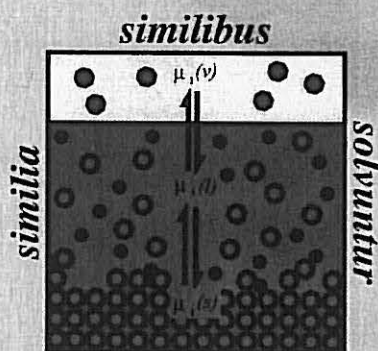


**11th INTERNATIONAL
SYMPOSIUM ON SOLUBILITY
PHENOMENA
Including Related
Equilibrium Processes**

Abstracts



11th, Aveiro, 2004

universidade de aveiro



30 anos a projectar futuros

Portugal

<u>R. Dohm and R. Leiberich</u>	31
Indirect methods for the mapping of the liquid-liquid locus under negative pressure ..	
<u>A. R. Imre, S. J. Rzoska, A. Drozd-Rzoska and T. Kraska</u>	32
Chemical speciation of heavy metals and arsenic in dissolved waste clinker material (Plovdiv-Assenovgrad region, Bulgaria).....	
<u>E. N. Pentcheva, R. Atanasova and N. Velitchkova</u>	33
Physical properties of for the mixtures of 1-methyl-3-octylimidazolium tetrafluoroborate [omim-bf ₄] ionic liquid with alcohols	
<u>A. Arce, P. López, E. Rodil, H. Rodríguez and A. Soto</u>	34
The solubility of ionic liquids and their use in separating organic liquid mixtures	
<u>T. M. Letcher and N. Deenadayalu</u>	35
The relation between virial and ion association models of specific ion interactions in solutions of 2-2 electrolytes.....	
<u>J.W. Lorimer</u>	36
Dynamic viscosities and densities of binary mixtures ionic liquids ([C ₆ min][Cl] and [C ₈ min][Cl]) with water at several temperatures.....	
<u>E. Gomez, B. González, E. Tojo, A. Dominguez and J. Tojo</u>	37
Dual-thermodynamic modeling of solid solution - aqueous solution equilibria.....	
<u>D.A. Kulik, I.K. Karpov and M. Kersten</u>	38
COSMO-RS, a novel <i>a priori</i> predictive method for solution phenomena and fluid phase thermodynamics	
<u>F. Eckert</u>	39
Interpretation of Isotope Effects on the Solubility of Gases	
<u>G. Jancsó</u>	40
Solubility of oxygen in substituted perfluorocarbons	
<u>A.M.A. Dias, J. A. P. Coutinho and I. M. Marrucho</u>	41
Effects of Acids on the Hydrogen-Bonding Structure of Water-Ethanol Mixtures	
<u>A. Nose, M. Hojo and T. Ueda</u>	42
Electrolyte Effect on the Solubility of Amino Acids in Aqueous Solutions	
<u>L. A. Ferreira, E. A. Macedo and S. P. Pinho</u>	43
Solubilities and vapour pressures of water over saturated solutions of magnesium-l-lactate, calcium-l-lactate, zinc-l-lactate, ferrous-l-lactate and aluminium-l-lactate.	
<u>A. Apelblat and E. Manzurola</u>	44
Development of Organophosphate Binding and Degrading Polymer Based Reagent....	
<u>V. Myasoedova and A. Danil de Namor</u>	45
Solubility of Sodium Chloride in Water in Dependence of Pressure	

ELECTROLYTE EFFECT ON THE SOLUBILITY OF AMINO ACIDS IN AQUEOUS SOLUTIONS O 13**L. A. Ferreira¹, E. A. Macedo² and S. P. Pinho¹**¹ Department of Chemical Technology, Instituto Politécnico de Bragança, Bragança, Portugal² Department of Chemical Engineering, University of Porto, Porto, Portugal
email: spinho@ipb.pt

The precipitation and crystallization of biomolecules have been widely used for their separation and concentration.^[1] The presence of electrolytes in solution may affect significantly the solubilities of biochemicals, which has been used for salt-induced separation of proteins.^[2] Although amino acids are among the simplest biochemicals, they have many similarities with more complex biochemicals and are the building block of proteins. So, the study of the electrolyte effect in the solubility of amino acids in water is a good starting point for further developments.^[3]

Although some studies have been published concerning the measurement and thermodynamic properties modelling of aqueous solutions of amino acids with electrolytes, the information available is very scarce. Therefore, in this work, the solubility of Glycine and DL-Alanine were measured in the temperature range between 25 and 60 °C for aqueous systems of KCl, Na₂SO₄ and (NH₄)₂SO₄, salts most often used in industrial separation processes.^[4] A comparison is given with values recently published in the literature.^[1] It was possible to find out big discrepancies, and for the solubility of DL-Alanine in aqueous solutions an inverse dependence with the concentration of the KCl salt was obtained.

The new experimental data were used together with information already available concerning the activity coefficients^[5,6] and solubilities, to explore the capabilities of a modified Wilson model,^[7,8] recently developed in our group, for the thermodynamic description of these complex systems. Despite the difficulties that arose for the description of these highly non-ideal systems, the results shown are satisfactory for the correlation of the solubilities.

References

- [1] J. H. Vera and M. K. Khoshkbarchi, *Ind. Eng. Chem. Res.*, **36**, 2445–2451 (1997)
- [2] C. J. Coen; H. W. Blanche and J. M. Prausnitz, *AIChE J.*, **41**, 996–1004 (1995)
- [3] S. Li.; W. Sang and R. Lin, *J. Chem. Thermodyn.*, **34**, 1761–1768 (2002)
- [4] M. P. Breil; J. M. Møllerup; E. S. J. Rudolph; M. Ottens and L. A. M. van der Wielen, *Fluid Phase Equilib.*, **215**, 211–225 (2004)
- [5] A. M Soto-Campos; M. K. Khoshkbarchi and J. H. Vera, *Fluid Phase Equilib.*, **142**, 609–622 (1997)
- [6] M. Kamali-Ardakani; H. Modarress; V. Taghikhani and M. K. Khoshkbarchi, *J. Chem. Thermodyn.*, **33**, 821–836 (2001)
- [7] X. Xu; P. P. Madeira; J. A. Teixeira and E. A. Macedo, *Fluid Phase Equilib.*, **213**, 53–63 (2003)
- [8] X. Xu; P. P. Madeira and E. A. Macedo, *Chem. Eng. Science*, **59**, 1153–1159 (2004)