

Personal Information

First name(s) / Surname(s): Joana Rafaela / Lara Guerreiro

Address(es):

Contact:

E-mail(s): joana.guerreiro@inl.int

Nationality: Portuguese

Date of birth: 18 May 1983, Porto

Gender: Female

Driver Licence (B)



Interested/Occupational field

Biosensors/ Chemical Engineering / Nanotechnology / Food Science

Work Experience

July 2016 - Present

Position Post-doctoral Research Fellow at Nano4Food, Department of Life Science at International Iberian Nanotechnology Laboratory (INL), Braga

Research Area Early detection of zebra mussel invasive species on river basins based on point of care optical devices. The project has a strong laboratorial component in chemical, biological, optical and nanotechnological fields.

Sector Nanotechnology, Biosensors/Optical and Electrochemical devices

June 2015 – May 2016

Position Post-doctoral Researcher at Nanobiointerfaces Group, Interdisciplinary Nanoscience Center (iNANO), Aarhus University

Research Area Innovative autonomous electrical biosensor synergistically assembled inside a passive direct methanol fuel cell for screening cancer biomarkers. The project has a strong laboratorial component in chemical, electrochemical, biological and nanotechnological fields.

Sector Nanotechnology, Biosensors/Optical and Electrochemical devices

1/4/ 2011 – 21/07/2015

Position PhD student with the project research "Plasmonic biosensors monitoring protein-polyphenol interactions, applied to sensorial astringency" at University of Porto/BioMark Sensor Research/Aarhus University.

Research Area The PhD project (4yr) included different techniques such as: surface chemistry; nanofabrication; nanocharacterization tools (electron beam-physical vapor deposition, scanning electron

microscope - SEM, atomic-force microscopy - AFM); spectroscopy; flow injection analysis; optical, mass and electrochemical biosensing detection.

Sector Biosensors, Nanotechnology, Nanobiotechnology

11/2008-02/2011

Position Researcher Fellowship - "Detection and quantification of antimicrobials in fish and waters from aquaculture." PTDC/AGR-AAM/68359/2006 (ICETA, REQUIMTE, INIAV)

Research Area Development of ion selective electrodes to detect specific antibiotics in aquaculture water samples as food control for routine analysis.

Name of employer GRAQ – REQUIMTE (Chemistry and Technology Network), Porto, Portugal.

Sector Agricultural and Forestry Sciences - Agriculture and Environment; Food Safety

10/2007-09/2008

Position Researcher Fellowship - Study of the antioxidant action of vitamin C in flavoured waters. Financial supported by iBeSA and developed in GRAQ.

Research Area Analytical chemical techniques were used to evaluate the influence of vitamin C on antioxidant capacity.

Name of employer GRAQ – REQUIMTE (Chemistry and Technology Network) Porto, Portugal.

Sector: Food Industry

Education

1 April 2011 – 21 July 2015

Ph.D. in Chemistry approved with distinction – **Thesis Title** "Plasmonic biosensors monitoring protein-polyphenol interactions, applied to sensorial astringency".

1. Chemistry Department, Faculty of Sciences, Centro de Investigação em Química, University of Porto, Porto, Portugal;
 2. BioMark Sensor Research/Instituto Superior de Engenharia do Porto, Porto, Portugal;
 3. Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Aarhus, Denmark
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29 November 2011 - 16 December 2011

Introduction to Science Teaching Course. The main goal of the course was to give preparation on how to be successful teaching assistants.

1 October 2008 - 06 November 2009

MSc in Technology, Science and Food Safety - Thesis Title "Determination of Chlortetracycline in aquaculture".

Processes in food industry, food quality and safety, Microbiology

Faculty of Science University of Porto (FCUP) and Engineering School – Minho University, Portugal

01 October 2002 - 13 September 2007

BSc (5yr) in Chemical Engineering [Focus on Environmental Protection Technologies] **Thesis Title**
Monitoring antibiotics in food matrixes: Tetracyclines"

Chemistry (analytical, organic and inorganic), Physics, Biotechnology.

ISEP – IPP (Polytechnic Institute of Porto), Portugal

Research and Development Activities

Patent

Co-inventor of **PA2015 70398** - A molecular imprinted polymer comprising an imprint of salivary proteins – **Danish Patent** – Disclosed herein is a biosensor comprising an imprint of salivary proteins and a method for testing astringency.

Research Project Participation

R&D projects FCT

Research team member of R&D projects financed by FCT, PTDC/AGR-TEC/6547/2014 "FoodNanoSense: Bio-sensing research on food astringency and bitterness of natural phenolics

ICETA - Instituto de Ciências, Tecnologias e Agroambiente da Universidade do Porto (ICETA)

European Grant H2020-FET-Open

Post-doctoral Researcher in the EU project Symbiotic, H2020-FET-Open "Innovative autonomous electrical biosensor synergistically assembled inside a passive direct methanol fuel cell for screening cancer biomarkers".

Instituto Superior de Engenharia do Porto

Supervision Experience

2009 Supervised the internship of two students of the course Technician for Laboratorial Analysis (11th grade) and two students of the course Food Quality Control.

2010 Supervised and helped from the laboratorial point of view an undergraduate student of Chemical Engineer during the final project.

2014 – 2016 Responsible for supervision of both undergraduate and graduate students in the lab including training, project planning and guidance aspects.

Experience as Scientist adviser

Jury in Probationary year

14th November 2016- Jury of probationary year of Helena Gomes. Dissertation entitled "Stem cells,

pharmacological compounds and imaging-contrasting agents combined in cancer nanotheranostics". Instituto de Ciências Biomédicas Abel Salazar, University of Porto.

13th December 2016- Jury of probationary year of Ana Tavares Moreira. Dissertation entitled "Development of biosensor integrated into dye sensitized solar cell to measure cancer biomarkers". Engineering School, University of Minho.

Jury in Master dissertation public defense

22nd November 2016 – Jury of Masters in Chemical Engineering of Ricarda Torre. Dissertation entitled "Production of biomimetic materials for photovoltaic cells". ISEP – Instituto Superior de Engenharia do Porto.

22nd November 2016 – Jury of Masters in Chemical Engineering of Lurdes Gonçalves. Dissertation entitled "Development of a biosensor for the fast diagnosis of Alzheimer's disease". ISEP – Instituto Superior de Engenharia do Porto.

Honors / Awards

2017 – Awarded with 2017 Travel Awards sponsored by Sensor of 800 Swiss francs

2013 - Awarded with a travel grant of 7500 DKK sponsored by Lundbeck Foundation (Lundbeck Foundation is a Danish industrial foundation which provides funding for scientific research of the highest quality) to attend the 5th Graduate Student Symposium on Molecular Imprinting.

2013 - Awarded with a travel grant to participate at nanoPT 2014, sponsored by the congress Organisation.

2011 - PhD research grant financed by Fundação para a Ciência e Tecnologia, FCT

Book Chapter

1. F.T.C. Moreira, J.R.L. Guerreiro, L. Brandão, M.G.F. Sales (2015) Biomimetic Technologies: Principles and Applications, Synthesis of molecular biomimetics, 3-31.
2. J. Rafaela L. Guerreiro, M. Goreti F. Sales, Beatriz M.P. Oliveira (2009), Acção antioxidante da vitamina C em águas aromatizadas (Antioxidant effect of vitamin C in flavoured waters), IBeSa, Porto

Personal Skills and Competences

Languages:

Portuguese [Native] | English [Fluent or Professional] | Spanish [Working knowledge] | French [Basic knowledge] | Danish [Basic knowledge - Level 3 Completed at "Lær Dansk"]

IT Competences

Ms Office Package

Gwyddion and SPIP

Image J

Origin

Extracurricular Activities

Interested in Nature

Interested in hiking, running & cycling & triathlon

References:

- i. Adjunct professor Goreti Sales (BioMark Sensor Research/Instituto Superior de Engenharia do Porto)
E-mail address: goreti.sales@gmail.com
- ii. Cathedraic Professor Victor Freitas (Chemistry Department – Faculty of Sciences University of Porto)
E-mail address: vfreitas@fc.up.pt
- iii. Associate Professor Duncan Sutherland (iNANO, Aarhus University)
E-mail address: duncan@inano.au.dk

Publications

Papers in International Journals

1. J. Rafaela L. Guerreiro, Vladimir E. Bochenkov, Kasper Runager, Hüsnü Aslan, Mingdong Dong, Jan J. Enghild, Victor De Freitas, M. Goreti F. Sales and Duncan S. Sutherland, Molecular Imprinting of Complex Matrices at Localized Surface Plasmon Resonance Biosensors for Screening of Global Interactions of Polyphenols and Proteins, ACS Sensors Article ASAP (As Soon As Publishable, DOI: 10.1021/acssensors.5b00054 (Publication Date (Web): December 25, 2015).
2. J. Rafaela L. Guerreiro, Maj Frederiksen, Vladimir E. Bochenkov, Victor De Freitas, M. Goreti F. Sales and Duncan S. Sutherland, Multifunctional Biosensor Based on Localized Surface Plasmon Resonance for Monitoring Small Molecule Protein Interaction, ACS Nano 8, 7958-7967 (2014).
3. J. Rafaela L. Guerreiro, Duncan S. Sutherland, Victor De Freitas and M. Goreti F. Sales, Protein/polyphenol interaction on silica beads for astringency tests based on eye, photography or reflectance detection modes Analytical Methods 5, 2694-2703 (2013).
4. JRL Guerreiro, V Freitas, DS Sutherland, MGF Sales, SPR based Studies for Pentagalloyl Glucose Binding to α -Amylase, Procedia Engineering, 47, 498-501 (2012).
5. FTC Moreira, JR Guerreiro, R Barros, MGF Sales, The effect of method, standard and sample components on the total antioxidant capacity of commercial waters assessed by optical conventional assays, Food Chemistry, 134, 564-571 (2012).
6. Tânia S.C.R. Rebelo, Sofia A.A. Almeida, J. Rafaela L. Guerreiro, M. Conceição B.S.M. Montenegro and M. Goreti F. Sales, Trimethoprim-selective electrodes with molecularly imprinted polymers acting as

ionophores and potentiometric transduction on graphite solid-contact, *Microchemical Journal*, 98, 21-28 (2011).

7. J.R.L. Guerreiro, M.G.F. Sales, Disposable solid state probe for optical screening of chlorpromazine, *Microchimica Acta*, 175, 323-331 (2011).
8. J. Rafaela L. Guerreiro, M. Goreti F. Sales, Felismina T. C. Moreira and Tânia S. R. Rebelo, Selective Recognition in Potentiometric Transduction of Amoxicillin by molecularly-imprinted materials, *European Food Research Technology*, 232, 39-50 (2011).
9. J.R.L. Guerreiro, V. Freitas and M.G.F. Sales, New sensing materials of molecularly-imprinted polymers for the recognition of Chlortetracycline, *Microchemical Journal*, 97, 173-181 (2011).
10. Felismina T.C. Moreira, Ayman H. Kamel, Joana R.L. Guerreiro, M. Goreti F. Sales, Man-tailored biomimetic sensor of molecularly imprinted materials for the potentiometric measurement of oxytetracycline. *Biosensors and Bioelectronics*, 26, 566-74 (2010).
11. Felismina T. C. Moreira, J. Rafaela L. Guerreiro, Vera L. Azevedo, Ayman H. Kamel and Maria Goreti Ferreira Sales, New biomimetic sensors for the determination of tetracycline in biological samples: Batch and flow mode operations, *Analytical Methods*, 2, 2039-2045 (2010)
12. Felismina T.C. Moreira, Ayman H. Kamel, J. Rafaela L. Guerreiro, Vera L. Azevedo, M. Goreti F. Sales, New potentiometric sensors based on two competitive recognition sites for determining tetracycline residues using flow-through system, *Procedia Engineering*, 5, 1200-1203 (2010).
13. J. Rafaela L. Guerreiro, Ayman H. Kamel, M. Goreti F. Sales, FIA potentiometric system based on periodate polymeric membrane sensors for the assessment of ascorbic acid in commercial drinks, *Food Chemistry* 120, 934–939 (2010).

Scientific Communications

Oral

1. J. Rafaela L. Guerreiro, Vladimir E. Bochenkov, Kasper Runager, Hüsnu Aslan, Mingdong Dong, Jan Enghild, Victor Freitas, M. Goreti F. Sales, D. S. Sutherland, Molecular imprinting of complex matrices at localized surface plasmon resonance for screening global interactions polyphenol-protein, 6th Graduate Student Symposium on Molecular Imprinting, Kent, United Kingdom, 27-28 August 2015.
2. J. Rafaela Guerreiro, Maj Frederiksen, Vladimir Bochenkov, Victor De Freitas, M. Goreti Sales and Duncan S. Sutherland, Astringency estimation by Localized Surface Plasmon Resonance, NanoPt, Oporto, Portugal, 12-14 February 2014.

3. J. Rafaela L. Guerreiro, Victor Freitas, D. S. Sutherland, M. Goreti F. Sales, The potential of molecular imprinted combined with plasmonics as a biosensor: Gold nanostructures combined with molecular imprint for biosensing, 5th Graduate Student Symposium on Molecular Imprinting, Belfast, United Kingdom, 15-17 August 2013.

Poster

4. J Guerreiro, V Bochenkov, M Frederiksen, V Freitas, G Sales and D Sutherland. LSPR studies between a polyphenol and alpha-amylase. Scandinavian Society for Biomaterials, Aarhus, Denmark, 26-28 March 2014.
5. J Rafaela L Guerreiro, M. Frederiksen, V. E. Bochenkov, V. Freitas, M. G. F. Sales, D. S. Sutherland. Versatile Localized Surface Plasmon Resonance Biosensor for Monitoring Small Molecule-Protein Interaction. 13th iNANO Annual Meeting, Aarhus, Denmark, 15 January 2015.
6. JRL Guerreiro, V Freitas, DS Sutherland, MGF Sales, SPR based Studies for Pentagalloyl Glucose Binding to α -Amylase, Eurosensors XXVI, Krakow, Poland, 9-12 September 2012.
7. JRL Guerreiro, V Freitas, D Sutherland, MGF Sales, Protein/polyphenol interaction study by an optical sensor, 2nd International Conference on Bio-Sensing Technology 2011, Amsterdam, The Netherlands, 10-12 October 2011.
8. Rafaela L. Guerreiro, Victor Freitas, M. Goreti F. Sales, New optical sensor for astringency in wine, Ibersensors, Lisbon, Portugal, 9-11 November 2010.
9. Rafaela L. Guerreiro, C. D. Matos, M. Goreti F. Sales, Colorimetric Sensor for Chlopromazine in aquaculture samples, Ibersensor, Lisbon, Portugal, 9-11 November 2010
10. Felismina T. C. Moreira, Ayman H. Kamel, Rafaela L. Guerreiro, Vera Azevedo, M. Goreti F. Sales, New Potentiometric Sensors Based on Two Competitive Recognition Sites for Determining Tetracycline Residues Using Flow-Through System, Austria, Linz, 3-8 September 2010
11. J. R. L. Guerreiro, M. G. F. Sales, Determinação colorimétrica de clorpromazina em amostras de aquacultura, 1^o Enc TCAQ, Braga, Portugal, 7 May 2010.
12. L. A. A. N. A. Truta, J. R. L. Guerreiro, C. D. Matos and M. G. F. Sales, FIA spectrophotometric system for the assessment of antioxidant capacity of commercial drinks by TRAP method, IJUP 2010, Oporto, Portugal
13. J.R.L. Guerreiro, M.G.F. Sales, Selective Recognition in Potentiometric Transduction of Amoxicillin by molecularly-imprinted materials, Euro Analysis, Linz, Austria, 6-10 September 2009.
14. J. R. L. Guerreiro, A. H. Kamel, M. G. F. Sales, FIA potentiometric system based on periodate polymeric membrane sensors for the assessment of ascorbic acid in commercial drinks, Euro Analysis, Linz, Austria, 6-10 September 2009.
15. J. R. L. Guerreiro, M. G. F. Sales, Chlortetracycline - Imprinted Materials for its Potentiometric Determination in Food and Biological Samples, Euro Analysis, Linz, Austria, 6-10 September 2009

16. Ayman H. Kamel, Felismina T. C. Moreira, J. Rafaela L. Guerreiro and M. Goreti F. Sales, New Enrofloxacin Sensors for Aquaculture Environment. 6th European Conference on Marine Products 19-23 July 2009, Oporto, Portugal
17. M.Goreti. F Sales, Felismina T.C. Moreira, J.Rafaela L. Guerreiro and Vera L.O. Azevedo, Flow Injection potentiometric determination of tetracycline, Rapid Methods Europe, The Netherlands, 21-23 January 2008.