

The concept of reactive extraction

[Science](#), [Chemistry](#)



Reactive extraction is advanced method of solvent extraction or liquid-liquid extraction for recovering of carboxylic acid in which carboxylic acid is isolated by reactive extraction with the help of some extractant i. e. trioctylamine, tributylphosphate etc. and it is an advanced formed of a solvent extraction.

In this technique, the reactive extraction is thermal stability remains for targeting molecules during process. Although the process is different in which the reactive extraction is recovered by chemical exaction as well as physical extraction. The targeted chemical is recovered by using some extractants, the extractants are dissolved in organic phase diluent or solvent. Here the process is increased the efficiency of carboxylic acid and the process is carried out in single stage instead of multiple stages by this technique.

Reactive extraction is selected instead of separation process because their result is high extraction efficiency, low energy consumption, easy to operate and relatively low cost.

Reactive extraction has been favored over the technique due to high efficiency, ease of operation, low energy consumption and cost.

Reactive extraction or Liquid-liquid extraction (LLE) is a process in which a particular solute is removed from a liquid phase (feed phase) by another liquid phase (solvent or extract phase). The major difference between reactive extraction and solvent extraction is the reaction between the extractant and the solute in the organic phase. Extractant are widely used in

the extraction of organic and inorganic for separation and purification purposes or product enrichment.

By earlier researchers, some extractant are found most effective like aliphatic amines and phosphoric solvents in extraction efficiency and the major role of extractant in the reaction is increase the degree efficiency, the significant of diluents is effect on degree extraction. Nonaromatic, water immiscible and polar solvents with intermediate molecular weights and high boiling points are commonly preferred for the extraction to have high distribution and selectivity. The solvents (diluents) control the physical properties (viscosity, density, surface tension, etc.) of the solvent phase and also affect the stability of the complex structure formed between the solute and the extractant. So the advanced technique is found to be a promising method for the recovery of the carboxylic acids from a dilute fermentation broth.

This separation method has advantages such as the following:

- the acid can be re-extracted and the solvent can be reused,
- better recovery of acid with higher product purity,
- reduction of downstream processing load and recovery cost,
- product(s) undergoes subsequent undesired reactions in reaction phase,
- reaction products to be separated are immiscible with the reaction phase,
- phase equilibrium can be positively influenced,
- heat transfer is to be improved during the reaction.