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SEPARATION SCIENCE & ENGINEERING

不同稀释剂中三辛胺相对于有机羧酸碱度的研究

单欣昌, 金伟, 戴凯元

State Key Laboratory of Chemical Engineering, Department of Chemical Engineering, Tsinghua University, Beijing 100084, China

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摘要 The relative basicity of trioctylamine（TOA）, pKa,BS, in protic polar diluent（1-octanol）, non-protic polar diluent [methyl iso-butyl ketone（MIBK）] and inert diluent（CCl4）were determined for 11 mono-carboxylic acids, and the dependence of PKa,BS on the nature of solute and diluent type was discussed. The results show that pKa,BS determined by half neutralization with the solute carboxylic acid is in the order of 1-octanol（MIBK）CCl4 for a fixed TOA concentration, and it increases with increasing acidity and hydrophobicity of the carboxylic acid. Compared with two parameters of the solute extracted（acidity and hydrophobicity）, pKa,BS is more sensitive to hydrophobicity of the acid. A mathematic equation representing relationship between the apparent extraction equilibrium（K11）and the system properties（PKa,BS and pKa）was proposed. 1g K11 = 2pKa,BS+pKa. It is proved that thhe extraction equilibrium of mono-carboxylic acids can be predicted by the above equation with reasonable accuracy.

关键词 稀释剂 三辛胺 非有机羧酸 碱度 萃取平衡

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Relative Basicity of Trioctylamine to Carboxylic Acid in Selected Organic Diluents

SHAN Xinchang, QIN Wei, DAI Yourman

State Key Laboratory of Chemical Engineering, Department of Chemical Engineering, Tsinghua University, Beijing 100084, China

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Abstract The relative basicity of trioctylamine（TOA）, pKa,BS, in protic polar diluent（1-octanol）, non-protic polar diluent [methyl iso-butyl ketone（MIBK）] and inert diluent（CCl4）were determined for 11 mono-carboxylic acids, and the dependence of PKa,BS on the nature of solute and diluent type was discussed. The results show that pKa,BS determined by half neutralization with the solute carboxylic acid is in the order of 1-octanol（MIBK）CCl4 for a fixed TOA concentration, and it increases with increasing acidity and hydrophobicity of the carboxylic acid. Compared with two parameters of the solute extracted（acidity and hydrophobicity）, pKa,BS is more sensitive to hydrophobicity of the acid. A mathematic equation representing relationship between the apparent extraction equilibrium（K11）and the system properties（PKa,BS and pKa）was proposed. 1g K11 = 2pKa,BS+pKa. It is proved that thhe extraction equilibrium of mono-carboxylic acids can be predicted by the above equation with reasonable accuracy.

Key words relative basicity: trioctylamine(TOA); mono-carboxylic acid; extraction equilibrium

通讯作者:
单欣昌 qinwei@tsinghua.edu.cn
作者个人主页: 单欣昌; 金伟; 戴凯元

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