Short Commentary

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Dicationic Ionic Liquids and their Applications

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Abstract

Since environmental pollution created by chemical and energy industries has increased. The scientists tried to design a variety of sustainable compound processes to create less harmful materials and more eco-friendly sources of energy production. This review is all about the Ionic liquids which are incredible chemical compound and their various uses in several areas of contemporary science due to their exceedingly tuneable scenery. IL's have grown to be necessary in the areas of fusion and catalysis, mining, electrochemistry analytics etc. These are based on fluoro-complex and Oxofluoro-complex anions exhibit interesting properties in view of a variety of applications. In this review, mainly consist of the mixture, arrangement and properties of the ionic liquids.

Keywords: Dictonic liquid; Ion; Chemistry; Azeotropic

Introduction

An IL's is a saline in which the ions are weakly synchronized ,which results in these solvents creature fluid even at scope heat. Ionic liquids acquire a lot of advantageous merits for use as solvents, especially in separations [1-3]. One of the major sources of desecrate is solvent sufferers that end up in the atmosphere. Solvent use has been dependable for 50% of post treatment green-house gas commission. So, the solvent choice should be measured systematically to adulterated synthesis circumstances within the structure of green chemistry principle. The make use of ionic liquids in solvent-based separation of azeotropic systems has been investigated in this work. In this work, a group donation line of harass has been industrial to predict the solvent-related properties of ionic liquids.

Dicationic ionic liquid

Common IL's are composed of monocation and cation. DIL's are of two types [4]. These DIL's can characterised as regular and irregular DIL's for both DIL's.

Homoanionic dicationic ionic liquids

These are emblematic kinds of DIL's which contain of a dication and two identical anions [5]. The consequent section converse about the symmetrical and assymetrical homoanionic DIL's.

Symmetrical dicationic ionic liquids

Symmetrical IL's be able to synthesized combination of both identical cation candidates such as imidazolium, which might have aliphatic chain [6]. Moreover a stiff or a stretchy spacer. Familiar spacer is an alkyl chain.

Asymmetrical dicationic ionic liquids

The regular dicationic IL's which contain dissimilar groups of cation are close to a spacer such as alkyl chain [7]. They mainly have twofold functionality as they contain two different groups.

Ionic liquids

Types and classification: Ionic liquids are a set of new raw salts that exists in the fluid state at comparatively small temperatures [8]. An idyllic IL for cellulose conversion must acquire the subsequent properties:

- Low melting point
- High-quality thermal permanence
- Low-priced and simple process
- Non-toxic
- Chemically stable

Applications

The ionic liquids suggest the benefit of equally homogeneous and heterogeneous catalyst. This is given that certain ionic liquids are able to immisicible with the reactants and products but suspend the catalyst [9]. The compensation of a hard for immobilizing the catalyst. By means of the compensation of a liquid for allowing the catalyst to move liberally.

- Management of elevated point nuclear waste Ionizing emission does-not involve IL's and they can used to indulgence elevated stage nuclear dissipate
- Carbon dioxide is one of the greenhouse gases said to be causing climate change [10]. As ionic liquids do not remove to a gaseous phase owed to their short vapour pressure, they can be worn diagonally an extensive heat assortment and are flame proof, thus safe
- Lubricants are important in a selection of mechanical systems and provide to decrease resistance between bodies and develop force competence [9]. As ionic liquids have enclosed mist pressures, their consumption as a lubricant in space is being explored

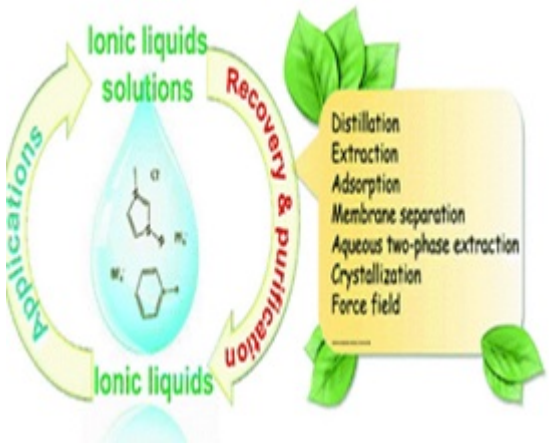

Figure 1: Ionic liquids solutions.

In **Figure 1**, ionic liquid has low melting point, the low vapour pressure and non-flammability; ionic liquids have been attracting much concentration and industrial fields [11]. Many labors have been made to assist their application in catalytic process extraction, gas departure, hydrogenation electronic manufacturing etc. The methods for the recovery of ionic liquids including distillation, extraction, adsorption, etc.

Separation is introduced and discussed systematically [12-15]. The methods and process optimization have also been touched on to provide potential insights for future development of ionic liquid recovery and purification.

Conclusion

Still despite the fact that, the first di-cationic IL's were synthesized above 10 years ago, the exploitation of these di-cationic IL's for any application are awfully fewer. Hence additional kind of ionic liquids among additional functional groups can be used for a wider application area [16]. So, the performance of these di-cationic IL's in all appliances must be compared with mono-cationic IL's.

Through the identical commence in command to approximation and verify the enhancement finished by the di-cationic IL's. Several of the chemical reaction worn in manufacturing needs the use of ionic liquids [17-21].

References

1. Aghabarari B, Dorostkar N, Ghiaci M, Amini SG, Rahimi E, et al. (2014) Esterification of fatty acids by new ionic liquids as acid catalyst. Journal of the Taiwan Institute of Chemical Engineers 45: 431-435.
2. Ratti R (2014) Ionic Liquids: Synthesis and application. Advances in Chemistry 2014: 16.
3. Chinnappan A, Kim H, Baskar C, Hwang IT (2012) Hydrogen generation from the hydrolysis of sodium boronhydried with new pyridinium dicationic salts containing transition metal complexes. Int J Hydrogen Energy 37: 18851-18859.
4. Chinn D, Vu DQ, Boudreau LC (2006) CO_2 using removal from gas iconic liquid absorbents.
5. Liang Y, Dai HB, Ma LP, Wang P, Cheng MN (2010) Hydrogen generation from sodium boronhydried solution. Int J Hydrogen Energy 35: 3023-3028.
6. Nockemann P, Thijs B, Parac-Vogt TN, Van Hecke, Van Meervelt L, et al. (2008) Carboxyl-functionalized task-specific ionic liquids for solubilizing metal oxides. Inorganic Chemistry 21: 9987-9999.
7. Anderson JL, Ding J, Welton T, Armstrong DW (2002) Characterizing ionic liquids on the basis of multiple solvation interactions. J Am Chem Soc 124: 14247-14254.
8. Cornils B (1999) Bulk and fine chemicals via aqueous biphasic catalysis. J Mol Catal A 143: 1-340.
9. Dyson PJ, Sava G (2006) Metal-based antitumour drugs in the post genomic era. Dalton Trans 28: 1929-1933.
10. Miao W, Chan TH (2005) Ionic-liquid-supported synthesis: A novel liquid-phase strategy for organic synthesis. J Org Chem 70: 889-908.
11. Geldbach TJ, Zhao D, Castillo NC, Laurenczy G, Weyershausen B, et al. (2006) Catalysis in ionic liquirds: From catalyst synthesis to application. J Am Chem Soc 128: 9773.
12. Welton T (2004) Ionic liquids in catalysis. Coordination Chemistry Reviews 248: 2459-2477.
13. Chang JC, Ho WY, Sun IW, Chou YK, Hsieh HH, et al. (2010) Synthesis and properties of new (μ-oxo)bis[trichloroferrate(III)] dianion salts incorporated with dicationic moiety. Polyhedron 29: 2976-2984.
14. Chang JC, Ho WY, Sun IW, Tung YL, Tsui MC, et al. (2010) Synthesis and characterization of dicationic ionic liquids that contain both hydrophilic and hydrophobic anions. Tetrahedron Letters 66: 6150-6155.
15. Chang JC, Ho WY, Sun IW, Chou YK, Hsieh HH, et al. (2011) Synthesis and properties of new tetrachlorocobaltate (II) and tetrachloromanganate (II) anion salts with dicationic counterions. Polyhedron 30: 497-507.
16. Holman RW (2003) The art of writing reasonable organic reaction mechanisms, (2nd edtn). J Chem Educ 80: 1259.

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17. Vollhardt KPC, Schore NE (2007) Organic Chemistry: Structure and Function, W. H. Freeman.

18. Camper D, Bara JE, Gin DL, Noble RD (2008) Room-temperature ionic liquidamine solutions: tunable solvents for efficient and reversible capture of CO_2. Ind Eng Chem Res 47: 8496-8498.

19. Chinn D, Vu DQ, Driver MS, Boudreau LC (2006) CO_2 removal from gas using ionic liquid absorbents.

20. Shahkaramipour N, Adibi M, Seifkordi AA, Fazli Y (2014) Separation of CO_2/CH_4 through alumina-supported geminal ionic liquid membranes. J Membr Sci 455: 229-235.

21. Muir SS, Yao X (2011) Progress in sodium borohydride as a hydrogen storage material Development of hydrolysis catalysts and reaction systems. Int J Hydrogen Energy 36: 5983-5997.