Electronic Supporting Information

Amphiphilic oligoether-based ionic liquids as functional materials for thermoresponsive ion gels with tunable properties via aqueous gelation

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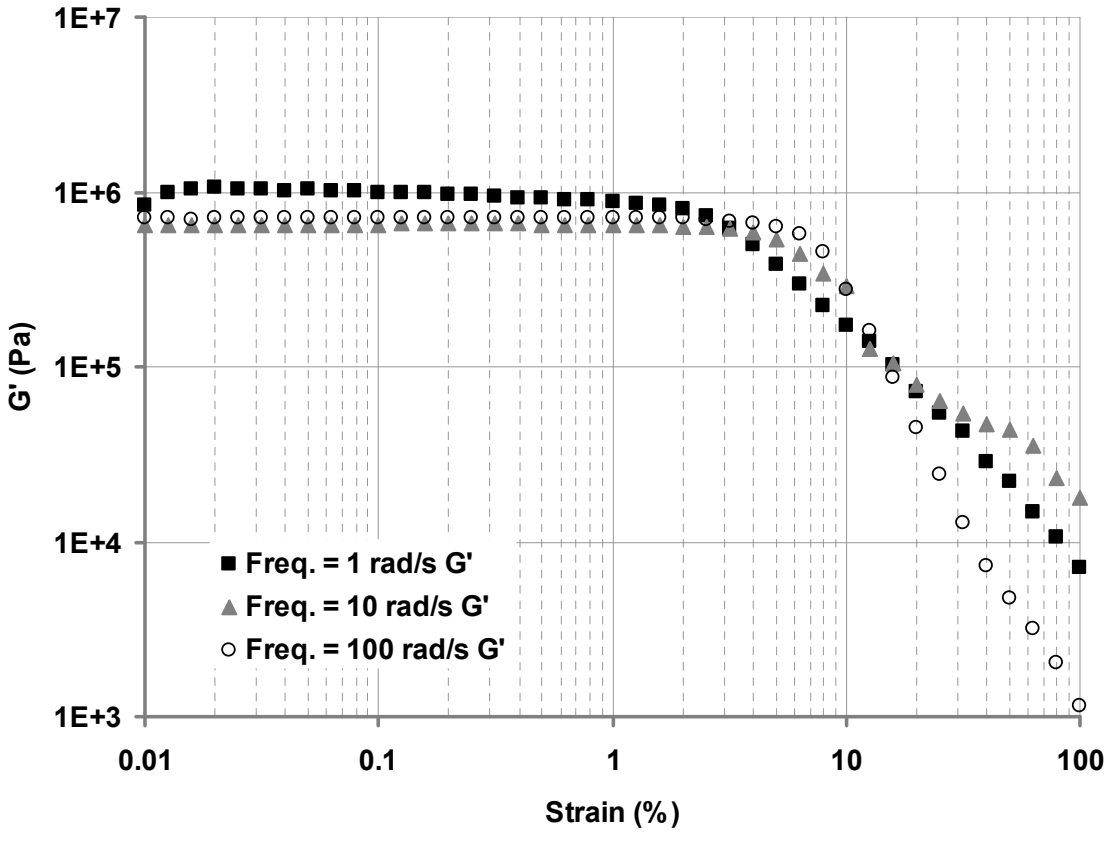

Fig. S1 Dynamic strain sweep measurements for an IG derived from the aqueous gelation of A100 IL (60 wt. %) at 20 °C delimiting the linear viscoelastic regime of these kind of materials.

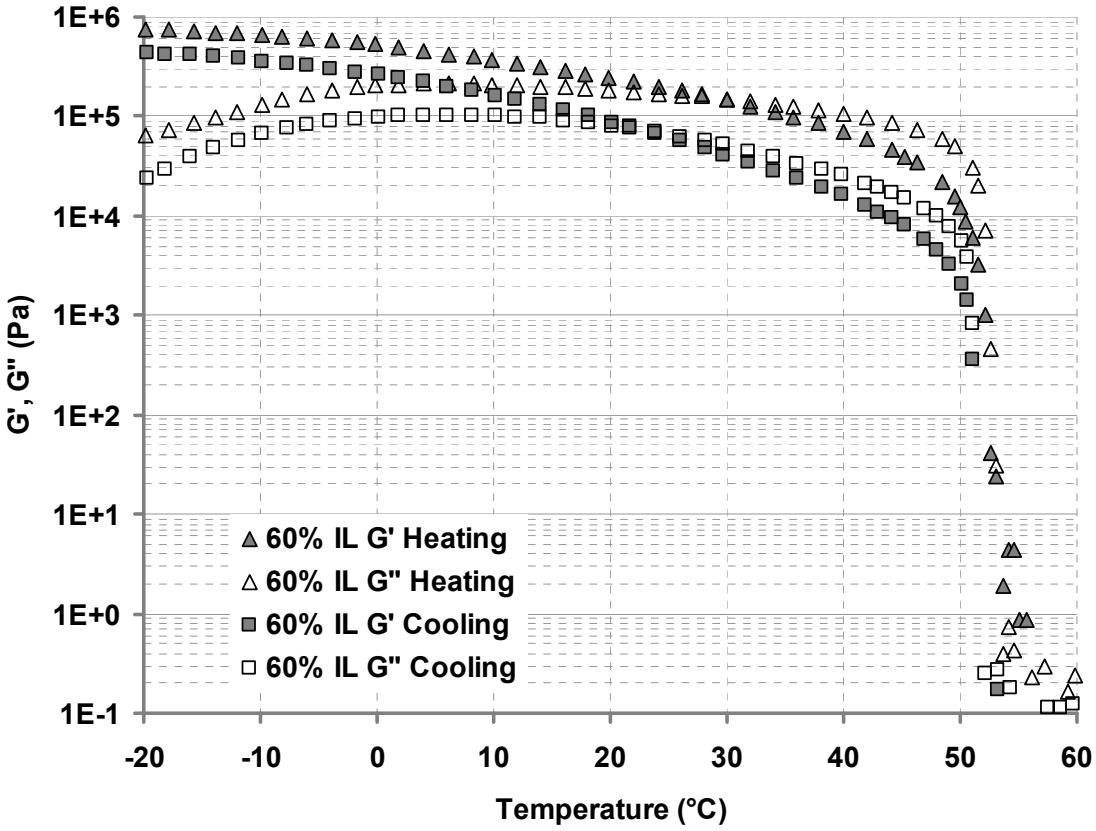

Fig. S2 Rheological properties as a function of temperature for an IG derived from the aqueous gelation of A102 IL (60 wt. %). Heating-cooling cycles of the IG during the oscillatory shear measurements demonstrated that the melting temperature is practically observed at the same temperature regardless whether the sample is subjected to a heating or a cooling process.

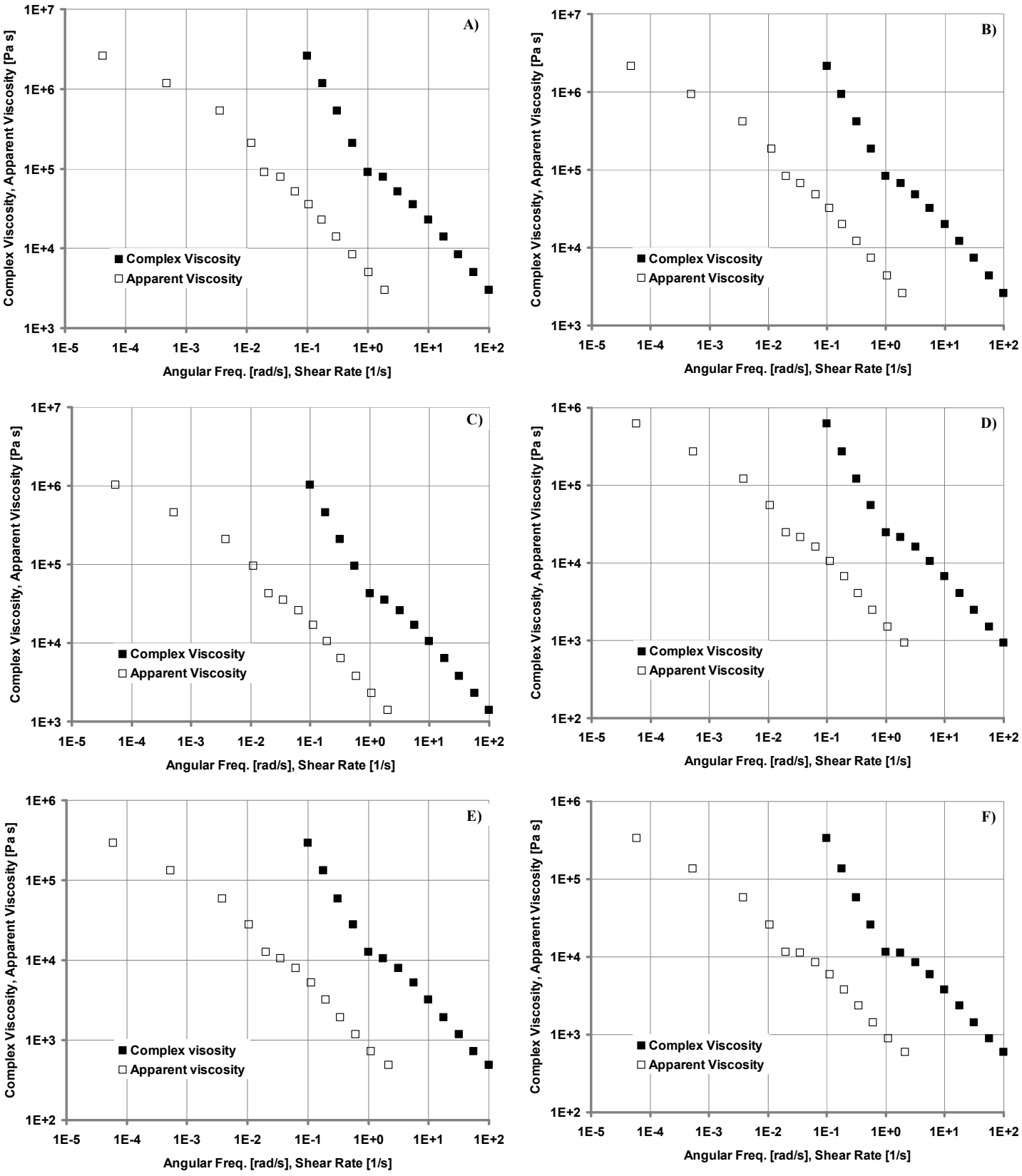

Fig. S3 Cox-Merz experiments performed at 20 ºC on the investigated IGs confirmed the existence of elastic gel-like structures as the complex dynamic viscosity plotted against the frequency was consistently higher than the apparent viscosity plotted against shear rate. Data for the investigated IGs derived from the aqueous gelation of A102 IL are shown (wt. % of A102 IL): A) 40 wt. %, B) 60 wt. %, C) 62.5 wt. %, D) 65 wt. %, E) 67.5 wt. % and F) 70 wt. %

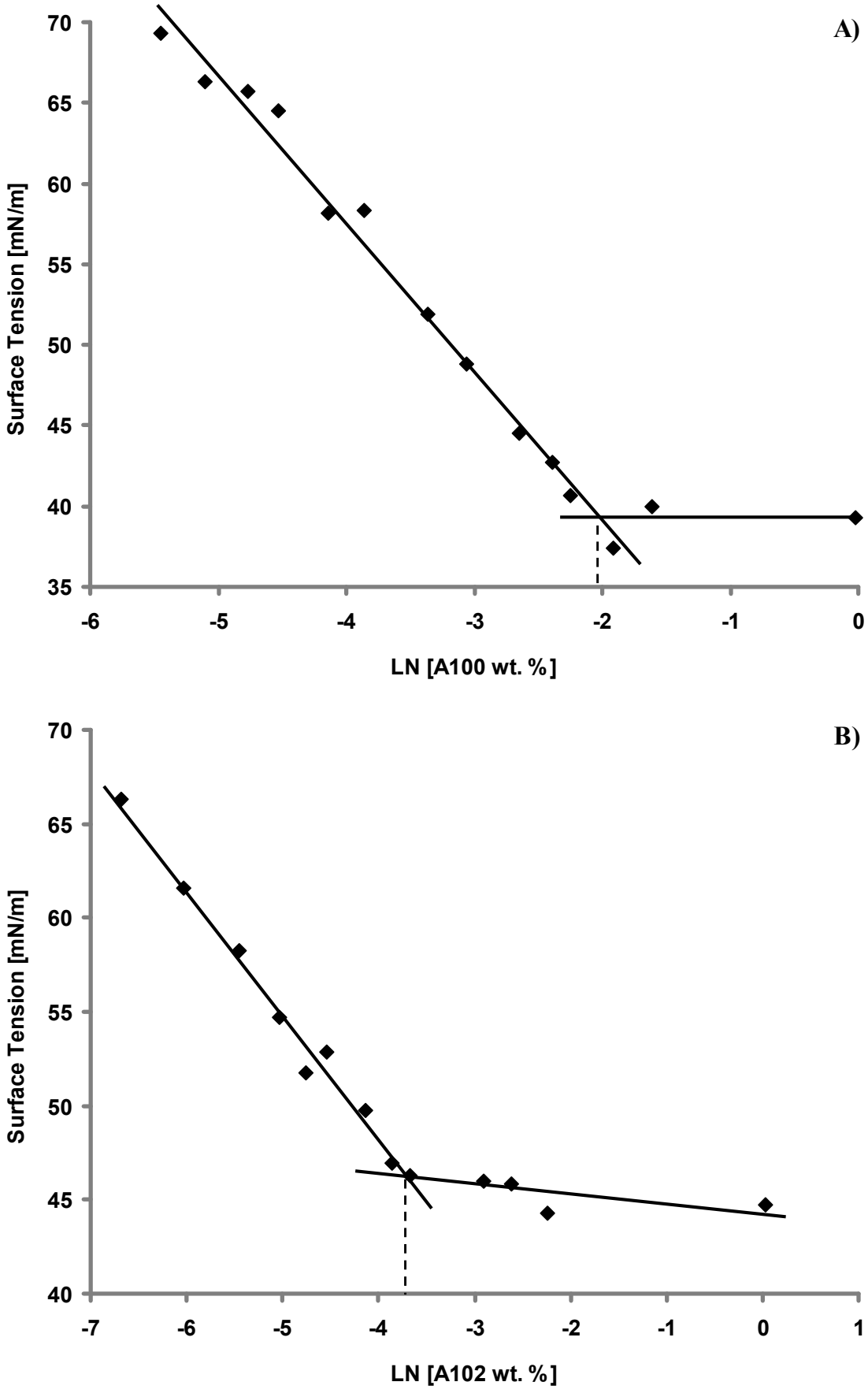

Fig. S4 Surface tension measurements *vs.* concentration of aqueous solutions of A) A100 IL and B) A102 IL

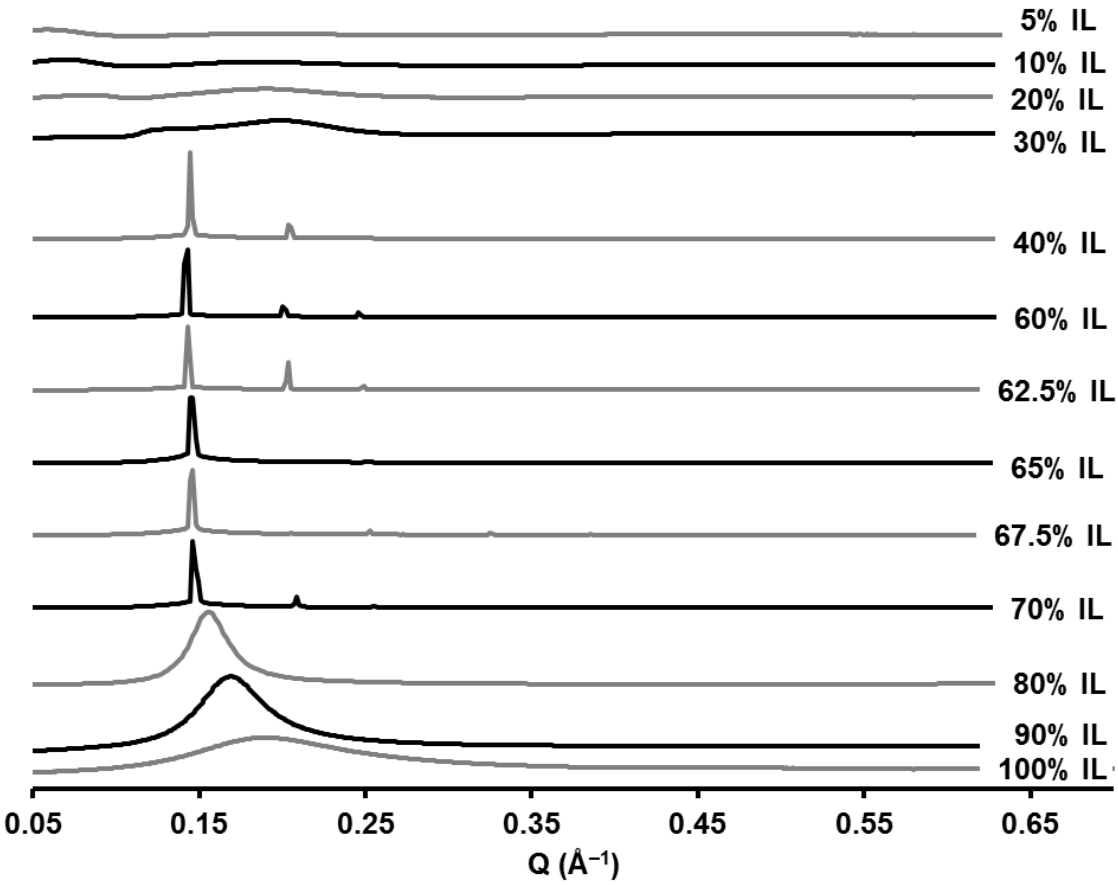

Fig. S5 1-D diffraction plots of azimuthally averaged intensity (arbitrary units) as a function of scattering vectors obtained from SAXS measurements for the A102 IL and IGs derived from its aqueous gelation at different IL concentration. Note that to ease visualization plots have been offset in the y-axis.