Curriculum Vitae
Andreia Fonseca de Faria

Assistant Professor
University of Florida
Engineering School of Sustainable Infrastructure & Environment (ESSIE)
Department of Environmental Engineering Sciences
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EDUCATION

2013-2016 **Postdoctoral Training**
Department of Chemical and Environmental Engineering, Yale University, New Haven, Connecticut, USA.
Project: Environmental applications of graphene oxide-based materials.
Supervisor: Prof. Menachem Elimelech.

2011-2012 **Postdoctoral Training**
Institute of Chemistry, University of Campinas, Campinas, São Paulo, Brazil.
Project: Synthesis, characterization, physicochemical and antimicrobial properties of graphene oxide-based nanocomposites.
Supervisor: Prof. Oswaldo Luiz Alves

2005-2010 **Ph.D., Food Engineering**
University of Campinas, Campinas, São Paulo, Brazil.
Thesis: Production and chemical characterization of biosurfactants produced by *Bacillus subtilis* using raw glycerol as a carbon source.
Advisors: Prof. Lucia Regina Durrant and Matthew Grossman

2000-2005 **B.Sc., Chemistry, concentration on Biochemistry and Microbiology**
Federal University of Viçosa, Viçosa, Minas Gerais, Brazil
Minor: Biochemistry and microbiology

RESEARCH EXPERIENCE

Antimicrobial properties of nanomaterials and their application to water treatment
Yale University, New Haven, CT-USA with Prof. Elimelech
Areas of Expertise: surface science, material science, nanotechnology, water purification.
-Nanomaterials for water treatment and decontamination
-Membrane-based water separation processes
-Biofilm formation and control.

Synthesis and characterization of nanomaterials for biological application
University of Campinas, Campinas, São Paulo, Brazil with Prof. Oswaldo Alves
Areas of Expertise: Chemistry, nanomaterials, surface chemistry, microbiology and biotechnology.

-Chemical functionalization of graphene oxide
-Microbial toxicity of graphene-based materials
-Ultrafiltration membranes for water purification
-Mitigation of microbial proliferation.

Biological processes for the production of valued-added chemicals
University of Campinas, Campinas, São Paulo, Brazil with Prof. Lucia Durrant
Areas of Expertise: Biotechnology, Surfactants, Emulsions, Environmental Microbiology, Food Science, Food Microbiology.

-Scale-up production of bio-based products, including biosurfactants (media formulation and optimization, fermentation processes, bioreactors, bench-scale lyophilization)
- Purification (chromatography techniques) and chemical characterization of macromolecules
-Use of renewable and raw materials as low-cost carbon sources for the production of bioactive molecules.

Environmental microbiology and bioremediation
Federal University of Viçosa, Minas Gerais, Brazil with Prof. Marcos Tótola
Areas of Expertise: biotechnology, surfactants, environmental microbiology, water remediation, oil recovery, and soil microbiology.

-Biosurfactant for oil emulsification and oil recovery,
-Water and soil bioremediation
-Microbial ecology and identification of microorganisms
-Molecular biology applied to environmental ecology.

TEACHING AND MENTORING EXPERIENCE

CHI-138: Introduction to organic chemistry
-Responsible for quiz solving and individual meetings

TA-918 General microbiology and biological processes
-I was entirely responsible for delivering lectures and assisting the students during the laboratory sessions

Teaching assistant
-TA-615 Food Microbiology
-TA-716 Microbiology Foodborne Illnesses
-TA-918 General Microbiology and Biological Processes
-TP-119 Physiology and Metabolism of Bacteria

Mentoring of graduate and undergraduate students:
At University of Campinas in São Paulo:
-Undergraduate: Erika Assulfi
-Master students: Fernanda Pescumo, Lygia Gibbin Santos, Cristina Mantovani
-Ph.D. student: Ana Mazarin Moraes

At Yale University:
-Ph.D. student: Caihong Liu

AWARDS AND FELLOWSHIPS

Undergraduate Research Assistance Fellowship
Department of Microbiology with Prof. Marcos Tótola 2002-2004
Sponsored by FINEP (Funding Authority for Studies and Projects)

Teaching Assistance Fellowship
CHI-138 Introduction to organic chemistry, Federal University of Viçosa 2004
Sponsored by: Arthur Bernardes Foundation

Doctoral Fellowship
National Council for Scientific and Technological Development – CNPq 2005-2010

Teaching Assistance Fellowship
TA-918 General microbiology and biological processes 2006
University of Campinas

Teaching Assistance Fellowship
TA-615 Food microbiology, University of Campinas 2007
Foundation of the University of Campinas

Teaching Assistance Fellowship
TA-716 Food microbiology, University of Campinas 2007
Foundation of the University of Campinas

Conference Participation Fellowship
Brazilian Society of Microbiology 2007

Teaching Assistance Fellowship
TA-716 Food microbiology, University of Campinas 2008
Foundation of the University of Campinas

Teaching Assistance Fellowship
TA-918 General microbiology and biological processes 2009
Foundation of the University of Campinas

Poster Presentation Award
XVI Brazilian Congress of Toxicology, Belo Horizonte, Brazil 2009

National Admission Exams for Academic Positions
Second place for Associate Professorship 2010
Federal University of Santa Catarina, Florianópolis, Brazil.

Postdoctoral Fellowship
National Council for Scientific and Technological Development – CNPq 2011-2012
Department of Chemistry, University of Campinas

Poster Presentation Award
Congress of the Brazilian Society of Microscopy and Microanalysis 2013

National Admission Exams for Academic Positions
Second place for Associate Professorship 2015
University of Campinas, São Paulo, Brazil.

Postdoctoral Fellowship
National Council for Scientific and Technological Development – CNPq 2013-2016
Yale University

Postdoctoral Fellowship
National Council for Scientific and Technological Development – CNPq 2013-2016
Yale University

RESEARCH GRANTS AND WRITING PROPOSAL

Under supervision of Prof. Marcos Tótola
Environmental and oil microbiology: biosurfactant production, bioremediation, and enhanced oil recovery.
Funding Authority for Studies and Projects (FINEP) and National Council for Scientific and Technological Development (CNPq).
Awarded: $2,000

Under the supervision of Prof. Lucia Durrant
Production, optimization, and physicochemical characterization of biosurfactants
National Council for Scientific and Technological Development – CNPq
Process: 141418/2005-2.
Awarded: $150,000/ 5 years

Under the supervision of Prof. Oswaldo Luiz Alves
Biological properties of graphene oxide functionalized with metallic nanoparticles and its effect on bacterial adhesion
National Council of Science and Development – CNPq
National Institute of Science and Technology in Complex Materials (INOMAT)
Awarded: $60,000/2 years

Under the supervision of Prof. Menachem Elimelech
Antimicrobial nanomaterials for the development of anti-biofouling surfaces
National Council for Scientific and Technological Development – CNPq
Science Without Borders Program
Process: 141418/2005-2
Awarded: $170,000/ 2 years

ACADEMIC AND SOCIAL IMPLICATION

Reviewer for Scientific Journals
Process Biochemistry, Journal of Nanoparticle Research, Bioresource Technology, Journal of Applied Microbiology, ACS Applied Materials and Interfaces, RSC Advances, Colloids and Surfaces B: Biointerfaces, Desalination, Energy and Fuels, Journal of Chemical Technology and Biotechnology

Volunteer Service
2005-2006 Chemistry tutor for high schools students
University of Campinas, São Paulo, Brazil
Organizing Committees
2005 - International Workshop on Environmental Microbiology: Opportunities in the South America, University of Campinas, Campinas, São Paulo, Brazil.

Invited Speaker
2007 - Environmental applications of biosurfactants, Federal Institute for Education, Science and Technology, Minas Gerais, Brazil.

2006 - Biosurfactants and their industrial applications, State University of Minas Gerais, Minas Gerais, Brazil.

Participation in Master and Doctorate Committees

- **Ph.D. committee**

2012 - Luana Pereira de Moraes: Production of γ-polyglutamic acid by *Bacillus velezensis* in a medium supplemented with glycerol and molasses, Department of Food Engineering, University of Campinas, São Paulo, Brazil.

- **Master committee**

2012 - Sheila de Oliveira: Biotransformation and biodegradation of D-limonene by a consortium of microorganisms, Department of Chemical Engineering, University of Campinas, São Paulo, Brazil.

2012 - Meire Brum Lima: Production of phytase by *Aspergillus* using solid-state fermentation: influence of mineral salts and nitrogen source, Department of Food Engineering, University of Campinas, São Paulo, Brazil.

2011 - Fernanda Franzoni Pescumo: Production, purification and chemical characterization of biosurfactants produced by *Gordonia amicalis*, Department of Food Science, University of Campinas, São Paulo, Brazil.

2011 – Sylvia Carolina Alcázar Alay: Production of lactic acid by *Lactobacillus delbrueckii* spp. *bulgaricus* in a medium containing sugar molasses, Department of Food Engineering, University of Campinas, São Paulo, Brazil.

REFEREED JOURNAL PUBLICATIONS

1. T.M. Lima, **A.F. Faria**, B.A. Leão, A.H. Mounteer, M.R. Tótola, A.C. Borges. Oil recovery from fuel oil storage tank sludge using biosurfactants. ***Journal and Biodegradation and Bioremediation***, 2:1-5, 2011.

2. **A.F. Faria**, D. Stéfani, G.N.O. Barbosa, B.G. Vaz and I.S. Silva, J.S. Garcia, M.R. Tótola, M.N. Eberlin, M. Grossman, O.L. Alves, L.R. Durrant. Production and structural characterization of surfactin (C_{14}/Leu_7) produced by *Bacillus subtilis* isolate LSFM-05 grown on raw glycerol from the biodiesel industry. ***Process Biochemistry***, 46:1951-1957, 2011.

3. **A.F. Faria**, D. Stéfani, B.G. Vaz and I.S. Silva, J.S. Garcia, M.N. Eberlin, M. Grossman, O.L. Alves, L.R. Durrant. Purification and structural characterization of fengycin homologues produced by *Bacillus subtilis* LSFM-05 grown on raw glycerol. ***Journal of Industrial Microbiology and Biotechnology***, 38:1951-1957, 2011.

4. I.S. Silva, C.R. Menezes, **A.F. Faria**, and J.G. Costa, S. Pepper, M. Britz, L.R. Durrant. Application of Molecular Fingerprinting of a PAH-contaminated growing in the presence of complex PAHs. ***Acta Scientarium: Biological Sciences***, 32:63-69, 2010.

5. R. C. Menezes, S. I. Silva, C. E. Pavarina, **A.F. Faria**, E. Franciscon, L.R. Durrant. Production of xylooligosaccharides from enzymatic hydrolysis of xylan by white-rot fungi *Pleurotus*. ***Acta Scientarium: Technology***, 32:37-42, 2010.

6. I.S. Silva, E.C. Santos, C.R. Menezes, **A.F. Faria**, E. Franciscon, M. Grossman, L.R. Durrant. Bioremediation of a polyaromatic hydrocarbon contamined soil by a native soil microbiota and bioaugmentation with isolated microbial consortia. ***Bioresource Technology***, 100:4669-4675, 2009.

7. **A.F. Faria**, D.S.T. Martinez, A.C.M. Moraes, M.E.M. Costa, E.B. Barros, A.G.S. Filho, A.J. Paula, O.L. Alves. Unveiling the role of oxidation debris on the surface chemistry of graphene through the anchoring of Ag nanoparticles. ***Chemistry of Materials***, 24:4080–4087, 2012.

8. **A.F. Faria**, D.S.T. Martinez, S.M.M. Meira, A.M. Moraes, A. Brandelli, A.G.S. Filho, O.L. Alves. Antibacterial and anti-adhesion activity of silver nanoparticles supported on graphene oxide sheets. ***Colloids and Surface: B***, 113:115-124, 2013.

9. **A.F. Faria**, A.C.M. Moraes, P.D Marcato, D.S.T. Martinez, N. Durán, A.G.S. Filho, A. Brandelli, O.L. Alves. Eco-friendly decoration of graphene oxide with biogenic silver nanoparticles: antibacterial and antibiofilm activity. ***Journal of Nanoparticle Research***, 16:1-16, 2014.

10. V.R. Coluci, D.S.T. Martinez, J.G. Honório, **A.F. Faria**, D.A. Morales, M.S. Skaf, O.L. Alves, G.A. Umbuzeiro. Noncovalent interaction with graphene oxide: the crucial role of oxidative debris. ***Journal of Physical Chemistry: C***, 118:2187-2193, 2014.

11. P.F. Andrade, **A.F. Faria**, D.S. Silva, J.A. Bonacin, M.C. Gonçalves. Structural and morphological investigations of β-cyclodextrin-coated silver nanoparticles. ***Colloids and Surface: B***, 118:289-297, 2014.

12. D.S.T Martinez, **A.F. Faria**, E. Berni, A.G.S.Filho, G. Almeida, A. Caloto-Oliveira, M.J. Grossman, L.R. Durrant, G. Umbuzeiro, O.L. Alves. Exploring the use of biosurfactants from *Bacillus subtilis* in bionanotechnology: A potential dispersing agent for carbon nanotube ecotoxicological studies. ***Process Biochemistry***, 49:1162-1168, 2014.

13. A.B. Jackisch-Matsuura, L.S. Santos, M.N. Eberlin, **A.F. Faria**, T. Matsuura, A.F. Faria, T. Matsuura, M.J. Grossman, L.R. Durrant. Production and characterization of surface active compounds from *Gordonia amicalis*. ***Brazilian Archives of Biology and Technology***, 57:138-144, 2014.

14. A.C.M. Moraes, P.F. Andrade, **A.F. Faria**, M.B. Simões, F.C.C.S. Salomão, E.B. Barros, M.C. Gonçalves, O.L. Alves. Fabrication of transparent and ultraviolet shielding composite films based on graphene oxide and cellulose acetate. ***Carbohydrate Polymers***, 123:217-227, 2015.

15. D.F. Domingos, **A.F. Faria**, R.S. Galaverna, M.N. Eberlin, P. Greenfield, T.D. Zucchi, I.S. Melo, N. Tran-Dinh, D. Midgley, V.M. Oliveira. Genomic and chemical insights into biosurfactant production by the mangrove-derived strain *Bacillus safensis* CCMA-560. ***Applied Microbiology and Biotechnology***, 99:3155-3167, 2015.

16. **A.F. Faria**, F. Perreault, E. Shaulsky, L.H.A. Chavez, M. Elimelech. Antimicrobial electrospun biopolymer nanofiber mats functionalized with graphene oxide-silver nanocomposites. ***ACS Applied Materials & Interfaces***, 7:12751–12759, 2015.

17. F. Perreault*, **A.F. Faria***, M. Elimelech. Environmental applications of graphene-based nanomaterials, ***Chemical Society Reviews***, 7:12751–12759, 2015. *equal contributions.

18. S.R-V. Castrillón, F. Perreault, **A.F. Faria**, M. Elimelech. Interaction of graphene oxide with bacterial cell membranes: insights from force spectroscopy. ***Environmental Science & Technology Letters***, 2:112-117, 2015.

19. P.F. Andrade, **A.F. Faria**, S.R. Oliveira, M.A.Z. Arruda, M.C. Gonçalves. Improved antibacterial activity of nanofiltration polysulfone membranes modified with silver nanoparticles. ***Water Research***, 81:333-342, 2015.

20. F. Perreault, **A.F. Faria**, S. Nejati, M. Elimelech. Antimicrobial properties of graphene oxide: why size matters. ***ACS Nano***, 9:7226-7236, 2015.

21. P.F. Andrade, **A.F. Faria**, F.J. Quites, S.R. Oliveira, O.L. Alves, M.A.Z. Arruda, M.C. Gonçalves. Inhibition of bacterial adhesion on cellulose acetate membranes containing silver nanoparticles. ***Cellulose***, 22:3895-3906, 2015.

22. A.M. Moraes, B.A. Lima, **A.F. Faria**, M. Brocchi, O.L. Alves. Graphene oxide-silver nanocomposite as a promising biocidal agent against methicillin-resistant *Staphylococcus aureus*. ***International Journal of Nanomedicine***, 10:6847–6861, 2015.

23. **A.F. Faria**, A.M. Moraes, P.F. Andrade, D.S. Silva, M.C. Gonçalves, O.L. Alves. Cellulose acetate membrane embedded with graphene oxide–silver nanocomposite and its ability to suppress microbial proliferation. ***Cellulose***, 24:781-796, 2016.

24. C. Liu, **A.F. Faria**, Jun Ma, and M. Elimelech. Mitigation of Biofilm Development on Thin-Film Composite Membranes Functionalized with Zwitterionic Polymers and Silver Nanoparticles, ***Environmental Science and Technology***, 51:182-191, 2016.

25. **A.F. Faria**, C. Liu, Ming Xie, François Perreault, Jun Ma and M. Elimelech. Thin-film composite forward osmosis membranes functionalized with graphene oxide–silver nanocomposites for biofouling control, ***Journal of Membrane Science***, 525:146-156, 2016.

26. **A.F. Faria**, F. Perreault, M. Elimelech. Elucidating the role of oxidative debris in the antimicrobial properties of graphene oxide. ***ACS Applied Nano Materials***, 1:1164-1174, 2018.

BOOK CHAPTERS

1. O.L. Alves, A.C.M. Moraes, M.B. Simões, L.C. Fonseca, R.N. Oliveira, R. Holtz, **A.F. Faria**. Nanomaterials. ***Nanomedicine and Nanotoxicology***. First edition, Springer New York, 1-29, 2014.

2. **A.F. Faria**, A.M. Moraes, O.L. Alves. Toxicity of nanomaterials to microorganisms: mechanisms, methods, and new perspectives. ***Nanomedicine and Nanotoxicology***. First edition, Springer New York, 363-405, 2014.

3. **A.F. Faria**. Microbes Decontamination from Water, ***Nanomaterials Applications for Environmental Matrices, Elsevier, 2019. To be published.***

PATENTS

1. O.L. Alves, **A.F. Faria**, A.M. Moraes, P.F. Andrade, M.C. Gonçalves. Production of antimicrobial polymeric membranes from cellulose acetate and silver nanoparticles supported on graphene oxide: the antimicrobial membranes and their use. Brazilian Agency of Intellectual Property (INPI)-BR10201302663.

2. A.M. Moraes, **A.F. Faria**, P.F. Andrade, M.C. Gonçalves, O.L. Alves. Production of transparent and UV-shielding thin-film composites based on graphene oxide and cellulose acetate: preparation and their applications. Brazilian Agency of Intellectual Property INPI-BR 0180004558.

PAPERS IN PREPARATION FOR SUBMISSION

1. **A.F Faria**, L. Durrant, M. Grossman: Environmental Applications of Biosurfactants: Behind or Beyond Expectations? In preparation to ACS Agricultural and Food Chemistry, 2019.

CONFERENCE PARTICIPATION

1. Workshop of National Institute of Science and Technology in Complex and Functional Materials (INOMAT), Campinas, São Paulo, Brazil, 2012.

2. Workshop of physics of graphene, Institute of Physics, University of Campinas, São Paulo, Brazil, 2011.

3. D.S.T. Martinez, **A.F. Faria**, G.S. Filho, G. Almeida, M. Eberlin, L.R. Durrant, G.A. Umbuzeiro, O.L. Alves. Biosurfactant from *Bacillus subtilis* as a stabilizing agent for carbon nanotubes ecotoxicity studies. Nanotoxicology, Edinburgh Meeting Program and Abstracts, Edinburgh, Scotland, 2010.

4. D.S.T. Martinez, **A.F. Faria**, G.S. Filho, G. Almeida, M. Eberlin, L.R. Durrant, G.A. Umbuzeiro, O.L. Alves. The impact of biosurfactants in the dispersion in aqueous solutions and ecotoxicity of carbon nanotubes to *Daphinia similis*. XVI Brazilian Congress of Nanotoxicology, Brazilian Society of Toxicology, Belo Horizonte, Minas Gerais, Brazil, 2009.

5. Silva, **A.F. Faria**, E.C. Santos, F.G. Dias, L.R. Durrant. Monitoring the performance of consortia and co-culture in the bioaugmentation of a polyaromatic hydrocarbons-contaminated soil microcosm. Second Brazilian Symposium on Petroleum Biotechnology, Natal, Rio Grande do Norte, Brazil. 2006.

6. **A.F. Faria**, I. Silva, M.L. Bonfá, L.R. Durrant. Application of extremophile and halophilic microorganisms in biotechnology. Second Brazilian Symposium on Petroleum Biotechnology, Natal, Rio Grande do Norte, Brazil, 2006.

7. **A.F. Faria**, N.M. Vieira, T.M.S. Lima, A.C. Borges, M.R. Tótola. Production of biosurfactants for *Bacillus subtilis* BBMA 155 in medium supplemented with iron. International Workshop of Environmental Microbiology, Campinas, São Paulo, Brazil, 2005.

8. R.C. Climaco, **A.F. Faria**, T.M.S. Lima, A.C. Borges, M.R. Tótola. Production of bacterial biosurfactants from petroleum derivatives. International Workshop of Environmental Microbiology, Campinas, São Paulo, Brazil, 2005.

9. G.M. Brito, **A.F. Faria**, T.M. Lima, M.R. Tótola. Production of biosurfactants by microorganisms isolated from environments contaminated with oil and hydrophobic substrates. XllII Conference of the Brazilian Chemical Society, Ouro Preto, Minas Gerais, Brazil, 2003.

10. G.M. Brito, **A.F. Faria**, T.M. Lima, M.R. Tótola. Influence of the iron concentration in the production of surfactin by *Bacillus subtilis*. XIII Symposium on Science, Viçosa, Minas Gerais, Brazil, 2003.

11. C.C. Aguiar, **A.F. Faria**, M.C.B. Pereira. Quantification of total protein and identification of heat shock proteins (HSP) from the livers of commercial chicken submitted to thermal stress. XI Symposium of Science, Viçosa, MG, Brazil, 2002.

RELEVANT EXPERTISE AND QUALIFICATIONS

1. Strong ten-years background in applied and food microbiology;

2. Solid experience in industrial biotechnology, synthesis of bio-products by bacteria and yeast, media formulation and optimization, and biological processes for the production of value-added chemicals;
3. Extensive experience working with sterile techniques, methods for microorganisms enumeration, protein purification, and methods to assess the microbial quality of food and pharmaceutical products;
4. Hands-on analytical chemistry, characterization of biological samples (proteins, small peptides, bioactive molecules, natural products, and raw materials) via high-performance liquid chromatography (HPLC), gas chromatography (GC), and UV-Vis spectroscopy,
5. Knowledge of synthesis and characterization of nanomaterials and nanostructured materials,
6. Fabrication of polymeric nanocomposites for environmental, medical, and pharmaceutical applications;
7. Materials characterization via spectroscopy and microscopy techniques such as UV-Vis spectroscopy, scanning and transmission electron microscopy (SEM, TEM), and Fourier transform infrared spectroscopy (FT–IR);
8. Preparation of coatings (eg. casting, spin coating, dip coating, layer-by-layer assembly, spray drying, chemical binding, evaporation) for the development of multi-functional surfaces;
9. Proficiency in colloidal and surface chemistry, surfactants and emulsions; contact angle and zeta potential measurements;
10. Technical proficiency in MS word, Excel, PowerPoint, Origin, ImageJ, design of experiments and acquisition and interpretation of analytical data.

REFERENCES

1. Prof. Menachem Elimelech, Department of Chemical and Environmental Engineering, Mason Laboratory, Yale University, Tel 203-432-2789, e-mail: menachem.elimelech@yale.edu

2. Prof. Lucia Regina Durrant, Food Science Department, Laboratory of Microbial Systematic and Physiology, University of Campinas, Tel +55 (19) 3521-2173 or +1 908-240-5751, e-mail: durrant@fea.unicamp.br or durrantclean@gmail.com (preferable)

3. Prof. Marcos Rogério Tótola, Microbiology Department, Laboratory of Environmental Biotechnology and Biodiversity, Federal University of Viçosa, Tel +55 (31) 3899-2903 e-mail: totola@ufv.br

4. Prof. Oswaldo Luiz Alves, Institute of Chemistry, Solid State Chemistry Laboratory, University of Campinas, Tel +55 (19) 3521-3147, e-mail: oalves@iqm.unicamp.br

PERSONAL INFORMATION

Citizenship: Brazil
Languages: Portuguese – native.
English – fluent (oral and written)
Spanish – reading, advanced comprehension.