Supporting information

Solute Rotation and Translation Dynamics in an Ionic Deep Eutectic Solvent Based on Choline Chloride

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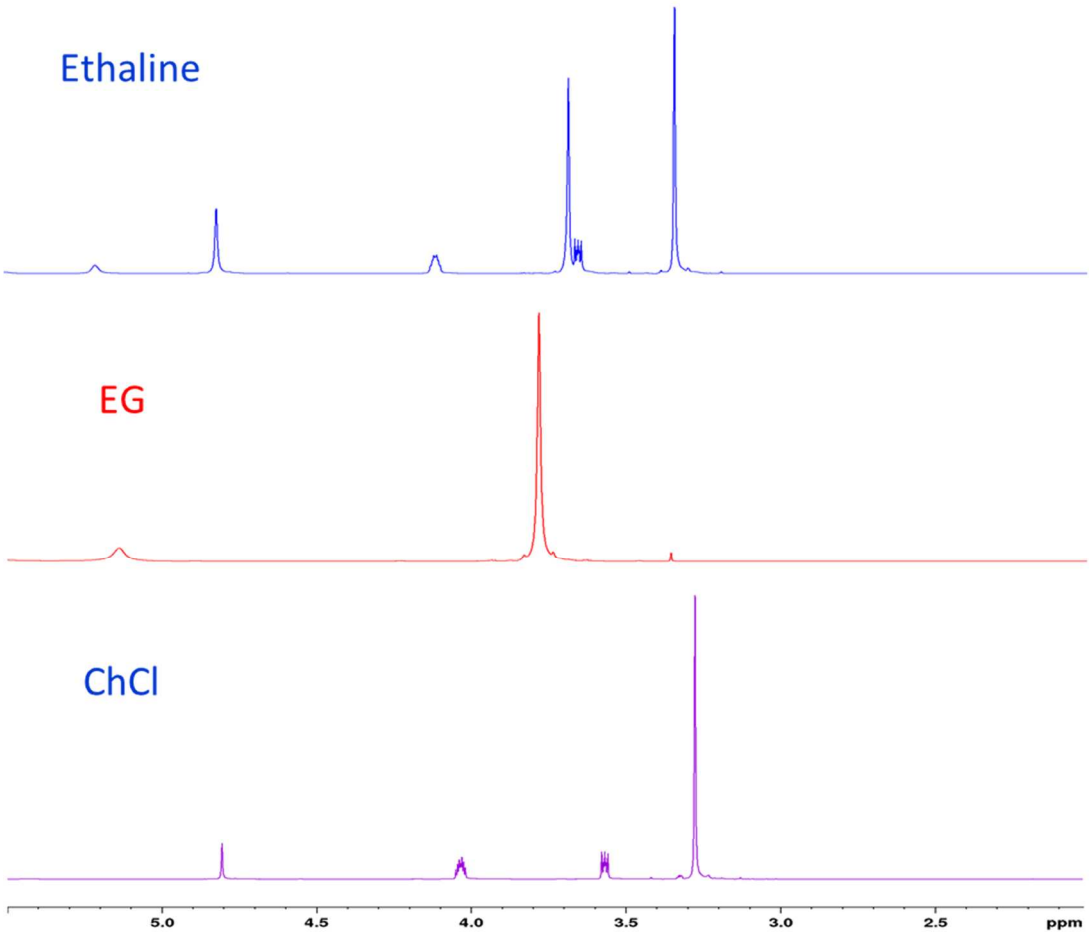

Figure S1. ^{1}H-NMR spectra of choline chloride (ChCl), ethylene glycol (EG) and ethaline (CD_3OD as reference).

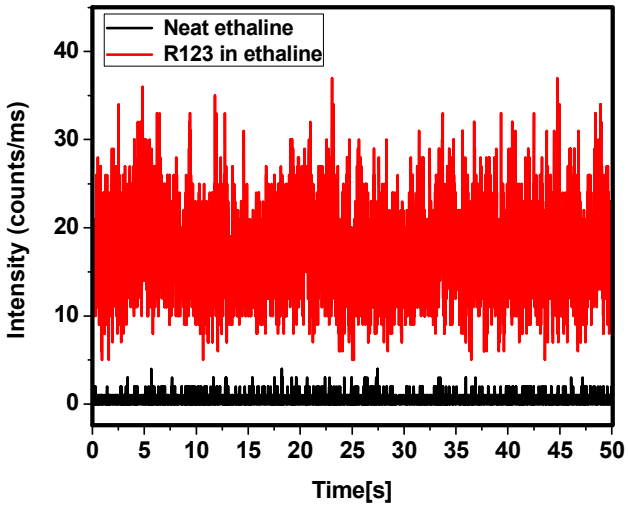

Figure S2. Fluorescence intensity time trace of ethaline alone and R123 in ethaline (λ_{exc} = 485 nm).

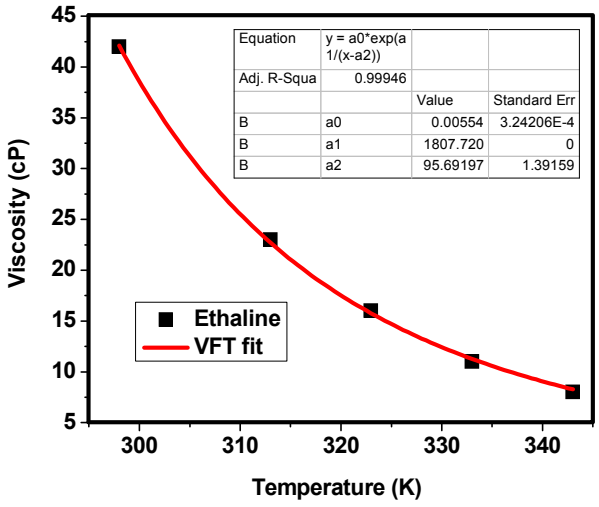

Figure S3. Measured viscosity (points) of ethaline at different temperatures together with the fits (solid line) ccording to the Vogel−Fulcher−Tamman (VFT) equation.

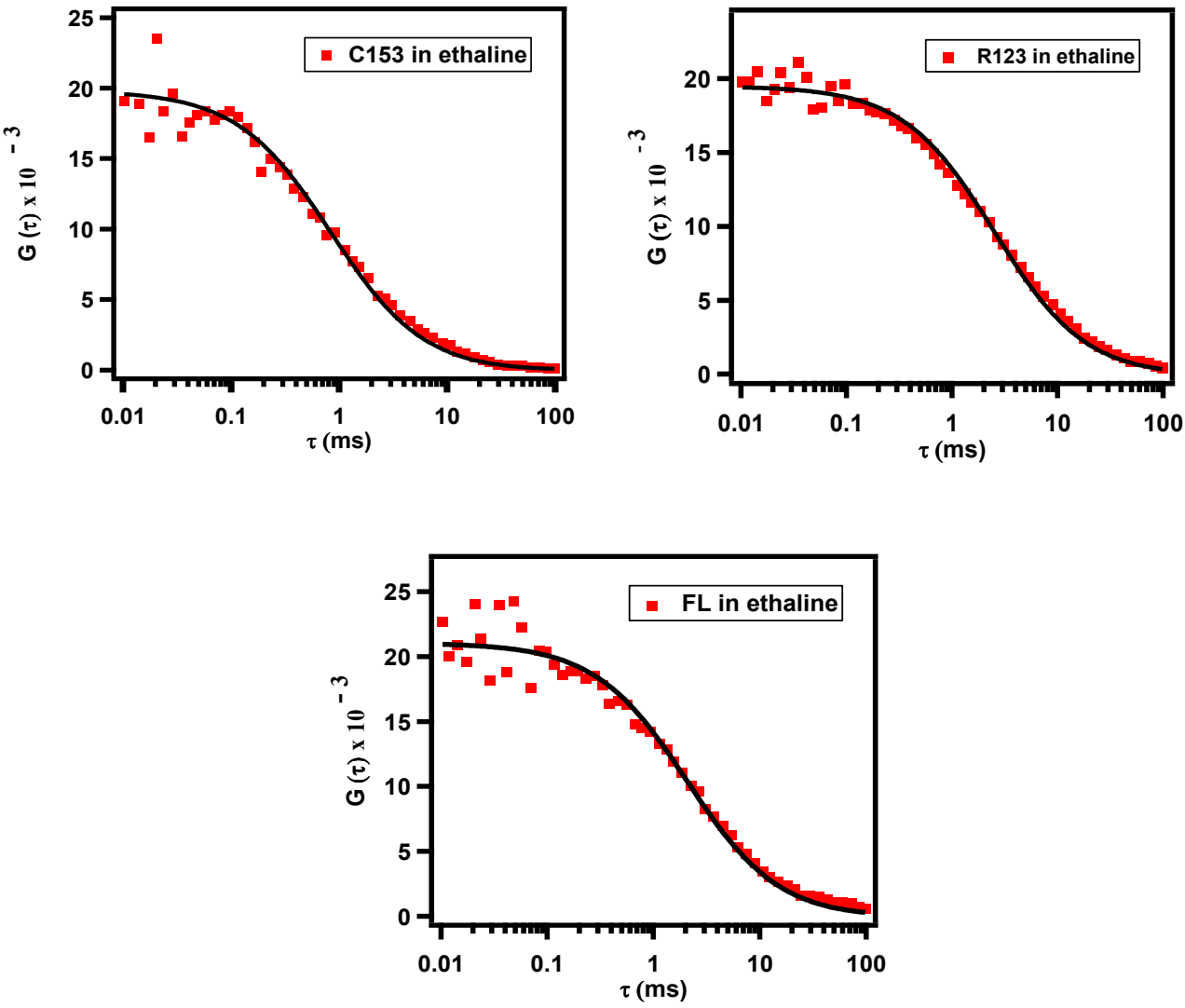

Figure S4. Fluorescence correlation curves for the diffusion of solutes in ethaline. The points are the experimental data and the solid lines represent fit to the data using single component diffusion model. The excitation wavelengths are 405 nm for C153 and 485 nm for R123 and FL.

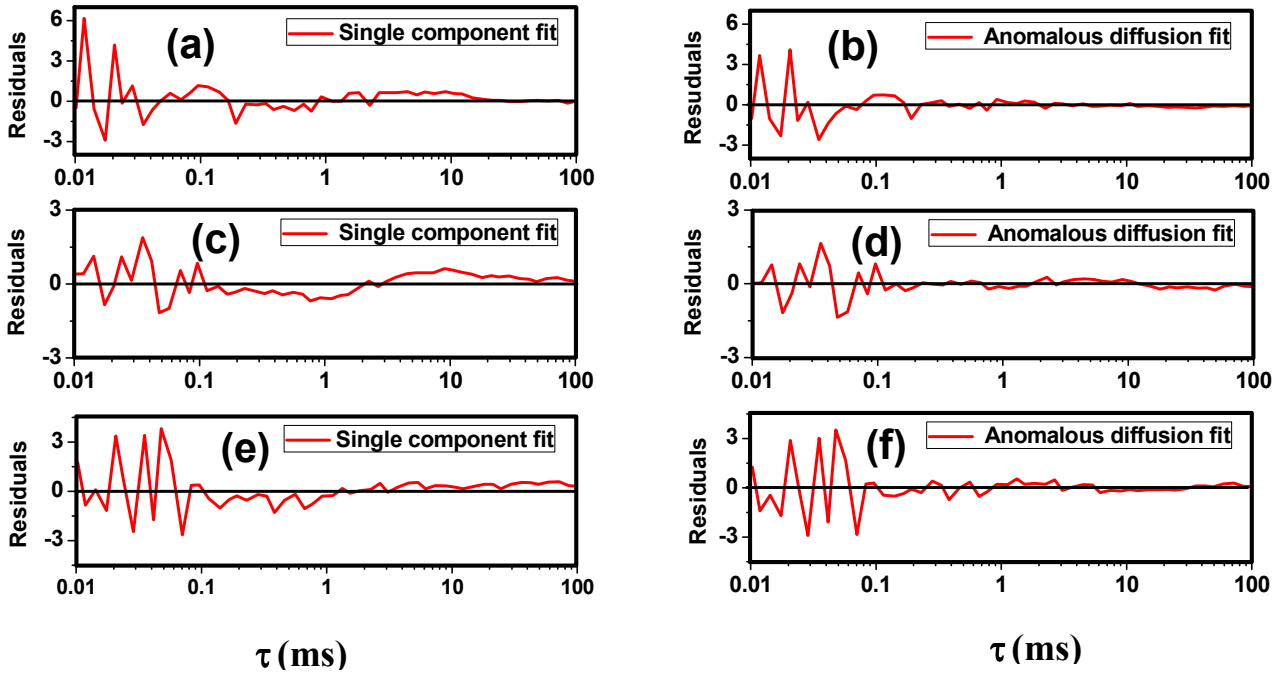

Figure S5. Residuals of the fits of fluorescence correlation curve for C153 (a, b), R123 (c, d), and FL (e, f) for the single component and anomalous diffusion models.

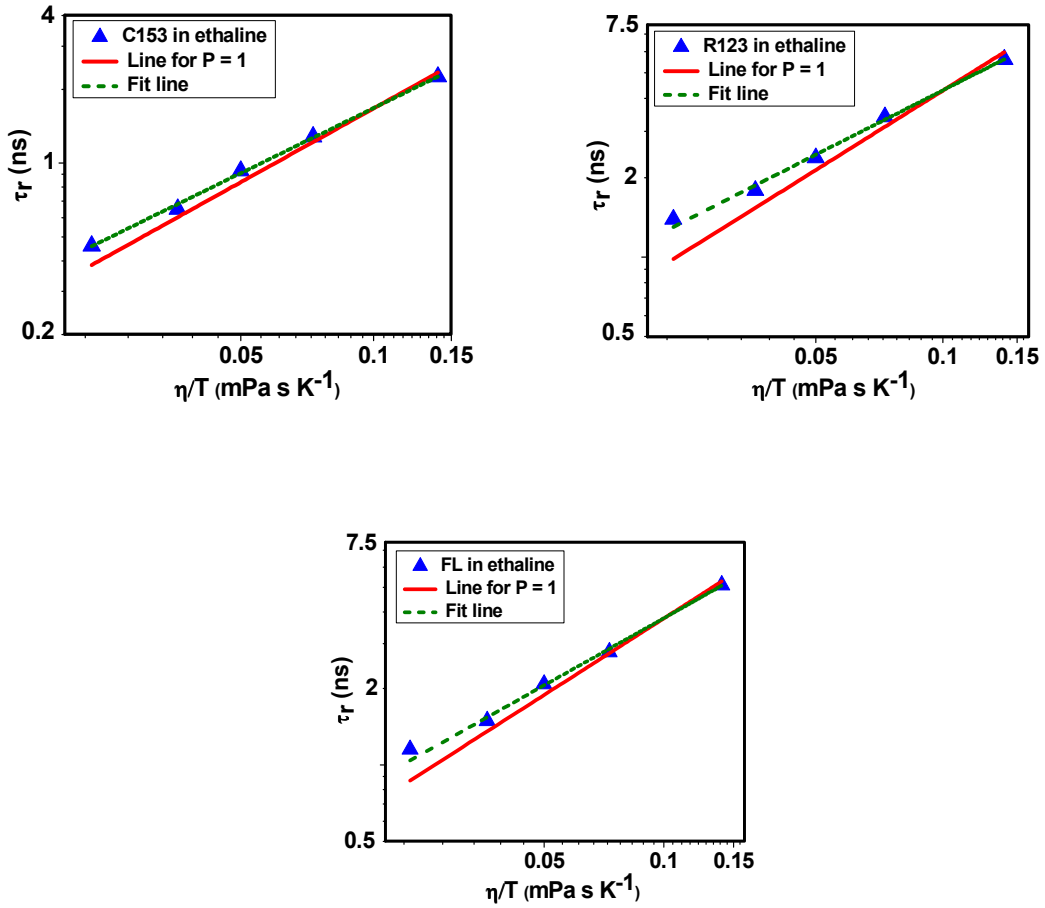

Fig. S6: Dependence of the τ_r values of C153, R123 and FL in ethaline on η/T according to $\tau_r = A(\eta/T)^P$ shown as dashed lines. The hypothetical line with P=1 is shown as solid line.

Table S1. Reorientation times (ns) of the solutes for slip and stick boundary conditions at different temperatures calculated using Stokes-Einstein-Debye (SED) hydrodynamic theory.

Temp (K)	C153		R123		FL	
	Slip	Stick	Slip	Stick	Skip	Stick
298	1.03	4.29	0.96	6.20	0.74	5.26
313	0.54	2.24	0.50	3.23	0.38	2.74
323	0.36	1.51	0.34	2.18	0.26	1.87
333	0.26	1.10	0.25	1.58	0.19	1.36
343	0.17	0.71	0.16	1.03	0.12	0.88