Soft matter encompasses many important classes of materials, such as membranes in energy storage devices, liquid crystals, self-healing polymers, colloidal nanocrystals, and ionic liquids. Their macroscopic properties, such as ionic conductivity and viscosity, arise from atomically defined chemistry that can be tuned and studied by the tools of molecular synthesis. Despite their great importance in tackling societal challenges, soft materials pose key fundamental questions, such as: how do slight changes in atomic composition produce drastic differences in bulk behavior? The Brozek lab is therefore interested in studying how soft materials bridge the divide between molecular and solid-state chemistry. We use inorganic synthetic chemistry and physical methods to understand the unique electron transfer and coordination chemistry that arises from electrolytes capable redox activity, ultra-low density semiconductors, polymers connected through dynamic bonds.