

Effects of operating conditions on the separation of ionic liquids by ultrasonic atomization

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Ionic liquids are recently emerging as desirable substituents for volatile, toxic and flammable organic solvents due to the non-volatile character and thermal stability. As a result, ionic liquids have gained wide popularity in recent years as extraction solvent, cosolvents and media for catalytic reactions. However, the big challenge for the industrial applications of ionic liquids resides in the economics of using ionic liquids. The economic feasibility of ionic liquids can be achieved by recycling them. Evaporation is the easiest method but it is energy-intensive. Therefore, ultrasonic atomization was investigated to recover ionic liquids from ionic liquids/water mixture. Ultrasonic atomization has been used as a novel separation method to recover ethanol and other substrate from its aqueous solution with respect to energy saving. In this study, the effects of operating conditions on the recovery of hydrophilic ionic liquids from ionic liquids/water mixture by ultrasonic atomization have been carried out. The results show that ultrasonic atomization could be used to recover ionic liquids from its aqueous solution with high efficiency.