INTRODUCTION

- Poly-(N-isopropylacrylamide) (pNIPAM) is a thermo responsive polymer gel that displays an inverse solubility of aqueous solutions upon heating above its Lower Critical Solution Temperature (LCST).
- Below the LCST, the gel becomes solvated by water molecules through hydration of aliphatic groups and hydrogen bonding with the amide group.
- Above the LCST (31 – 32 °C), the gel collapses along the polymer backbone before water molecules are expelled. This process is driven by the conversion from polymer-solvent bonds to polymer-polymer and solvent-solvent bonding.
- Ionic liquids (ILs) / ionogels have evolved as new type of material for actuators, mainly due to their unique and tunable physical properties.[1]

AIMS

- To investigate the physicochemical interactions that occur between A) IL B) Water C) Polymer as a result in a change in temperature .
- Examine the macro actuator effect as a result of these interactions

EXPERIMENTAL

- ILs of interest in this study are; 1-ethyl-3-methylimidazolium ethyl sulfate [C\textsubscript{2}mIm][EtSO\textsubscript{4}] and 1-ethyl-3-methylimidazolium bis(trifluoromethanesulfonylimide) [C\textsubscript{2}mIm][NTf\textsubscript{2}] (Figure 1).
- SEM images clearly display differences between states (c) dry and hydrated (d) states. It shows the hydrophobicity of the anion has effect on the formation of the polymer network.

RESULTS AND DISCUSSION

- Swelling and contracting properties of the ionogel were found to differ depending on the variation and hydrophobicity of the anion.

REFERENCES