

**1st Scientific Meeting of the
Doctoral Programme in Sustainable Chemistry (PDQS)**

Book of Abstracts

University of Aveiro, September 26, 2016

**All presentations will take place at Mechanic Engineering Department –
Amphitheater 22.3.1 (Building 22 - <http://academia.web.ua.pt/mapa/>)**

**Poster presentations will be at Pedagogic Complex Building (building 23;
<http://academia.web.ua.pt/mapa/>)**

Organising Committee and Direction of the PDQS

**Artur M. S. Silva
Manuel Nunes da Ponte
Baltazar de Castro**

Program

10:00h Opening ceremony

Artur Silva, Manuel Nunes da Ponte and Baltazar de Castro

10:15h Role of polyphenols in sensorial properties of foods

Vitor Freitas, REQUIMTE, Department of Chemistry and Biochemistry, Faculty of Sciences, University of Porto, Porto

10.50h Manganese(III) porphyrins as homogeneous and heterogeneous catalysts in oxidation reactions

Cláudia M. B. Neves, QOPNA, Department of Chemistry, University of Aveiro, Aveiro

11.00h New Water Soluble Ir(III)-NHC Complexes for Waste Valorization

Ana Fernandes, Instituto de Tecnologia Química e Biológica/António Xavier-New University of Lisbon, Oeiras

11.10h Synthesis of polymeric ionic liquids and their application as coatings for solid phase micro extraction fibers

David J. S. Patinha, Instituto de Tecnologia Química e Biológica António Xavier, Universidade Nova de Lisboa, Oeiras and CICECO - Aveiro Institute of Materials, Department of Chemistry, University of Aveiro, Aveiro

11.20h Discussion

11.30h High added value products from macroalgae: lipids as bioactive compounds

Elisabete Costa, Centro de Espectrometria de Massa, Departamento de Química & QOPNA, Universidade de Aveiro, Aveiro

11.40h Molecular Understanding of Astringency: The Role of Salivary Proteins, Tannins and Wine Polysaccharides

Elsa Brandão, REQUIMTE/LAQV, Faculdade de Ciências, Universidade do Porto, Porto

- 11.50h Insights into fluoroquinolones uptake: a biophysical and biochemical approach
Mariana Santos Ferreira de Sá, UCIBIO/REQUIMTE, Departamento de Química e Bioquímica da Faculdade de Ciências da Universidade do Porto, Porto
- 12.00h Discussion
- 12.10h Nanocellulose Based Composites: Development and Applications
Armando Silvestre, CICECO - Aveiro Institute of Materials and Department of Chemistry, University of Aveiro, Aveiro
- 12.45h Lunch
- 14.15h Display posters
- 14.30h Posters discussion
- 16.30h Fermentation of glycerol by *Paracoccus denitrificans* under high pressure
Maria J. Mota, QOPNA, Department of Chemistry, University of Aveiro, Aveiro
- 16.40h Unconventional Methods for Food Preservation and Recovery of Phytochemicals from Plant Wastes: Towards a Science for Sustainable Development
José Pinela, Mountain Research Centre (CIMO), ESA, Polytechnic Institute of Bragança, Bragança and REQUIMTE/LAQV, Faculty of Pharmacy, University of Porto, Porto
- 16.50h Engineering Bio-based Polymers using Alternative Solvents and Processes
Rita Craveiro, LAQV@REQUIMTE, Departamento de Química, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Caparica
- 17.00h Discussão
- 17.10h Do it or do not. There is no try
José Luís Capelo-Martínez, REQUIMTE, Department of Chemistry and Biochemistry, Faculty of Sciences, New University of Lisbon, Caparica
- 17.30h Closing ceremony and attribution of best poster and oral communications awards.

Unconventional Methods for Food Preservation and Recovery of Phytochemicals from Plant Wastes: Towards a Science for Sustainable Development

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Plants are irreplaceable sources of food and bioactive phytochemicals. In this sense, this work has been focused on valorisation and processing of traditional plant foods, including medicinal plants (consumed in herbal beverages), leafy vegetables, and tomato farmers' varieties, but also bio-wastes (source of biomolecules), using non-conventional and emerging technologies [1]. The preservation of dried medicinal plants (*Tuberaria lignosa* (Sweet) Samp. and *Malva neglecta* Wallr.) and fresh vegetables (*Nasturtium officinale* R. Br. and *Rumex induratus* Boiss. & Reut.) by using gamma irradiation treatments [2–4] and/or inert gas-enriched modified atmospheres [4,6] was investigated. The main goal was to ensure food safety and shelf-life extension without negatively affect quality parameters, and therefore reduce food waste. Argon was a suitable choice for preserving the overall postharvest quality of the selected vegetables during refrigerated storage. The adequacy of post-packaging irradiation treatments for shelf-life extension was also demonstrated. This extensive work also highlights the bioactive compounds of tomatoes as health promoters [7] and described for the 1st time the chemical and nutritional composition of four tomato farmers' varieties in Northeastern Portugal homegardens [8,9]. The optimization of microwave- and high pressure-assisted extraction processes for recovery of valuable phytochemicals and production of antioxidant and nutrient-rich ingredients has been carried out using response surface methodology. Relevant independent variables and optimal processing condition for recovery of hydrophilic and lipophilic antioxidants [10] and phenolic compounds [11] from tomato wastes were determined. Green solvents have been used. The current research focuses on the optimization of high pressure-assisted extraction of phenolic compounds from *N. officinale* and in the effects of the treatment on antioxidant and antitumor properties of this fast growing cruciferous plant rich in glucosinolates. It is also intended to investigate the combined effects of modified atmosphere packaging and antioxidant coatings in the preservation of plant foods.

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References

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