

## Extraction of Indium into Hydrophobic Amine Based Mixtures from Dilute Hydrochloric Acid Medium

The efficacy of eutectic solvents for the extraction of indium (III) from dilute hydrochloric acid is reported in this work. Combinations of three amine-containing compounds, lidocaine, grape smell (methyl anthralate), and Proton Sponge<sup>TM</sup> [1,8-Bis(dimethylamino)naphthalene] have been prepared along with DL-menthol and ibuprofen in binary and ternary mixtures. The mixtures corresponding to the lowest phase transition temperature (the eutectic composition) are used for liquid-liquid extraction. The transfer of indium to the eutectic solvent has been measured by the ratio of activity of the tracer isotope <sup>111</sup>In in the organic and aqueous phases after separation. It is found that mixtures where a ternary amine is present demonstrate the ability to extract indium. By varying the concentration of stable indium present in the aqueous phase, the mechanism of extraction is also determined through varying the concentration of stable indium in the aqueous phase.