

## Ionic Liquids in Removal of Liquid Phase Aromatic Nitrogen Compounds from Dodecene

Ramalingam Anantharaj<sup>1\*</sup> and Muniandy Parimala<sup>2</sup>

<sup>1</sup>Department of Chemical Engineering, SSN College of Engineering, India

<sup>2</sup>Department of Chemical Engineering, Faculty of Engineering, University of Malaya, Malaysia

**T**ernary liquid-liquid equilibrium (LLE) for 8 systems containing 1-ethyl-3-methylimidazolium ethylsulphate {[EMIM][EtSO<sub>4</sub>]}, 1-ethyl-3-methylpyridiniumethylsulphate {[EMPy][EtSO<sub>4</sub>]} (1) + pyridine/pyrrole/indoline/quinoline (2) + dodecene (3) have been determined at 298.15K. The reliability of experimental LLE data was tested by Othmer-Tobias and Hand equations. The NRTL and UNIQUAC models were successfully used for experimental LLE data correlation and gave the RMSD less than unity, which indicated a good degree of experimental LLE data fit. The distribution coefficient and the selectivity were calculated for all systems. High distribution coefficient and selectivity were obtained for pyrrole, indoline, pyridine and quinoline at 298.15K. It is also observed that {[EMIM][EtSO<sub>4</sub>]}, {[EMPy][EtSO<sub>4</sub>]} has strong affinity towards nitrogen compounds due to both highly negative charged segments and positively segments in [EMIM] and [EMPy] cations. Thus, [EMIM] [EtSO<sub>4</sub>] and [EMPy] [EtSO<sub>4</sub>] can be used as the potential solvents in denitrification process at 298.15K.

**Keywords:** Ionic Liquid, Pyrrole, Indoline, Pyridine, Quinoline, Dodecene.

### Biography:

Dr. R. Anantharaj is working as an Associate Professor in Chemical Engineering Department at SSN College of Engineering, Chennai, since March 2015. He obtained B.Tech degree in Chemical Technology from EGS Pillay Engineering College, Nagapattinam, M.E. degree in Chemical Engineering from Annamalai University, Chidambaram and Ph.D. from Indian Institute of Technology Guwahati, Assam, in the area of Separation Process using Ionic Liquids, Phase Equilibria and COSMO-RS Model Predictions. He has 6.5 years of teaching and research experience both in India and abroad. He has authored one book which is published by Elsevier, MA, USA (ISBN: 978-0-12-801347-2). He has published more than 50 articles in peer reviewed international journals (Springer, Willey, Elsevier, ACS, and others) and conferences (National & International), since 2010. He is the recipient of ProSPER.Net-Scopus Young Scientist Award 2013 (First Runner up) for Sustainable Development in Transport Category (Promotion of Sustainability in Postgraduate and Research) from ELSEVIER, Therman-ASSET Awards 2013 for best Ph.D. Thesis, (Medal with INR 15000/-) from Bhabha Atomic Research Centre (BARC), India. Petrochemical Processing Award in Malaysia 2014 (Prof. Mohd Ali Bin Hashim Research Group) from IChemE Malaysia. PEARL – A Foundation Best Young Scientist in Chemical Engineering 2016, Venus International Foundation Best Young Scientist Award in Separation Process with Green Solvent 2016. IEI young engineers award 2017-18 in Chemical Engineering.