FROM ENANTIOPURE CHIRAL SALTS TO ENANTIOPURE CHIRAL IONIC LIQUID BY CONTROLLED STRUCTURAL MODIFICATIONS: EFFICIENT MODULAR SYNTHESIS OF ENANTIOPURE CHIRAL IMIDAZOLIUM SALTS

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Ionic liquids (ILs) are attracting considerable attention as reaction solvents, extraction liquids, and electrolyte materials as a result of their remarkable properties. ILs are now expected to be designed liquids with controllable physical and chemical properties or even specific functions (task specific ILs). Structural diversity often plays an important role in ionic liquid physicochemical properties.[5] Among these properties chirality is by far one of the mostly pursued by organic chemists. Therefore, the design and synthesis of novel enantiopure ionic liquids with the possibility of easy structural tuneability is highly attractive. In this sense, a great effort is being devoted to design and synthesize chiral ionic liquids (CILs).[6] Here, we reported a flexible and simple synthetic approach for the synthesis of chiral imidazolium salts. These novel RTILs can be readily prepared by simple and straightforward procedures from non-expensive enantiopure synthons obtained via lipase-catalyzed resolutions. The strategy here reported can be used to obtain a family of chiral ILs, in which structural diversity can be introduced by varying either the epoxide or the imidazole moieties. These modifications can affect the ILs physicochemical properties and further development of these molten salts as effective solvents, as well as chiral catalysts for a variety of asymmetric reactions.

Chiral ionic liquids could provide a simple entry into the area of chiral solvents with potential applications in resolution, chromatography, and synthesis. The use of these liquids in organic synthesis could find applications in fields as diverse as pharmaceuticals, fine chemicals, biotechnology, medical sciences, nanotechnology, bioremediation, and environmental and nuclear sciences.