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COMPARATIVE STUDY OF METHODS FOR SYNTHESIS OF POLYMERIZABLE IONIC LIQUIDS

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Ionic liquids (ILs) are low melting point (<100 °C) organic salts that have been in the focus of many investigations because of their extraordinary chemical and physical properties [1]. Recently polymeric forms of ILs (PILs) have attracted attention as a new class of polymers that combines the ILs moiety with the macromolecular structure to improve the mechanical durability of the material [2]. The properties of PILs are strongly associated with both the polymer and IL structure, where the structure of the cation and anion are known to determine the physicochemical properties of ILs. PILs can be prepared either by using a polymerizable cation or anion, resulting in a macromolecular structure possessing repeating charged units. To date, research has focused mostly on the introduction of polymerizable groups (acryloyl, methacryloyl or vinyl) to the IL cation.

In current study several PILs containing acryl or methacryl groups as polymerizable moiety were synthesised (Figure 1). Different methods for synthesis of PILs were compared. Despite the routine synthesis of this type of PILs described in details by H. Ohno [3], we decided to introduce the acrylate function into the IL structure in the last synthetic step. If compared these two methods, our novel strategy helps to avoid the premature polymerization which is the main drawback of the common method.

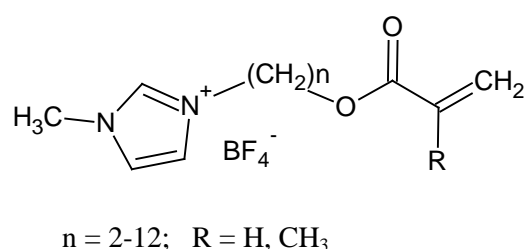


Figure.1. Different synthesised PIL monomers.

Determination of mechanical and electrical properties of PILs will be the main focus of our ongoing research.

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