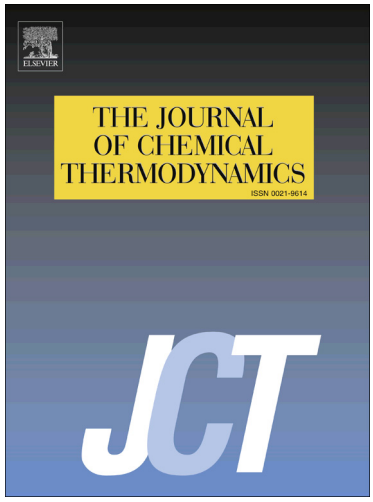

Salting out potential of cholinium dihydrogen citrate in aqueous solution of Triton surfactants

Noel Escudero, Lois Morandeira, M. Ángeles Sanromán, Francisco J. Deive, Ana Rodríguez

PII: S0021-9614(17)30416-0
DOI: https://doi.org/10.1016/j.jct.2017.11.019
Reference: YJCHT 5270

To appear in: *J. Chem. Thermodynamics*

Received Date: 18 October 2017
Revised Date: 29 November 2017
Accepted Date: 30 November 2017

Please cite this article as: N. Escudero, L. Morandeira, M.A. Sanromán, F.J. Deive, A. Rodríguez, Salting out potential of cholinium dihydrogen citrate in aqueous solution of Triton surfactants, *J. Chem. Thermodynamics* (2017), doi: https://doi.org/10.1016/j.jct.2017.11.019

Salting out potential of cholinium dihydrogen citrate in aqueous solution of Triton surfactants

Noel Escudero, Lois Morandeira, M. Ángeles Sanromán, Francisco J. Deive*, Ana Rodríguez*

Department of Chemical Engineering, University of Vigo, P. O. Box 36310, Vigo, Spain

ABSTRACT

Aqueous solutions of the non-ionic surfactants Triton X-100 and Triton X-102 have been salted out with the biocompatible ionic liquid cholinium dihydrogencitrate (N_{1112OH}DHC). The phase boundary for {Triton X-100 or Triton X-102 + N_{1112OH}DHC + H_2O} was ascertained at T = (293.15, 303.15, 313.15 and 323.15) K and 0.1 MPa. The binodal data were modelled by one polynomial and three exponential equations, and the tie-line data were suitably correlated by means of Othmer-Tobias, Bancroft and Setschenow empirical models. The experimental results allowed concluding that the increase of temperature and the hydrophobicity of the surfactant led to the shift of the binodal curve to the water vertex.

Keywords: Aqueous biphasic systems; Ionic liquids, Cholinium dihydrogencitrate; Non-ionic surfactants; Triton

1. Introduction

Nowadays, the extraction and purification of an array of bioactive products obtained via biological reactions is being the subject of unprecedented research effort. In this sense, most of the existing options are costly since they require high energy consumption like ultrasound, high pressure- or microwave-assisted techniques. Moreover, the operating conditions employed in this kind of extreme methods could jeopardize the biological activity of the desired biomolecules [1]. Another difficulty is derived from the complexity of separation strategies (e.g. combination of chromatographic steps) that may further product losses during

* Corresponding author. *E-mail address*: deive@uvigo.es (F.J. Deive); aroguez@uvigo.es (A. Rodríguez).