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Fall 9-22-2017

# Thermal, Mechanical, and Conductive Properties of Bisimidazolium Thiol-ene PIL Networks

Sunny Kwan  
*Murray State University*

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*Murray State University*

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Kwan, Sunny and Kwan, Sunny, "Thermal, Mechanical, and Conductive Properties of Bisimidazolium Thiol-ene PIL Networks" (2017). *Honors College Theses*. 19.  
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## Honors College Senior Thesis – Abstract

**Title: Thermal, Mechanical, and Conductive Properties of Bisimidazolium Thiol-ene PIL Networks**

Author: Sunny Yik Yeung Kwan

Advisor: Kevin Miller

Department: Jesse D. Jones College of Science, Engineering, and Technology

Keywords: organic, polymer, network, ionic liquids, imidazole, thiol-ene, ethylene glycol

### Abstract:

Polymers made from thiol-ene reactions are versatile – they can be made from a variety of easily obtainable starting materials and show promise as biomedical materials, hydrogels, resins, and nanoparticles. Ionic liquids (ILs) have uniquely exploitable physical and chemical properties, and polymerization of ILs into polymeric ionic liquids (PILs) enhances or changes these properties, allowing an even wider range of potential applications of ILs in technologies such as fuel cells, solar cells, and even artificial muscles. Bisimidazolium thiol-ene PIL (BITPIL) networks are polymers with each monomer consisting of two moles of bis-imidazolium bridged together with either an alkyl or poly(ethylene glycol) unit. Analyzing the thermal, mechanical, and conductive properties of BITPIL networks may provide additional insight into the use of thiol-enes and PILs in research areas such as electroactive devices and materials science.