



**"Gheorghe Asachi" Technical University of Iasi, Romania**



---

## DIRECT SEPARATION OF PROPIONIC ACID FROM *Propionibacterium acidipropionici* BROTHS BY REACTIVE EXTRACTION

### 2. EXTRACTION FROM SIMULATED BROTHS

**Alexandra Cârlescu<sup>1</sup>, Mădălina Poștaru<sup>1</sup>, Anca-Irina Galaction<sup>2</sup>, Dan Cașcaval<sup>1\*</sup>**

<sup>1</sup>"Gheorghe Asachi" Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection,  
73 D. Mangeron, 700050 Iasi, Romania

<sup>2</sup>"Gr.T. Popa" University of Medicine and Pharmacy of Iasi, Faculty of Medical Bioengineering,  
9-13 M. Kogalniceanu Street, 700454 Iasi, Romania

---

#### Abstract

The reactive extraction of propionic acid from simulated broths with apparent viscosity varying between 5 and 20 cP has been studied. The reactive extraction has been carried out with TOA dissolved in three solvents with different dielectric constants (dichloromethane, butyl acetate, n-heptane) without and with 1-octanol as phase modifier. The results indicated that the mechanism of the interfacial reaction between acid and extractant was not modified compared to the extraction from pure aqueous solutions, but the separation efficiency has been significantly affected. Thus, the extraction degree and extraction constant have been reduced by increasing the viscosity of aqueous phase, effect that was partially counteracted by adding 1-octanol in solvent phase. The most important influence of alcohol addition was recorded for the solvent with the lowest polarity, namely n-heptane.

**Key words:** 1-octanol, distribution coefficient, extraction constant, propionic acid, reactive extraction, simulated broths

*Received: January 2012; Revised final: March, 2012; Accepted: March, 2012*

---

\* Author to whom all correspondence should be addressed: E-mail: [dancasca@ch.tuiasi.ro](mailto:dancasca@ch.tuiasi.ro); Fax: +40.232.271.311