

SUPPLEMENTARY INFORMATION

Are Water-Xylitol Mixtures Heterogeneous? An Investigation Employing Composition and Temperature Dependent Dielectric Relaxation and Time-Resolved Fluorescence Measurements

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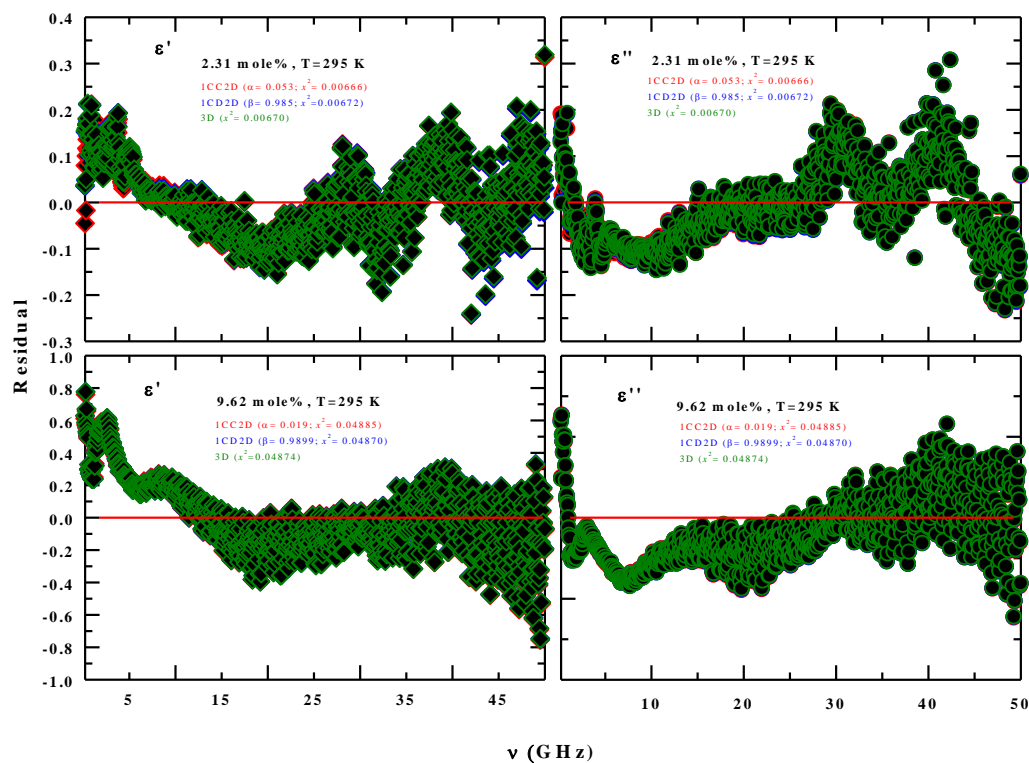


Figure S1. A representative comparison between the three fit models. Diamonds and circles represent the real ($\epsilon'(\nu)$) and imaginary ($\epsilon''(\nu)$) part of the DR data for the water-xylitol mixtures, respectively. Presentations are color coded.

Table S1. Molecular rotational times from SED relation for water and xylitol molecules in water-xylitol mixtures (using experimental viscosity) at 295 K. From SED using stick boundary condition, $\tau_r = 3\eta V / k_B T$.

| Xylitol Mole % | η (cP) | Water ($V = 10.9\text{\AA}^3$) (ps) | Xylitol ($V = 107.3\text{\AA}^3$) (ps) | $\tau_{DR}^{Slowest} = \tau_1$ (ps) | $\langle \tau_{DR}^{i=2} \rangle = \alpha_1 \tau_1 + \alpha_2 \tau_2$ (ps) |
|----------------|-------------|---------------------------------------------|------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------|
| 2.31 | 1.58 | 13 | 125 | 48 | 17 |
| 4.52 | 2.46 | 20 | 194 | 49 | 22 |
| 5.58 | 3.11 | 25 | 246 | 57 | 28 |
| 7.65 | 4.67 | 37 | 369 | 68 | 35 |
| 8.65 | 5.75 | 46 | 454 | 77 | 43 |
| 9.62 | 7.01 | 56 | 554 | 80 | 46 |

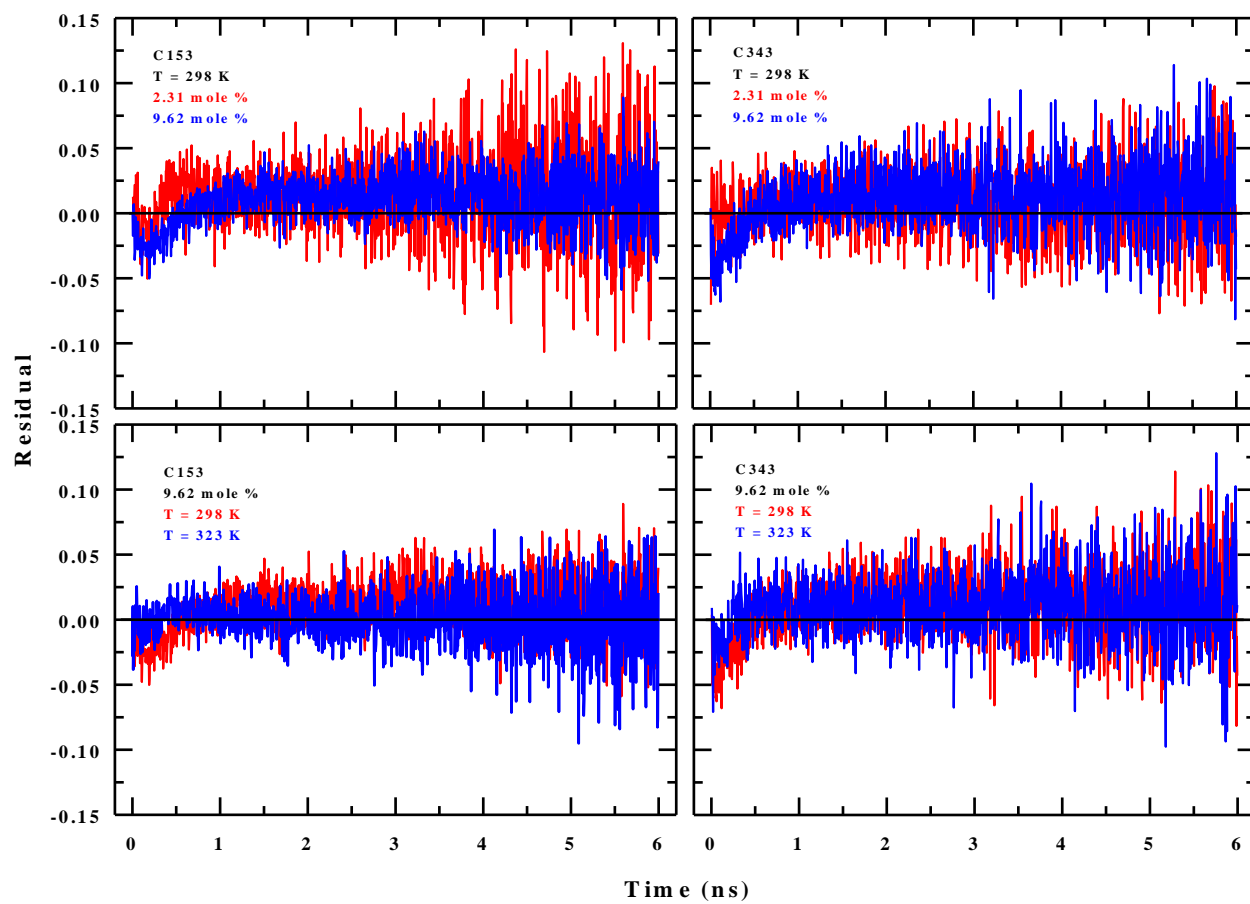


Figure S2. Residual of $r(t)$ decays are plotted here to show the validity of fits.