

Supporting Information

Cross-linked Solid Electrolyte Obtained by Cationic Ring Opening Polymerization of a Diepoxy 1,2,3-Triazolium Ionic Liquid

Antoine Jourdain,^{a,b} Mona M. Obadia,^a Jannick Duchet-Rumeau,^b Julien Bernard,^b Anatoli Serghei,^a François Tournilhac,^c Jean-Pierre Pascault,^b and Eric Drockenmüller^{a,*}

^{a)} Univ Lyon, Université Lyon 1, CNRS, Ingénierie des Matériaux Polymères, UMR 5223, F-69003, Lyon, France

^{b)} Univ Lyon, INSA Lyon, CNRS, Ingénierie des Matériaux Polymères, UMR 5223, F-69003, Lyon, France

^{c)} PSL Res Univ, Mat Molle & Chim, ESPCI Paris, UMR 7167, CNRS, 10 Rue Vauquelin, F-75005 Paris, France

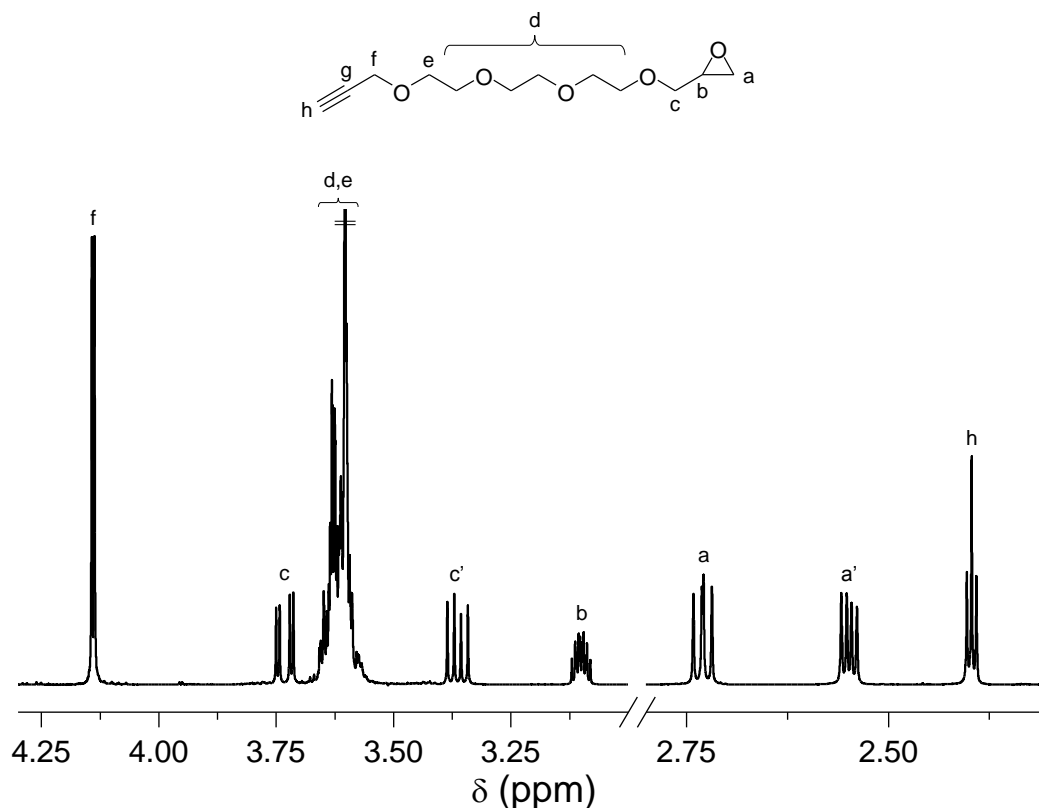


Figure S1. ¹H NMR (25 °C, CDCl₃, 400 MHz) of 2-(2-(2-(2-prop-2-ynyloxy-ethoxy)-ethoxy)-ethoxymethyl)-oxirane **2**.

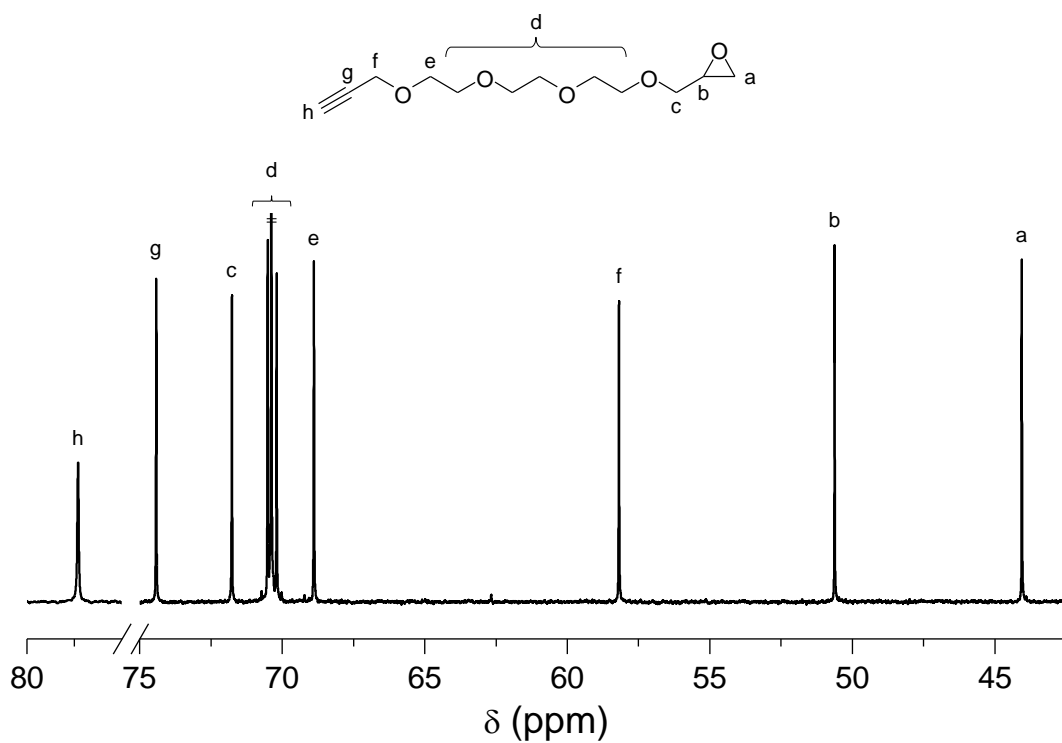


Figure S2. ^{13}C NMR (25 °C, CDCl_3 , 100 MHz) of 2-(2-(2-(2-prop-2-ynyloxy-ethoxy)-ethoxy)-ethoxymethyl)-oxirane **2**.

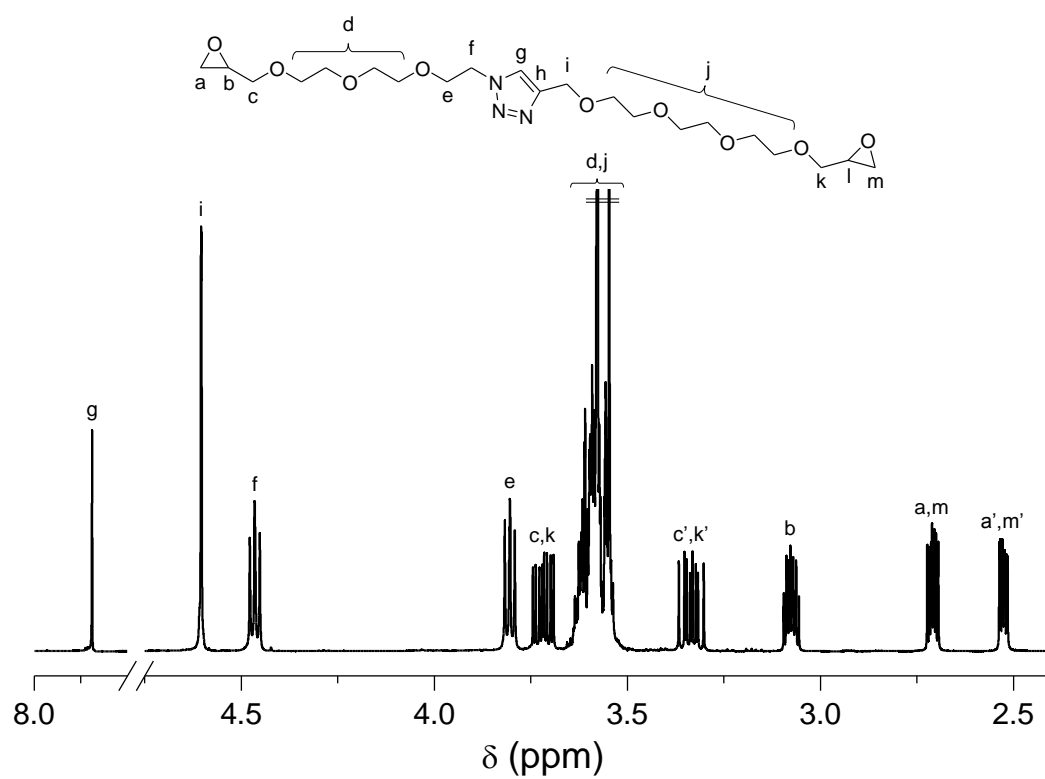


Figure S3. ^1H NMR (25 °C, CDCl_3 , 400 MHz) of diepoxy 1,2,3-triazole **3**.

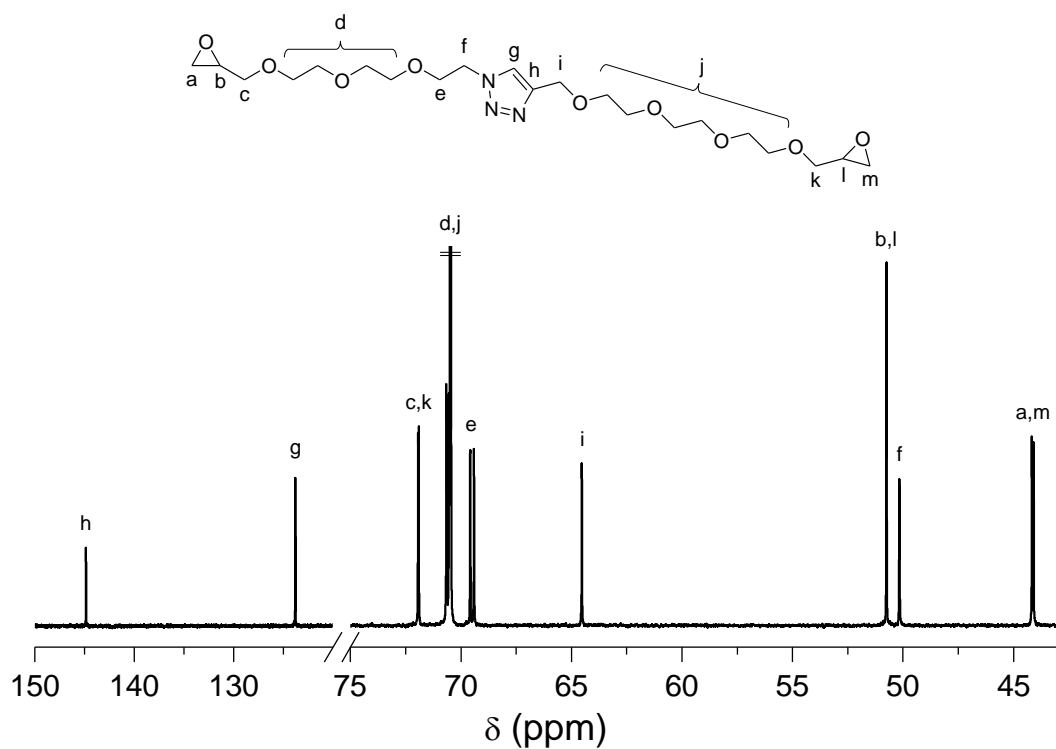


Figure S4. ^{13}C NMR (25 °C, CDCl_3 , 100 MHz) of diepoxy 1,2,3-triazole **3**.

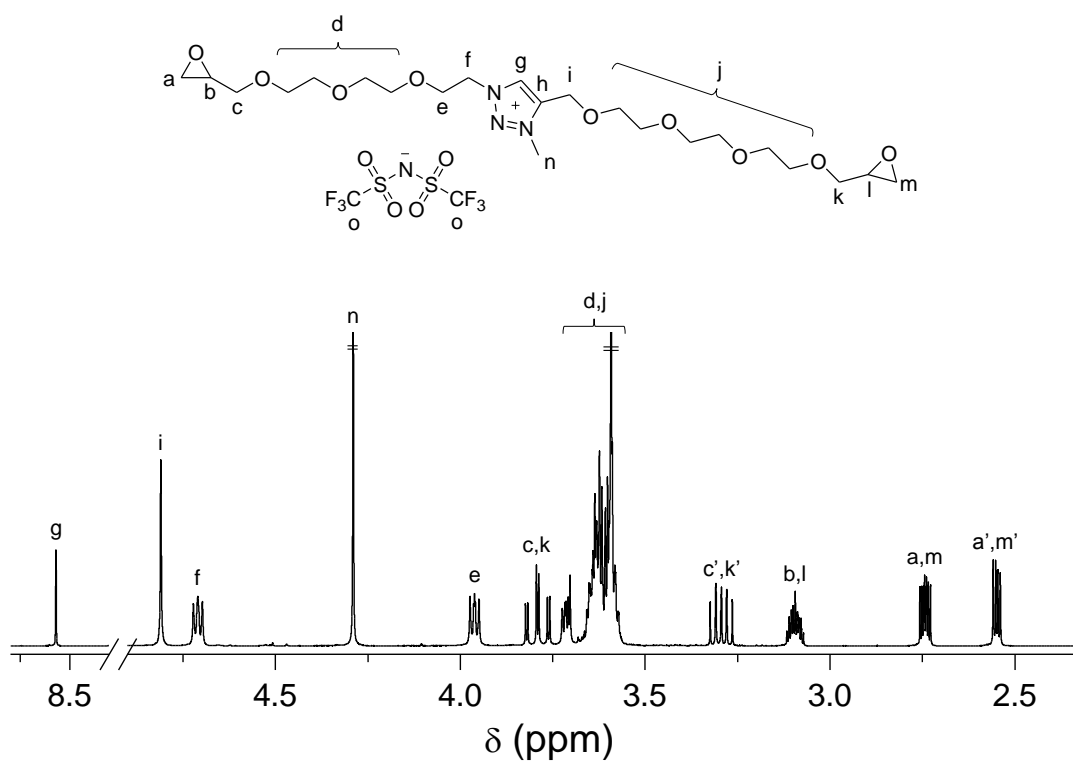


Figure S5. ^1H NMR (25 °C, CDCl_3 , 400 MHz) of diepoxy 1,2,3-triazolium **5**.

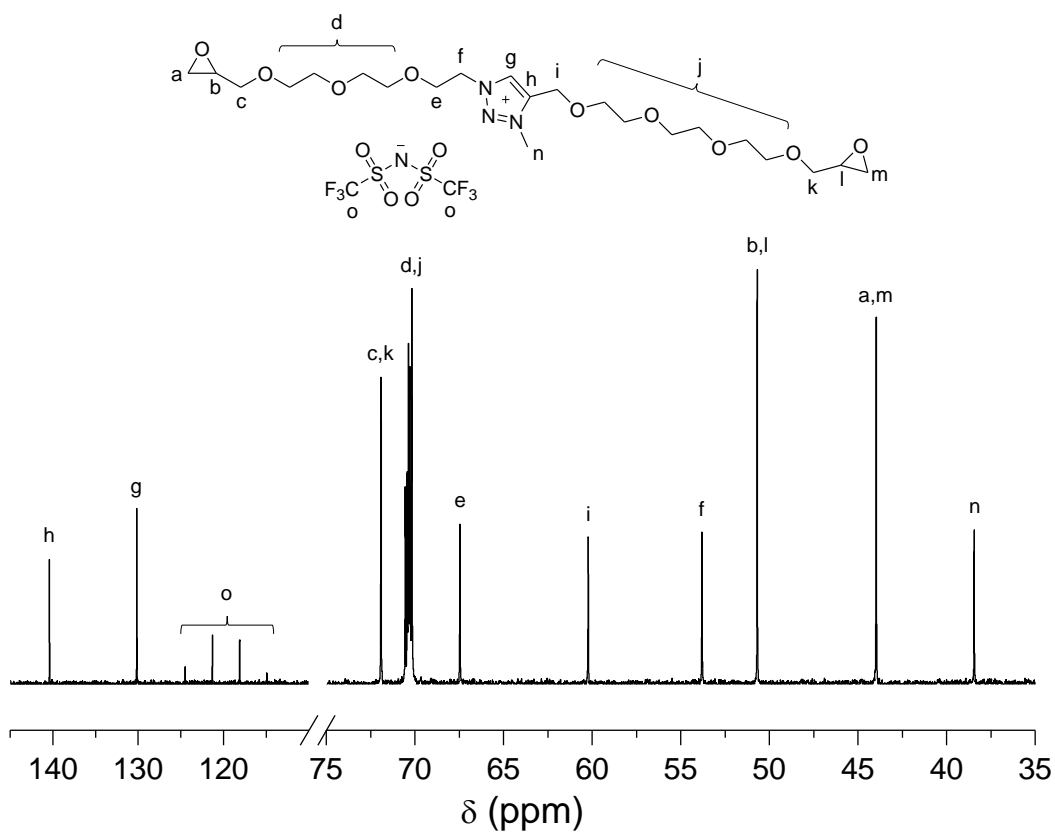
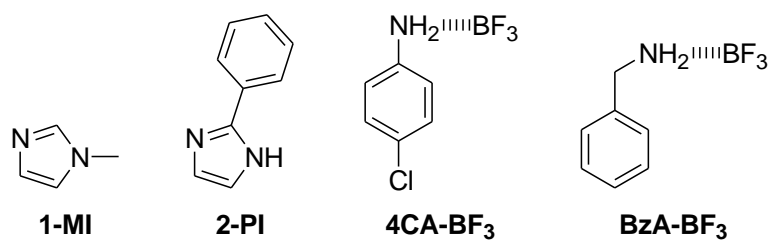


Figure S6. ^{13}C NMR (25 °C, CDCl_3 , 100 MHz) of diepoxy 1,2,3-triazolium **5**.

Scheme S1. Chemical structures of anionic (1-MI and 2-PI) and cationic (4CA- BF_3 and BzA- BF_3) initiators investigated for the ROP of DET **5**.



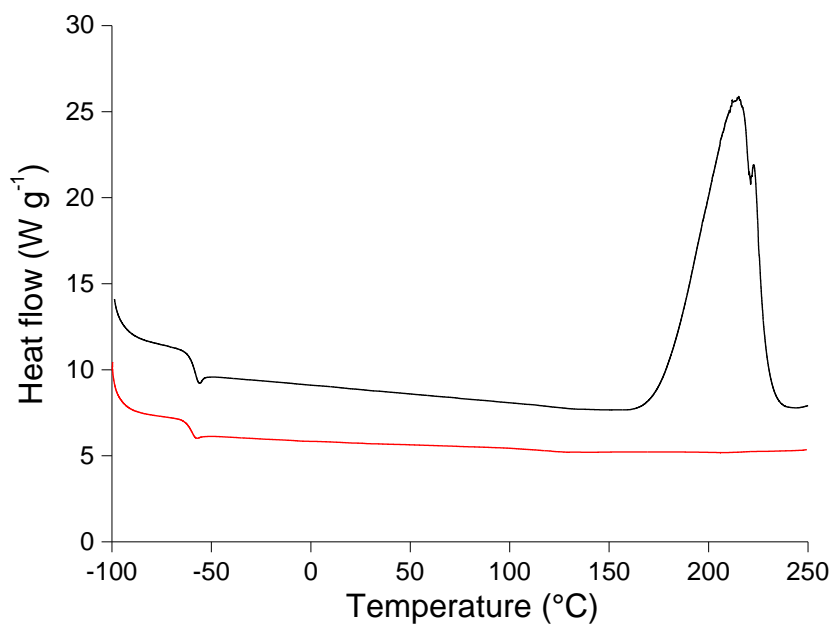


Figure S7. DSC monitoring of the thermal curing of crude DET **5** (black line), purified DET **5** (red line).

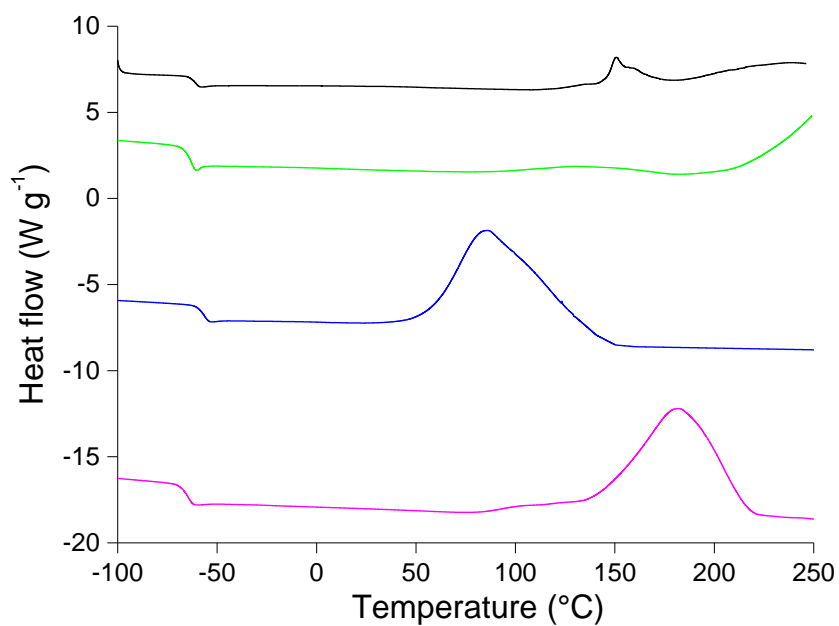


Figure S8. DSC monitoring of the thermal curing of DET **5** in the presence of 0.075 mol EE⁻¹ of 2-PI (black line), 1-MI (green line), 4CA-BF₃ (blue line) and BzA-BF₃ (pink line).

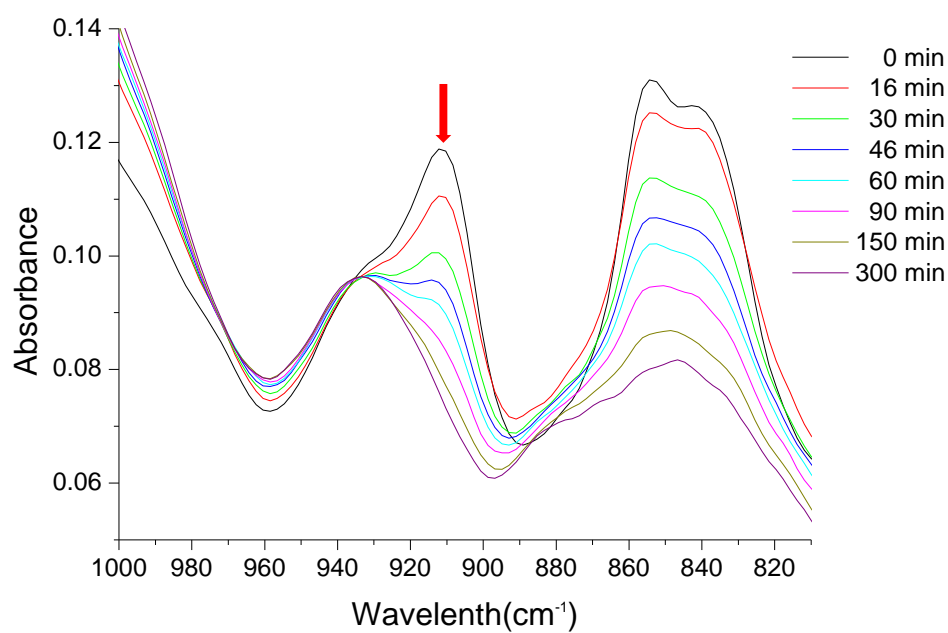


Figure S9. On-line ATR-FTIR monitoring of the cationic ROP of DET **5** at 130 °C initiated by BzA-BF₃ (0.075 mol EE⁻¹).

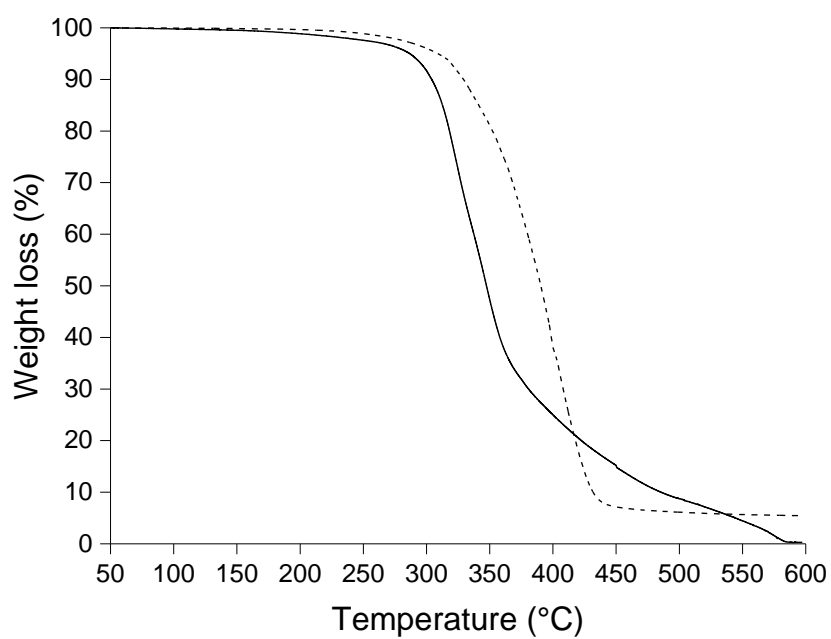


Figure S10. TGA traces of ENs **7** (solid line) and **8** (dashed line).

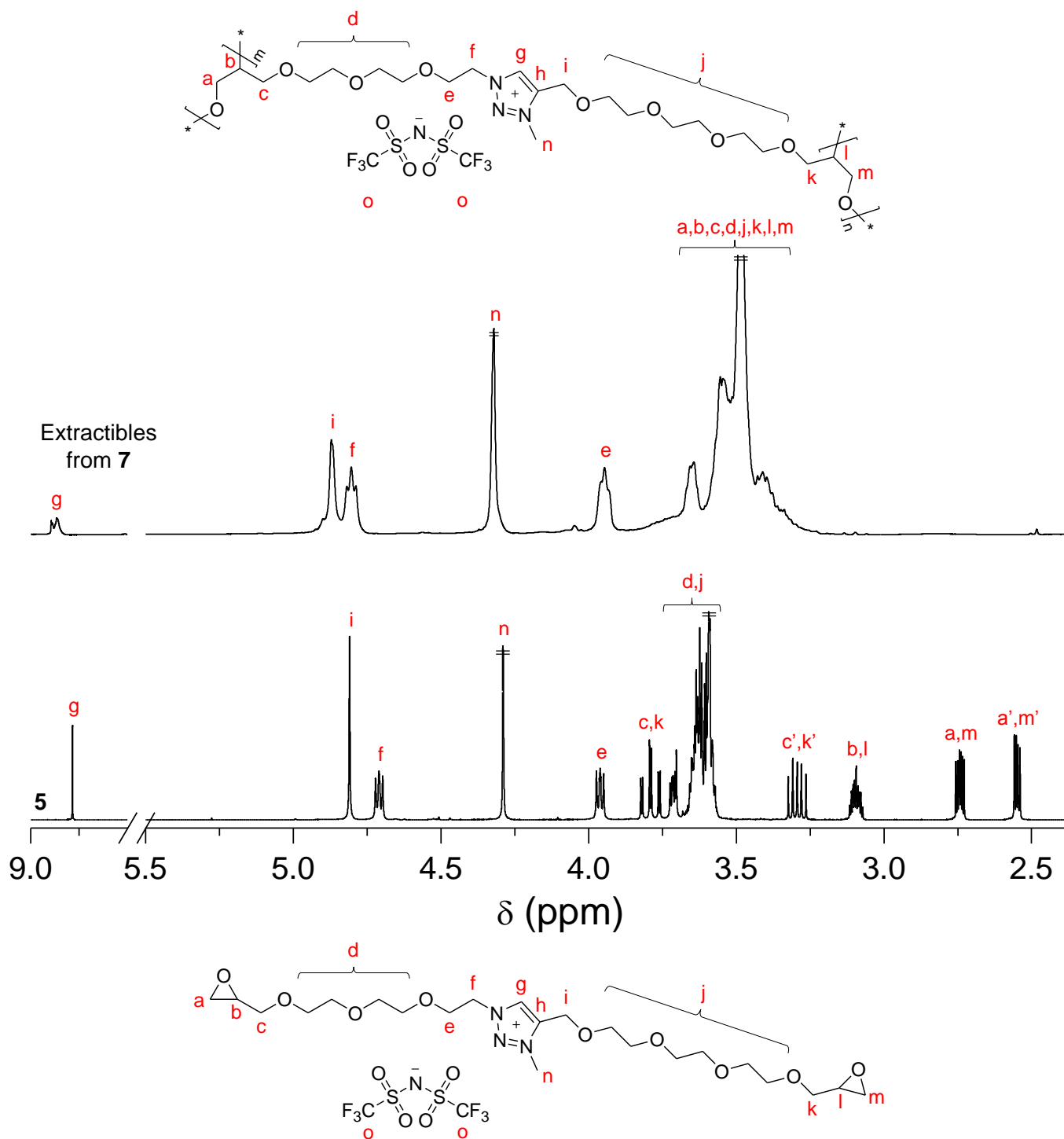


Figure S11. ^1H NMR (25 °C, CDCl_3 , 400 MHz) of diepoxy 1,2,3-triazolium **5**. (bottom) and extractibles from epoxy network **7** (top).

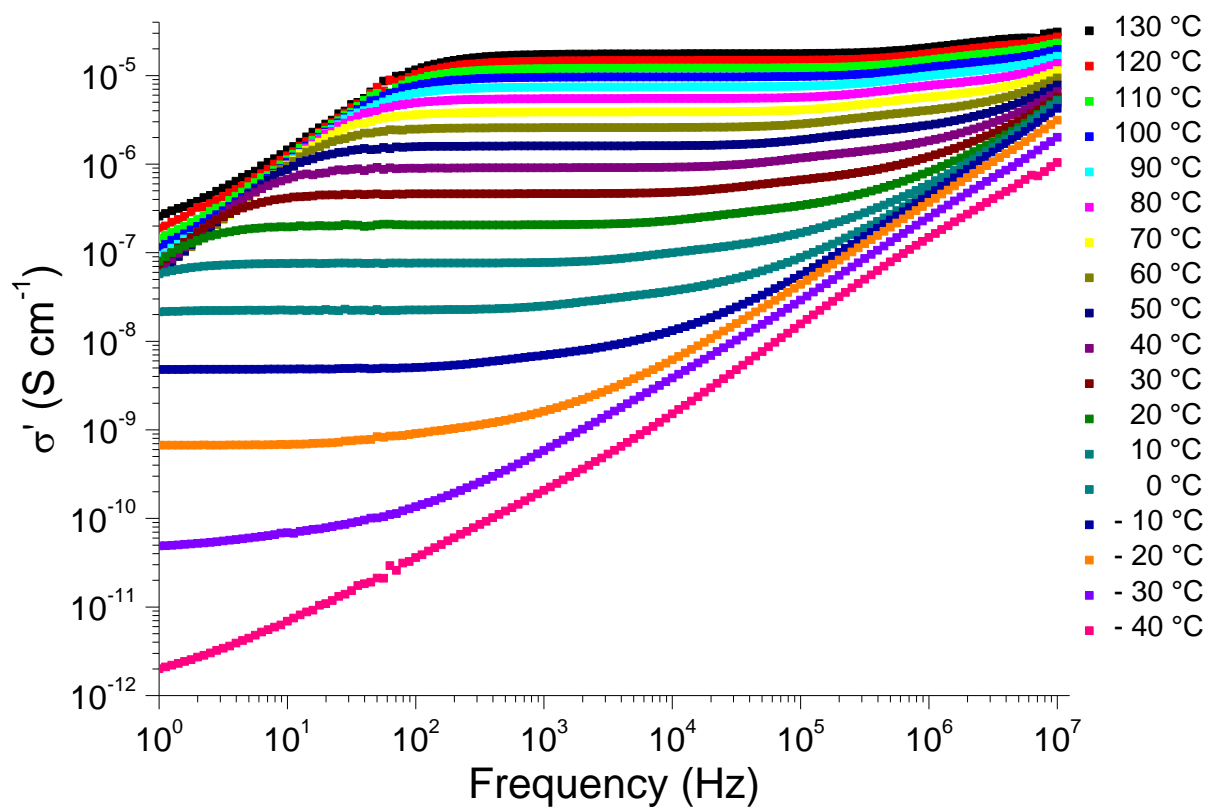
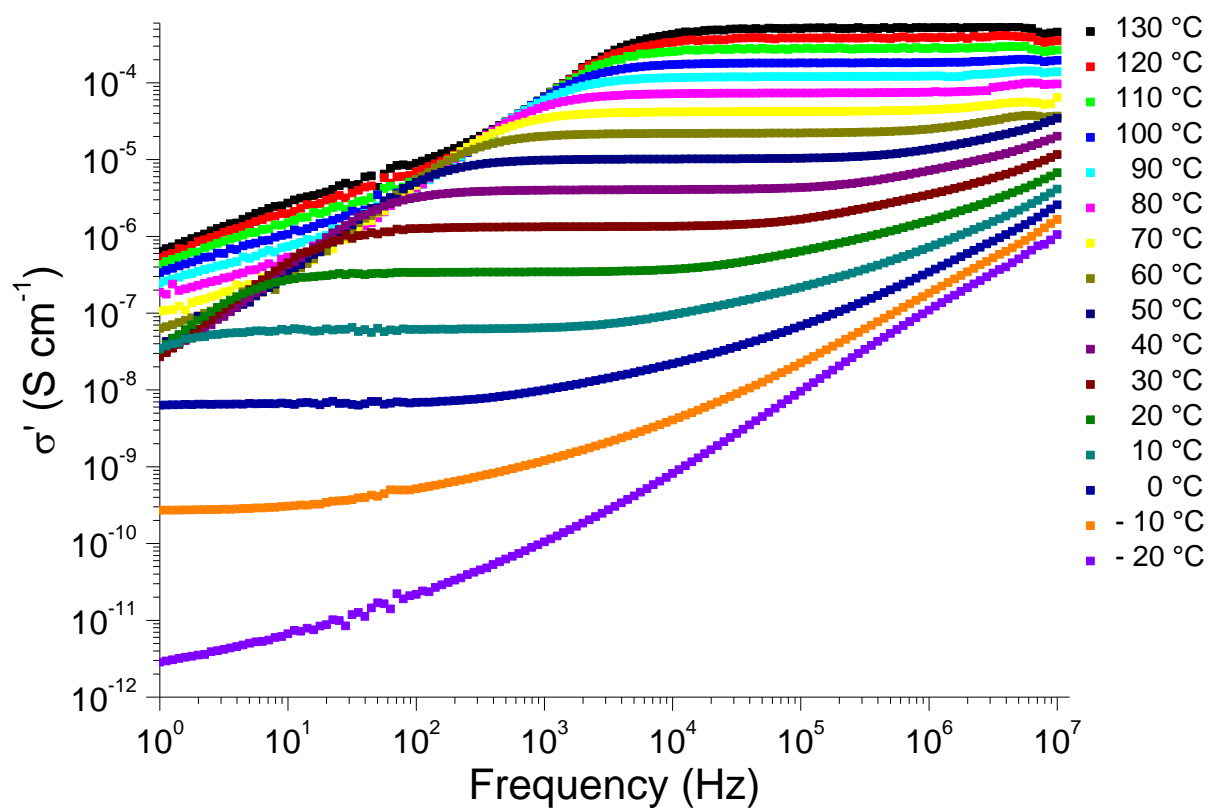


Figure S12. Conductivity σ' versus frequency at different temperatures measured by BDS for DET epoxy network **7** (top) and PEGDGE epoxy network **8** (bottom).