Development of Novel Deep Eutectic Solvents for the Extraction of Aromatics for Production of Food Grade Hexane and Straight run Kerosene using Cosmo-SAC Screening – Hindustan Petroleum Corporation Limited (HPCL)

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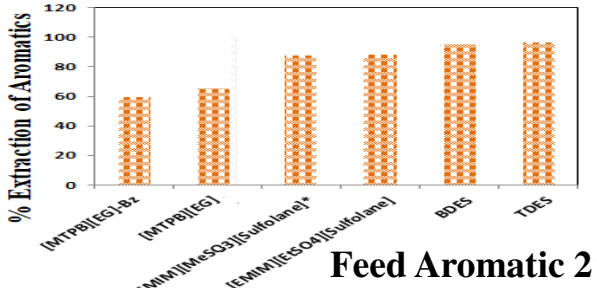
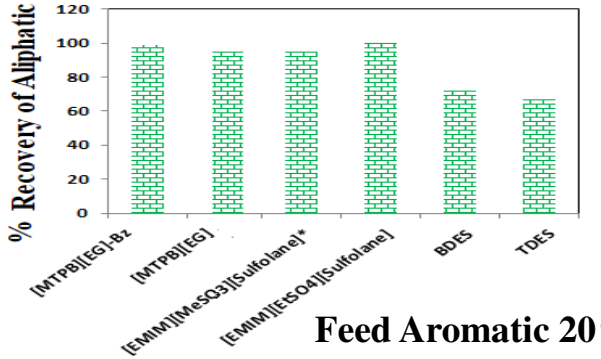
COSMO-SAC screening and adoption of appropriate DES and or co-solvents for the reduction of aromatics from hexane to produce food grade hexane and Pharma-grade Hexane with less than 100 and 10 pm benzene content respectively. Benchmarking of the results using single stage batch multicomponent Liquid Liquid Equilibria experiments for DES(1)-Benzene(2)-Hexane(3) and DES(1)-Benzene or Model Aromatic(2)-Model Kerosene(3) systems.

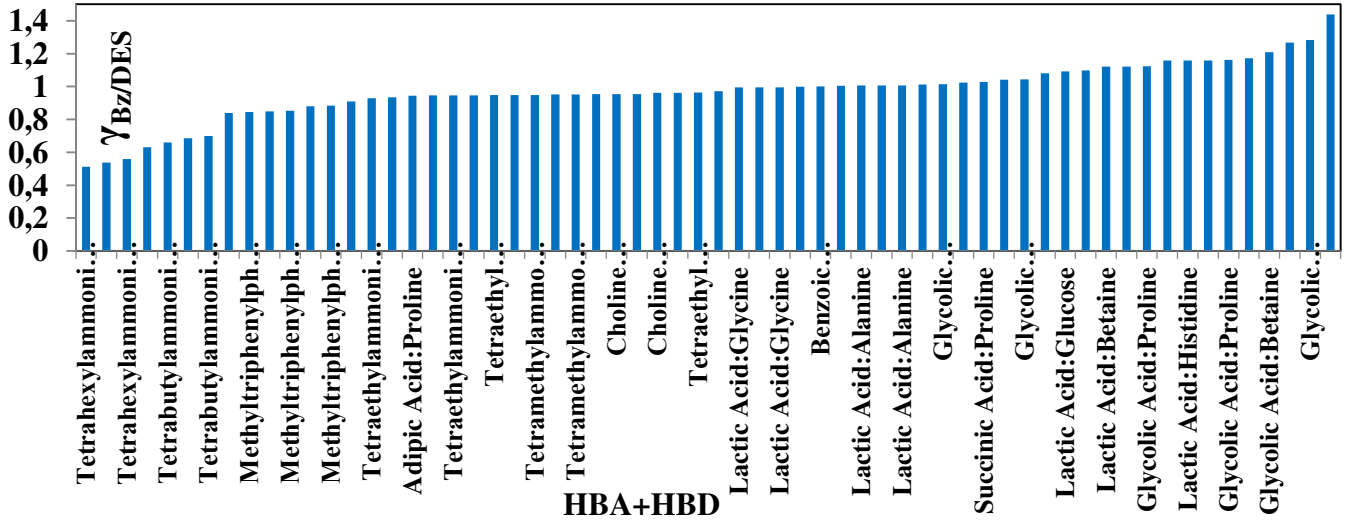


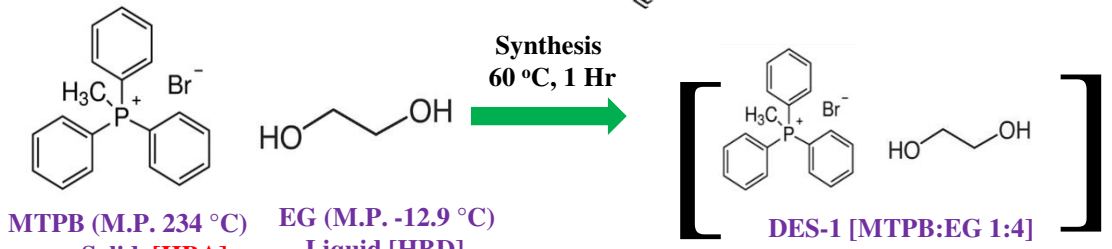
Feed Aromatic 2%



Feed Aromatic 20%

- The nanofluid was prepared by mixing DES (Methyltriphenylphosphonium bromide salt and ethylene glycol in the molar ratio of 1:4) and 0.02 weight% of MWCNT.
- A significant increase in thermal conductivity and specific heat for MWCNT-DES nanofluid.
- Better thermophysical properties of nanofluid suggests that, it can replace the traditional commercial HTFs for use as an advanced Heat Transfer Fluid in Concentrated Solar Power (CSP) and Multi-Stage Flash (MSF) column plants.

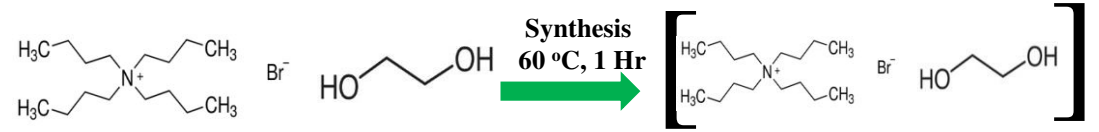




MTPB (M.P. 234 °C)
Solid [HBA]

EG (M.P. -12.9 °C)
Liquid [HBD]

DES-1 [MTPB:EG 1:4]



TBAB (M.P. 103 °C)
Solid [HBA]

EG (M.P. -12.9 °C)
Liquid [HBD]

DES-2 [TBAB:EG 1:4]