The potential of Deep Eutectic Solvents for Battery Recycling Paper Outlines

Paper 1 – Optical Characterization of DES

1. Optical Characterization of DES in UV/Vis and IR
   1. Getting the actual spectroscopy data for each DES provided by CSM
   2. We gather some data from literature to prove that our results match for at least a few DES – therefore our methods are valid, and we characterize a lot more
2. Characterization of metal salts dissolved in DES
   1. Standard values like 5% 10% 15% 20% of each solvent
   2. Create a calibration curve
   3. Characterized in UV/Vis and IR
3. Estimate the amount of metal dissolved in a DES during battery recycling
   1. We use the calibration curve to figure out how to best leach metals from batteries
      1. How much quantity of metal can we extract with which DES
      2. How much time does it take to extract the metals in the DES
   2. How well can we detect/quantify multiple ions at the same time
4. Future Uses
   1. Battery Recycling companies can know how long they need to mix their battery and DES soup to be able to extract the most precious metals.

Paper 2 – Improving Deep Eutectic Solvents through IR Characterization

1. Figure out which bonds are doing the most work for the metal extraction, so that materials scientists can make better DES to extract more metals.