

## Preface

An ionic liquid (IL) is a salt in the liquid state. In some contexts, the term has been restricted to salts whose melting point is below some arbitrary temperature, such as 100 °C (212 °F). While ordinary liquids such as water and gasoline are predominantly made of electrically neutral molecules, ionic liquids are largely made of ions. These substances are variously called liquid electrolytes, ionic melts, ionic fluids, fused salts, liquid salts, or ionic glasses. Ionic liquids have many potential applications. They are powerful solvents and can be used as electrolytes. Salts that are liquid at near-ambient temperature are important for electric battery applications, and have been considered as sealants due to their very low vapor pressure. The ionic bond is usually stronger than the Van der Waals forces between the molecules of ordinary liquids. Because of these strong interactions, salts tend to have high lattice energies, manifested in high melting points. Some salts, especially those with organic cations, have low lattice energies and thus are liquid at or below room temperature.<sup>1</sup>

In the present book, fifteen typical literatures about ionic liquid published on international authoritative journals were selected to introduce the worldwide newest progress, which contains reviews or original researches on Room-temperature ionic liquids (RTILs), Low-temperature ionic liquids, protic ionic liquids, Polymerized ionic liquids, Magnetic ionic liquids, *ect.* We hope this book can demonstrate advances in ionic liquid as well as give references to the researchers, students and other related people.

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<sup>1</sup> From Wikipedia: [https://en.wikipedia.org/wiki/Ionic\\_liquid](https://en.wikipedia.org/wiki/Ionic_liquid)