

The Evolution of Ionic Liquids – From Solvents and Separations to Advanced Materials and Pharmaceuticals: Examples from the Ionic Liquid Cookbook

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Ionic Liquids (ILs) *per se* have been known over a century, but they have come under intense worldwide scrutiny only relatively recently due to implications for the use of these compounds as solvents, where the accessible physical property set (e.g., non- or low-volatility, thermal stability, or large liquid ranges) achievable with many ILs are often unique. There is now, however, growing interest in the materials applications of ILs which utilize novel tunable physical and chemical property sets for such applications as energetic materials, lubricants, metal ion complexation, etc. While a tremendous amount of recent research has focused on the physical properties of ILs, and more recently the chemical properties, the toxicity, a biological property has been one of the most highly debated topics in this field. Here we consider then, the third evolution of ILs where biological activity is the primary IL property and look at ILs as active pharmaceutical ingredients (APIs). Taken together, it is clear that ILs offer almost every technological field an opportunity to advance knowledge and performance.