

## Electronic Supplementary Material (ESI)

### **DNA Ionogel: Structure and Self-Assembly**

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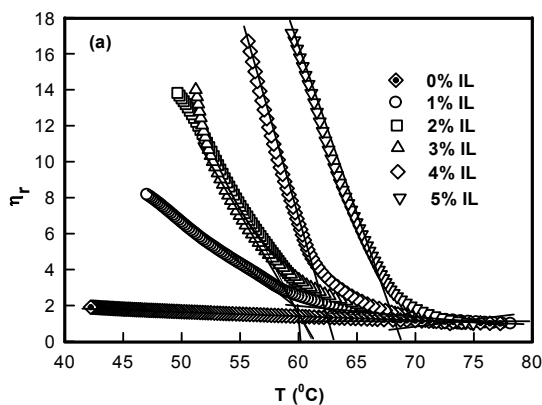
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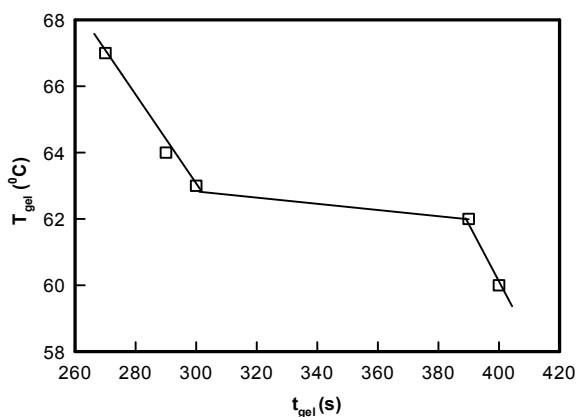
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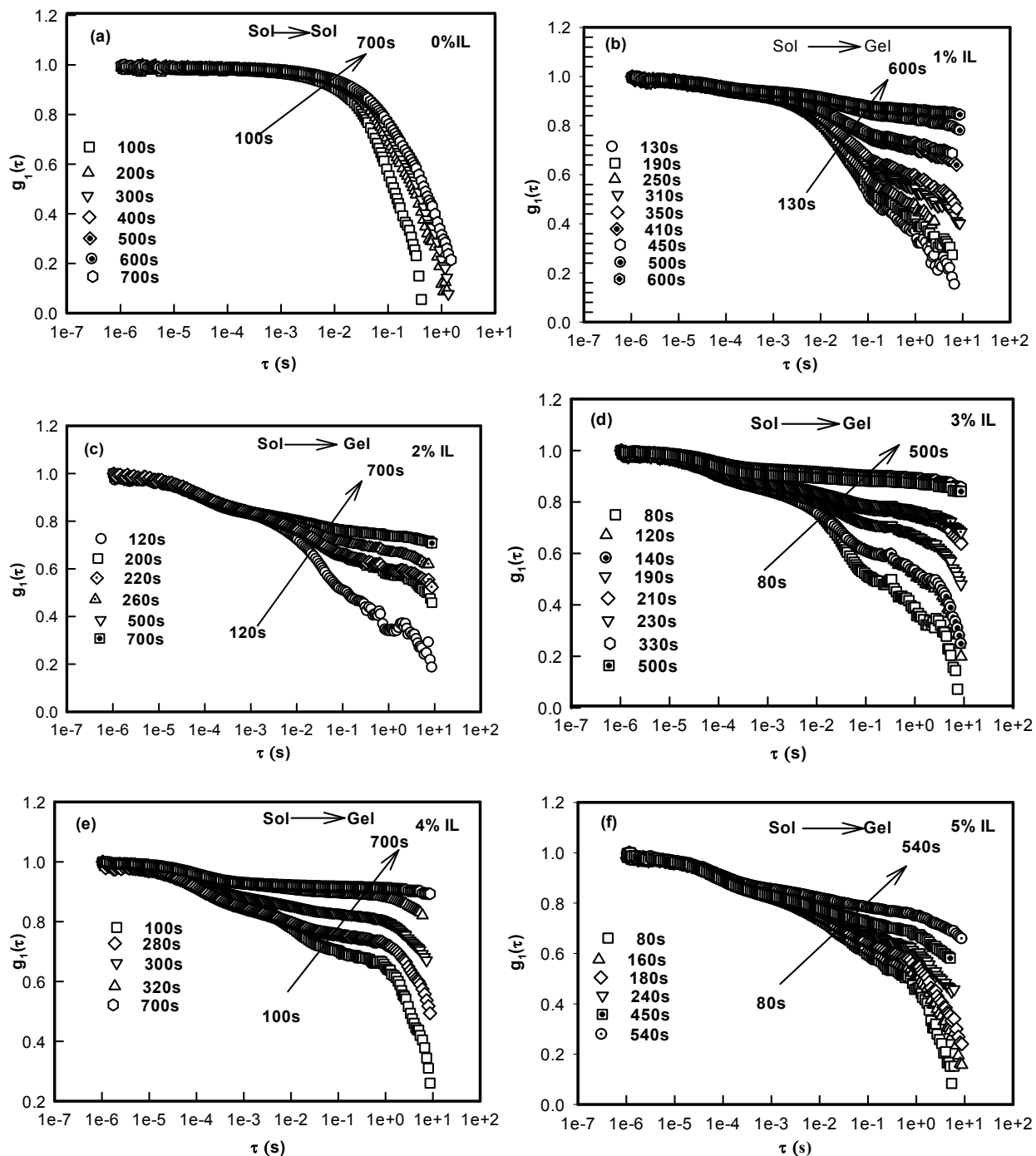
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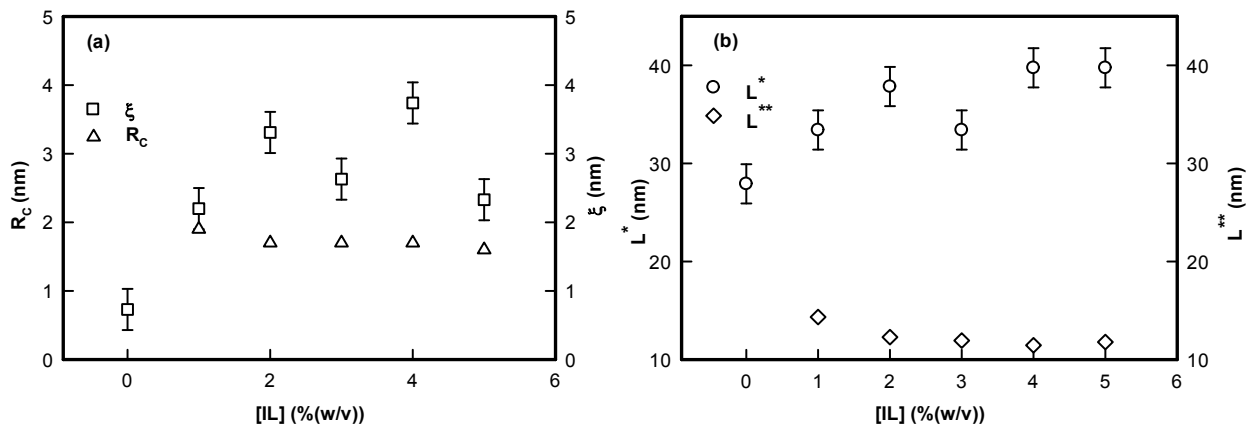
**Fig. S1** Representation of relative viscosity with different temperature at different of ionic liquid concentration. Network formation leads to viscoelasticity.



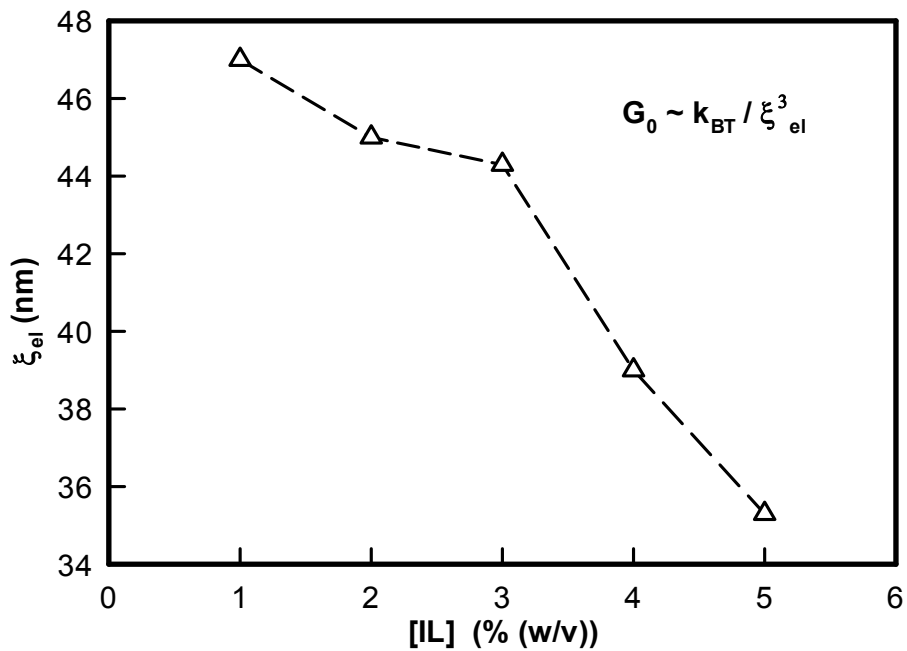
**Fig. S2** Representation of gelation temperature  $T_{gel}$  as a function of gelation time for different IL Concentrations.



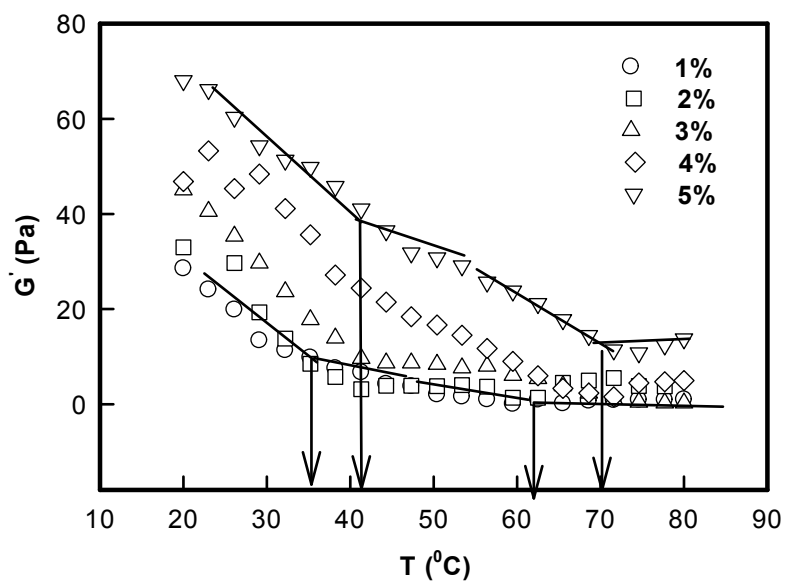
**Fig. S3** Indicative dynamic structure factor,  $g_1(\tau)$  obtained for 1% (w/v) DNA with (a) 0%, (b) 1%, (c) 2%, (d) 3%, (e) 4% and (f) 5% (w/v) ionic liquid concentration.



**Fig. S4** (a) A representative plot for mesh size  $\xi$  and cross sectional radius  $R_c$  for different IL concentrations. (b) A representative plot for characteristic cross over length (corresponding to  $q^*$  and  $q^{**}$ )  $L^*$  and  $L^{**}$  for different IL concentrations.



**Fig. S5** Variation of viscoelastic length,  $\xi_{el}$  of DNA ionogels as a function of IL concentration. A solid line is guides to the eye.



**Fig. S6** Storage modulus  $G'(\omega)$  of DNA ionogel with 0-5% IL as a function of temperature. Sharp drop indicates a melting temperature. The measurements were performed at 20 °C using a constant oscillation stress of 1 Pa. Solid lines is guides to the eye.