1.20
3.0	$0.311 \pm 0.001_1$	$16.7 \pm 0.0_3$	1.23

***T* (K) =328**

m_{LiCl} (mol.kg^{-1})	r_0	θ (ns)	χ^2
0.0	$0.245 \pm 0.001_3$	1.39 ± 0.04	1.24
0.5	$0.252 \pm 0.000_2$	1.82 ± 0.03	1.29
1.0	$0.253 \pm 0.001_2$	2.56 ± 0.01	1.23
1.5	$0.266 \pm 0.000_5$	3.19 ± 0.02	1.30

2.0	$0.273 \pm 0.000_7$	4.00 ± 0.04	1.39
2.5	$0.286 \pm 0.000_4$	5.73 ± 0.04	1.31
3.0	$0.287 \pm 0.000_2$	7.41 ± 0.05	1.22

***T* (K) = 343**

m_{LiCl} **(mol.kg^{-1})**	r_0	θ **(ns)**	χ^2
0.0	$0.237 \pm 0.001_1$	0.84 ± 0.02	1.15
0.5	$0.241 \pm 0.001_2$	1.07 ± 0.04	1.21
1.0	$0.229 \pm 0.000_8$	1.39 ± 0.03	1.22
1.5	$0.243 \pm 0.001_3$	1.84 ± 0.03	1.34
2.0	$0.246 \pm 0.000_9$	2.37 ± 0.04	1.33
2.5	$0.269 \pm 0.001_5$	3.10 ± 0.05	1.33
3.0	$0.269 \pm 0.000_3$	4.44 ± 0.02	1.46

***T* (K) = 358**

m_{LiCl} **(mol.kg^{-1})**	r_0	θ **(ns)**	χ^2
0.0	$0.195 \pm 0.001_2$	0.56 ± 0.02	1.12
0.5	$0.215 \pm 0.001_0$	0.62 ± 0.04	1.11
1.0	$0.222 \pm 0.000_8$	0.85 ± 0.03	1.09
1.5	$0.236 \pm 0.001_1$	1.03 ± 0.02	1.14
2.0	$0.238 \pm 0.000_7$	1.35 ± 0.05	1.21
2.5	$0.230 \pm 0.000_5$	1.90 ± 0.05	1.20
3.0	$0.247 \pm 0.001_5$	2.32 ± 0.04	1.27

Table S17: Linear regression analysis of θ (ns) of perylene vs η/T data of LiCl-added Glyceline.

m_{LiCl}	**Slope × 10^{-9} (ns.K.mPa^{-1})**	**R^2**
0.0	4.18 ± 0.15	0.956
0.5	3.41 ± 0.20	0.968
1.0	2.40 ± 0.13	0.924
1.5	1.75 ± 0.12	0.896
2.0	2.15 ± 0.16	0.934
2.5	1.71 ± 0.14	0.895
3.0	1.97 ± 0.15	0.735

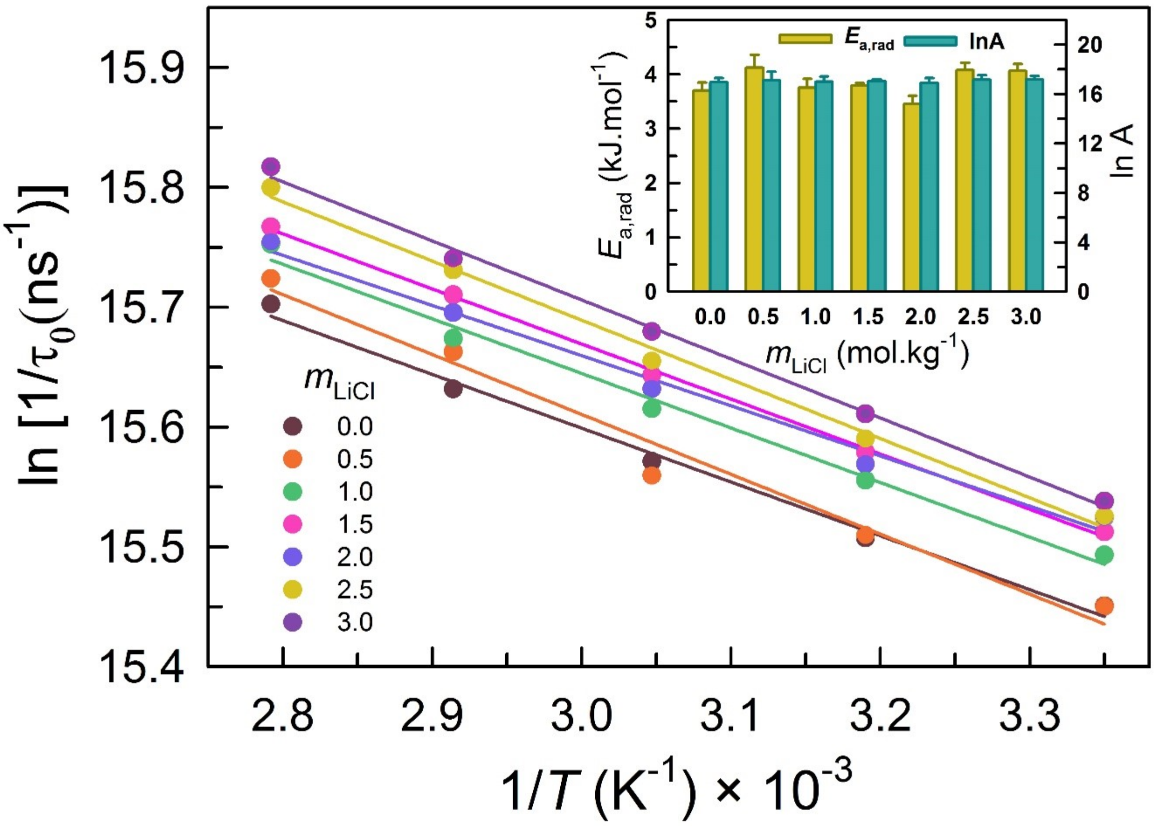

Fig. S1: Plot of ln $(1/\tau_o)$ vs $1/T$ for pyrene in LiCl-added Glyceline with the inset showing corresponding activation energies for radiative transition ($E_{a,rad}$) for different LiCl concentrations.