

# Dual Anion-Cation Ionic Liquid Crystal for Battery Applications

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Ionic liquid crystals (ILCs) are a special class of compounds that not only contains mesogens group but also have cationic and/or anionic components. ILCs can self-organize into assemblies with varying degrees of orientational order resulting into formation of unique liquid crystal phases. Thermotropic ionic liquid crystals are special subclass of liquid crystal containing ionic liquid moiety that self- assemble with application of heat to form liquid crystal phases. Thermotropic ionic liquid crystal materials may exhibit several mesogenic phases at differing temperatures, distinguishable by the degree of order.

This work mainly focuses on synthesis and characterization of Ionic liquid Crystals containing imidazolium and sulfonimide functional group attached to phenyl ring containing long chain alkyl group. In this presentation we will focus on how change in alkyl tail, change in ionic component (sulfonimide vs imidazolium) , and counter ion (i.e., triethyl ammonium vs Lithium cation) present in the compound, affect the liquid crystal properties. The synthesized ILCs was characterized by TGA, DSC and SAXS data.

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