C153 Dynamics in Ethylammonium Nitrate: The Effects of Dilution with Methanol

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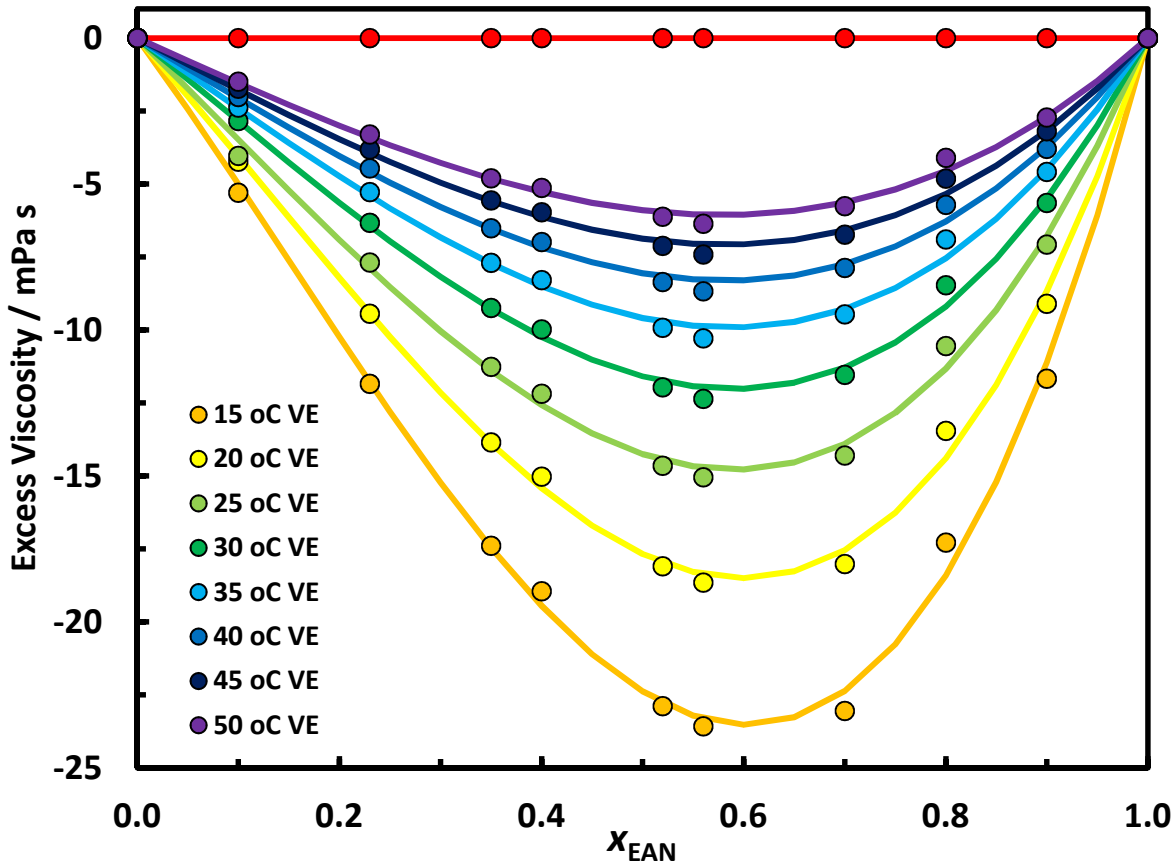
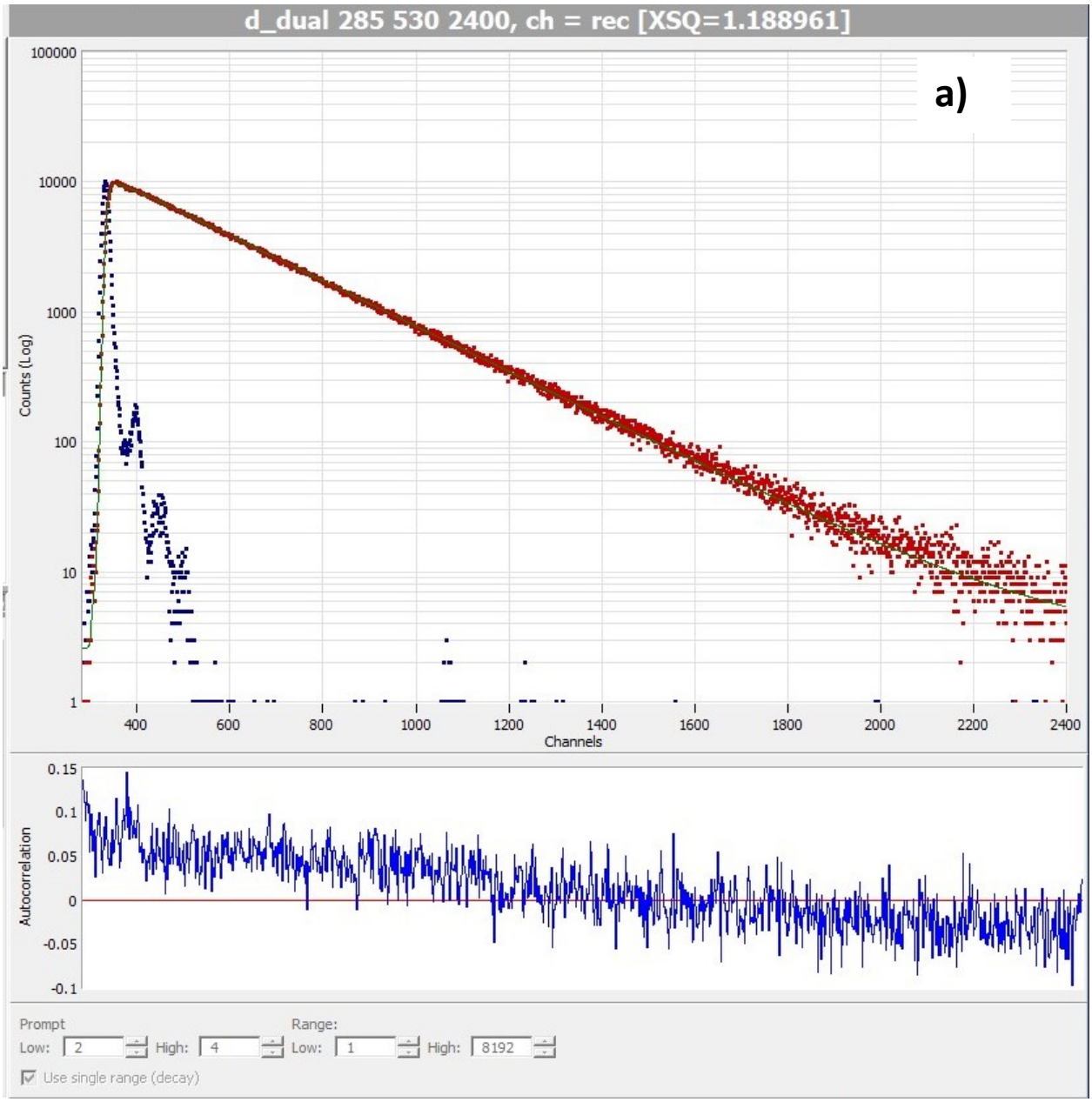


Figure S1. Excess viscosities (symbols) for EAN/MeOH as a function of EAN mole fraction for temperatures from 278 – 323 K. Lines are fits to a two component Redlich-Kister polynomial of functional form:[1].

$$\eta^E = x_{EAN}\left(1 - x_{EAN}\right)\sum_{i=1}^{N} A_i\left[2x_{EAN} - 1\right]^{i-1}$$


d_dual 285 530 2400, ch = rec [XSQ=1.188961]
a)
Counts (Log)
Channels
Autocorrelation
Prompt
Low: 2
High: 4
Range:
Low: 1
High: 8192
Use single range (decay)

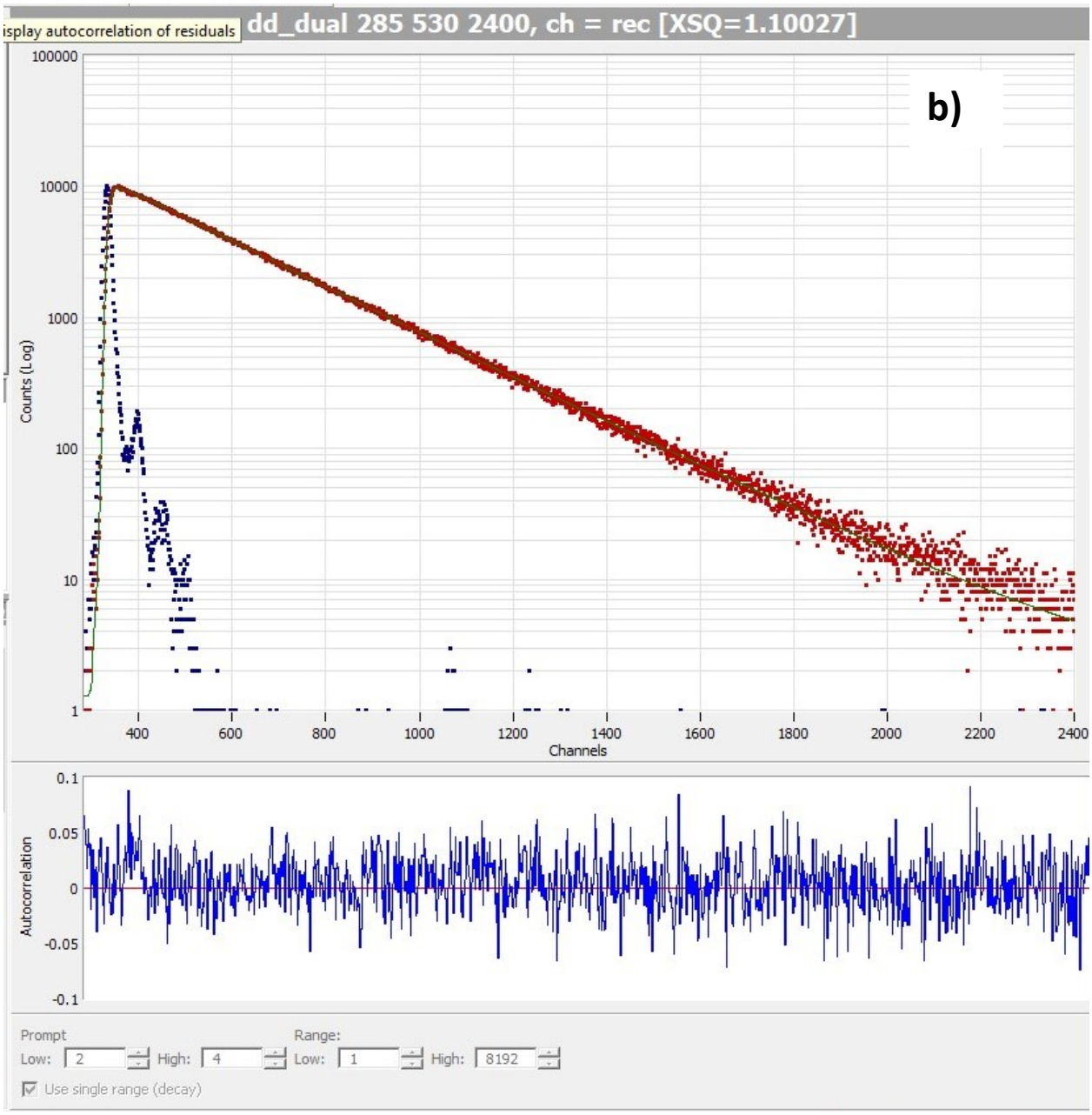


Figure S2. a) Autocorrelation of the residuals for x_{IL} = 0.2 EAN/MeOH at 295 K fit to a single exponential model. Note the χ^2 = 1.18, which by consideration is an "acceptable fit". Although the residuals appear convincing that this model is acceptable, the autocorrelation shows a very clear bias across the entire fitting range. b) Autocorrelation of the residuals for x_{IL} = 0.2 EAN/MeOH at 295 K fit to a double exponential model. Note the small improvement in χ^2 = 1.10 but much more significant is the randomness of the autocorrelation function. This argues for inclusion of a second time constant to properly describe the intensity decay.

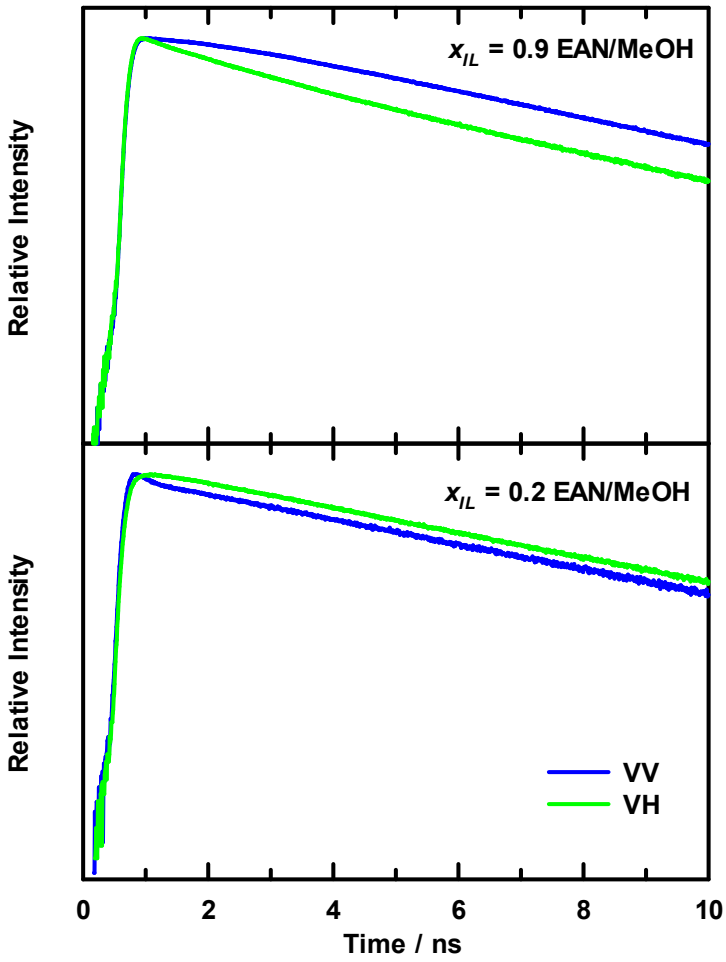


Figure S3. Parallel and perpendicular intensity decays for EAN/MeOH at 295 K. Lower panel shows polarized intensity decays for x_{IL} = 0.2 and upper panel is x_{IL} = 0.9. The traces intensities were normalized to 1. Note that more time is required for the decays to tail-match, which is the criterion to compute the anisotropy decay.

Reference

1. McAtee, Z. P.; Heitz, M. P. Density, Viscosity and Excess Properties in the Trihexyltetradecylphosphonium Chloride Ionic Liquid/Methanol Cosolvent System. *J. Chem. Thermodyn.,* **2016,** *93*, 34-44.