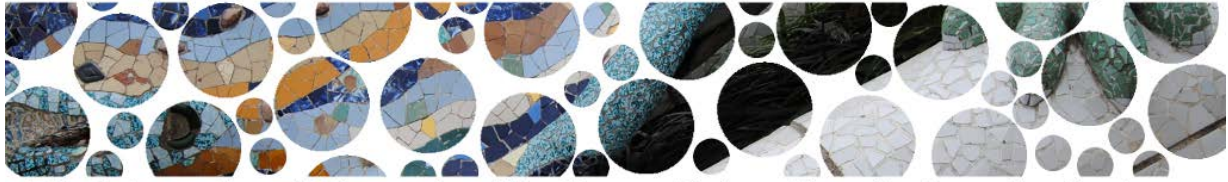


Barcelona 21-26 July 2013



7th International Discussion Meeting on Relaxations in Complex Systems

7th International Discussion Meeting on Relaxations in Complex Systems

New results, Directions and Opportunities

Book of Abstracts

Universitat Politècnica de Catalunya
Barcelona, Catalonia (Spain)
Sunday, July 21st - Friday, July 26th, 2013

<https://idmrscs7.upc.edu>



Changes in the phase transitions and transport properties of an intrinsically ibuprofen ionic liquid

Viciosa, M. Teresa⁴; Santos, Gonçalo¹; Costa, Alexandra³; Branco, Luis C.³;
Dionísio, Madalena³; Correia, Natália²

(1) REQUIMTE/CQFB, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa; (2) Unité Matériaux et Transformation (UMET), Université Lille 1; (3) REQUIMTE/CQFB, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa; (4) CQFM - IN, Instituto Superior Técnico, Universidade Técnica de Lisboa

Among the large number of applications of ionic liquids (IL), a special attention was devoted more recently to the intrinsic combination of ionic liquids with active pharmaceutical ingredients (API). The thus obtained IL_API, that may preserve or enhance the original biological and therapeutic activity of the API, has arisen as a potential strategy to overcome underlying difficulties of the API such as the low water solubility or the possibility of conversion between polymorphs.

In this work, a novel ionic liquid having ibuprofenate as anion has been studied calorimetrically to investigate its thermal transformations. As it was expected, the intrinsic pairing of the API with the IL counterion, has originated significant changes in the thermal properties of the API such as a significant increase of the glass transition temperature.

Dielectric relaxation spectroscopy has been used to probe the molecular mobility and to determine the transport properties of this novel ionic liquid. The diffusion coefficients and the mobility of the charges carriers were estimated in the IL_API supercooled state; furthermore the water influence was evaluated. It was observed a VFT-like temperature dependence of these quantities for both dried and hydrated material.

Acknowledgement

The authors thank Fundação para a Ciência e Tecnologia by the financial support of the projects PTDC/CTM/098979/2008, PTDC/CTM/103664/2008 and PTDC/EQU-EPR/104554/2008. Also, M.T.V. thanks F.C.T. by the postdoctoral fellowship SFRH/BPD/39691/2007.
