

Overview

1. Personal data

Full Name

Vítor Manuel Delgado Alves

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Birth date

31-12-1975

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PORTUGAL

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Work address

CEER - Biosystems Engineering, Instituto Superior de Agronomia, Universidade Técnica de Lisboa
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2. Academic degrees

Year: 2004

Degree: DOUTORAMENTO

Final grade: Approved with unanimity

Degree granting institution Universidade Nova de Lisboa

School/College/Campus Faculdade de Ciências e Tecnologia

Thesis title Fruit juice concentration at low temperature using membrane contactors

Supervisor:

Co-supervisor:

Scientific area Chemical Engineering, Unit Operations and Transport Phenomena

Number of curricular years 0

Program title Doutoramento

Year: 1998

Degree: LICENCIATURA

Final grade: 16

Degree granting institution Universidade Nova de Lisboa

School/College/Campus Faculdade de Ciências e Tecnologia

Thesis title Project: Production process of trifluoraline

Supervisor:

Co-supervisor:

Scientific area Chemical Engineering

Number of curricular years 5

Program title Chemical Engineering

3. Previous activity and current status

Period	Position, professional rank or activity	Institution
From July 2009 to present	Assistant Researcher	CEER - Biosystems Engineering (Centro de Estudos de Engenharia Rural) Instituto Superior de Agronomia, Universidade Técnica de Lisboa
From January to June 2009	Assistant Researcher	Laboratório Associado para a Química Verde: Tecnologias e Processos Limpos, Centro de Química da Universidade do Porto (REQUIMTE/CEQUP)
From January 2006 to December 2008	Post-Doctorant	Instituto de Biologia Experimental e Tecnológica
From August 2004 to December 2005	Invited Assistant Professor	Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa
From February 1999 to February 2003	PhD student	Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa

4. Area of scientific activity

Chemical Engineering - Membrane Separation Processes

Food science and technology

Transport phenomena.

5. Present research interest

Domain of specialization

Membrane Separation Processes. Membrane Contactors. Application in fruit juice concentration. Modelling of mass and heat transfer.

Current research interests

Development of biodegradable films using biopolymers, either recovered from fruit residues and algae (e.g. carrageenan and pectin), or produced by fermentation processes (polyhydroxyalkanoates and polysaccharides). Preparation of films with enhanced water resistance. Characterization of the films and the study of their application in packaging (including active packaging for food products), solvent resistant membranes, mulching films and water soluble capsules for detergents.

Bioactive edible coatings for food products.

Recovery of bioactive compounds from industrial residues and renewable resources, and their stabilization for food applications.

Screening of the applications of microbial biopolymers, namely the applications of a new exopolysaccharide produced from glycerol-rich product from biodiesel industries. Rheology.

Membrane separation processes.

Other professional interests/activities

Technology transfer: collaboration with Industries, patent writing.

Experience in pilot scale operations:

- Processing of aqueous solutions by Ultrafiltration, Nanofiltration and Reverse Osmosis, for treatment of aqueous streams and/or recovery of valuable compounds.
- Water refrigeration in packed towers with forced convection.

Participation on science divulgation activities to the non-scientific community, such as ExpoFCT (FCT-UNL) and Dia da Química (DQ-FCT/UNL).

Initiation course to wine tasting, Associação Portuguesa de Jovens Enófilos (ISA/UTL), 2009.

Course of Apiculture, Unidade de Investigação de Sicultura e Produtos Florestais, INRB, I.P., 2009.

Member of the sensory panel of Prosense Lda.

6. Experience as scientific adviser

Co-Supervision of PhD Thesis:

Cristiana Torres. Valorization of Industrial By-Products for the Production of Biopolymers. FCT/UNL (on-going work). Supervised by Prof. Dra. Maria Reis.

Supervision of Master degree thesis:

Telma Rodrigues, "Preparation and characterization of biodegradable membranes", FCT/UNL, 2008

Co-Supervision of Master degree thesis:

Ana Rita Ferreira, "Preparation and characterization of films obtained from microbial biopolymers", FCT/UNL, (on-going work).

Co-Supervision of research studies of Ph. D students from other Universities:

Balazs Koroknai, University of Kaposvar, October 2003, "Fruit juice concentration by osmotic evaporation in membrane contactors".

Petra Cserjési, October 2007, University of Kaposvar, "Production of biohydrogen and recovery using membrane processes".

Supervision of undergraduate research projects:

"Biodegradable films for food products", Nuno Costa, 2005.

"Bioethanol recovery by membrane distillation", Ana Rita Lima, 2005.

"Determination of heat transfer correlations for the membrane distillation process using membrane contactors", Patrícia Tavares, 2004.

Supervision of the Sócrates-Erasmus Programme research project:

"Development of biodegradable films for food applications", 2004.

7. Participation in R&D projects

Participação em projectos de investigação (coordenador/membro de equipas)

Participation as a team member:

Biohydrogen production and recovery using membrane processes. Bilateral cooperation project ICCTI/OMFB Portugal- Hungary June 2006 – June 2008

Production of biopolymers from glycerol, a by-product from biodiesel production. Suported by ENERSIS, 2005-2008.

Fruit juice concentration by osmotic evaporation using membrane contactors. Bilateral cooperation project ICCTI/OMFB P9/01, Portugal- Hungary, January 2002 - January 2004. Coordinator: Prof. Isabel Coelho, FCT/UNL, Portugal.

Development of edible films for food products using low value natural resources, POCTI / EQU / 45595 / 2002; 2003-2006. Suported by Fundação para a Ciência e a Tecnologia.

8. Prizes and awards received

Year	Name of the prize or award	Promoting entity
2008	Solvay Prize of SHIC'08 – Solvay & Hovione Ideas Challenge 2008	Solvay and Hovione
1999	Best Chemical Engineering Student, 1997/1998.	Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa

9. Published works

Teses

Vítor Alves, "Fruit juice concentration by evaporation at low temperature using membrane contactors ", PhD Thesis, Universidade Nova de Lisboa, 2004.

Capítulos de livros

V.D. Alves, I.M. Coelho, Osmotic evaporation: A new process to obtain juice concentrates, em *Ingeniería de Alimentos. Nuevas Fronteras en el Siglo XXI*, Volume III, Editorial de la UPV (2003) 13.(I.S.B.N. 84-9705-399-0)

Artigos em revistas de circulação internacional com arbitragem científica

1. A. M. M. Sousa, V. D. Alves, S. Morais, C. Delerue-Matos, M. P. Gonçalves. Agar extraction from integrated multitrophic aquacultured *Gracilaria vermiculophylla*: evaluation of a microwave-assisted process using response surface methodology, accepted for publication in *Bioresource Technology*.
2. Vítor D. Alves, Filomena Freitas, Nuno Costa, Mónica Carvalheira, Rui Oliveira, Maria P. Gonçalves, Maria A. M. Reis. Effect of temperature on the dynamic and steady-shear rheology of a new microbial extracellular polysaccharide produced from glycerol byproduct, *Carbohydrate Polymers*, in press.
3. Freitas F., Alves V.D., Pais J., Carvalheira M., Costa N., Oliveira R., Reis M.A.M. Production of a New Exopolysaccharide by *Pseudomonas oleovorans* Grown on Glycerol. *Process Biochemistry*, in press.
4. Carla Brazinha, Vítor D. Alves, Rui M.C. Viegas, João G. Crespo. Aroma recovery by integration of sweeping gas pervaporation and liquid absorption in membrane contactors, *Separation and Purification Technology*, in press (doi:10.1016/j.seppur.2009.08.018).
5. Vítor D. Alves, Filomena Freitas, Cristiana A. V. Torres, Madalena Cruz, Rodolfo Marques, Christian Grandfils, M. P. Gonçalves, Rui Oliveira, Maria A. M. Reis. Rheological and morphological characterization of the culture broth during exopolysaccharide production by *Enterobacter* sp., *Carbohydrate Polymers*, in press.
6. Vítor D. Alves, Nuno Costa, Isabel Coelho, Barrier properties of biodegradable composite films based on kappa-carrageenan/pectin blends and mica flakes. *Carbohydrate Polymers*, 20 (2010) 269.
7. Freitas F., Alves V.D., Carvalheira M., Costa N., Oliveira R., Reis M.A.M., Emulsifying behaviour and rheological properties of the extracellular polysaccharide produced by *Pseudomonas oleovorans* grown on glycerol byproduct, *Carbohydrate Polymers* 78 (2009) 549.
8. Loic Hilliou, Filomena Freitas, Rui Oliveira, Maria A.M. Reis, David Lespineux, Christian Grandfils, Vítor D. Alves, Solution properties of an exopolysaccharide from a *Pseudomonas* strain obtained using glycerol as sole carbon source, *Carbohydrate Polymers*, 78 (2009) 526.
9. Filomena Freitas, Vítor D. Alves, Joana Pais, Nuno Costa, Cristina Oliveira, Luis Mafra, Loic Hilliou, Rui Oliveira, Maria A.M. Reis, Characterization of an extracellular polysaccharide produced by a *Pseudomonas* Strain grown on glycerol, *Bioresource Technology*,100(2) (2009) 859.
10. L. Neves, N. Nemestóthy, V. D. Alves, P. Cserjési, K. Bélafi-Bakó, I.M. Coelho, Separation of biohydrogen by supported ionic liquid membranes, *Desalination*, 240 (2009) 311.
11. V.D. Alves, I.M. Coelho, Study of mass and heat transfer in the osmotic evaporation process using hollow fibre membrane contactors, *J. Membr. Sci*, 289 (2007) 249.
12. Vítor Alves, Nuno Costa, Loic Hilliou, Fábio Larotonda, Maria Gonçalves, Alberto Sereno, Isabel Coelho, Design of biodegradable composite films for food packaging, *Desalination*, 199 (2006) 331.
13. V.D. Alves, I.M. Coelho, Orange juice concentration by osmotic evaporation and membrane distillation: a comparative study, *Journal of Food Engineering*, 74 (2006) 125.
14. V. D. Alves, B. Koroknai, K. Bélafi-Bakó, I. M. Coelho, Using membrane contactors for fruit juice concentration, *Desalination*, 162 (2004) 263.
15. V.D. Alves, I.M. Coelho, Effect of membrane characteristics on mass and heat transfer in the osmotic evaporation process, *J. Membr. Sci*, 228 (2004) 159.
16. V.D. Alves, I.M. Coelho, Mass transfer in osmotic evaporation: effect of process parameters, *J. Membr. Sci*. 208 (2002) 171.
17. Alves V.D., Freitas F., Oliveira R., Gonçalves M.P., Reis M.A.M. Dynamic and steady-shear rheology of a bacterial extracellular polysaccharide produced from glycerol byproduct: effect of concentration, pH and ionic strength. (in preparation).

Publicações em actas de encontros científicos

Papers in Conference Proceedings: 15

1. Freitas F., Alves VD, Torres C., Carvalheira M, Costa N., Oliveira R., Reis M.A.M. (2009). New value-added bacterial extracellular polysaccharide produced from glycerol byproduct Book of Abstracts of EPNOE 2009 - POLYSACCHARIDES AS A SOURCE OF ADVANCED MATERIALS, Turku/Åbo, Finland.
2. Freitas F., Alves VD, Torres C., Carvalheira M, Costa N., Oliveira R., Reis M.A.M. (2009). Conversion of glycerol byproduct into value-added bacterial polysaccharide. Proceedings of INTB/INPB 2009 – The 6th International Conference on textile and Polymer Biotechnology / COST Actions 868 and MP0701, Ghent, Belgium.
3. Freitas F., Alves V.D., Torres C., Carvalheira M., Costa N., Oliveira R., Reis M.A. (2009) Production of Value-Added Bacterial Polysaccharides from Glycerol Byproduct from the Biodiesel Industry. Book of Abstracts of the European Polymer Congress (EPF'09), Graz, Austria, page 179.
4. Freitas F., Pais J., Alves V.D., Carvalheira M., Costa N., Oliveira R., Reis M.A.M. (2008) Conversion of Glycerol-rich Product (GRP) into Biopolymers. Clean Technology 2008 – CTSI Clean Technology & Sustainable Industries Conference & Trade Show, Boston, USA.
5. Freitas F., Pais J., Alves V.D., Costa N., Carvalheira M., Oliveira R., Reis M.A.M. (2008) Production of biopolymers by *Pseudomonas* Strain grown on Glycerol-rich Product. Book of Abstracts of the International Workshop on Biomacromolecules 2008 – Renewable, Degradable and Biomedical polymers, Stockholm, Sweden.
6. Freitas F., Alves V.D., Pais J., Costa N., Carvalheira M., Oliveira R., Reis M.A.M. (2008) Biopolymers production by microbial fermentation on Glycerol-rich Product. Book of Abstracts of the 10th International Chemical and Biological Engineering Conference – Chempor 2008, Braga, Portugal, 199-200 (ISBN 978-972-97810-4-9).

10. Communications in scientific meetings

Comunicações orais por convite

Invited communications: 2

1. Freitas F., Alves V.D., Torres C., Carvalheira M., Costa N., Oliveira R., Reis M.A.M. Production of Value-Added Bacterial Polysaccharides from Glycerol Byproduct from the Biodiesel Industry. European Polymer Congress (EPF'09), Graz, Austria, 12-17 July 2009
2. V.D. Alves, I.M. Coelho, Alternative membrane processes for fruit juice concentration, ICEF 10, Vina del Mar (Chile), April 2008

Outras comunicações orais

Other oral communications: 16

1. Freitas F., Alves VD, Torres C., Carvalheira M, Costa N., Oliveira R., Reis M.A.M. Conversion of glycerol byproduct into value-added bacterial polysaccharide. INTB/INPB 2009 – The 6th International Conference on textile and Polymer Biotechnology / COST Actions 868 and MP0701, 23-25 September 2009, Ghent, Belgium.
2. Freitas F., Alves VD, Torres C., Carvalheira M, Costa N., Oliveira R., Reis M.A.M. New value-added bacterial extracellular polysaccharide produced from glycerol byproduct. POLYSACCHARIDES AS A SOURCE OF ADVANCED MATERIALS, 21-24 September 2009, Turku/Åbo, Finland.
3. Filomena Freitas, Vítor D. Alves, Joana Pais, Nuno Costa, Mónica Carvalheira, Rui Oliveira, Maria A. M. Reis, of Biopolymers production by microbial fermentation on Glycerol-rich Product, Chempor 2008, Braga (Portugal), September, 2008.
4. Filomena Freitas, Joana Pais, Vítor D. Alves, Nuno Costa, Mónica Carvalheira, Rui Oliveira, Maria A. M. Reis, Production of biopolymers by Pseudomonas Strain grown on Glycerol-rich Product, Biomacromolecules 2008, Stockholm (Sweeden), June 1-4 2008.
5. Filomena Freitas, Joana Pais, Vítor D. Alves, Mónica Carvalheira, Nuno Costa, Rui Oliveira, Maria A. M. Reis, Conversion of Glycerol-rich Product (GRP) into Biopolymers, Clean Technology 2008, Boston (USA), 1-5 June 2008.
6. Vítor V. D. Alves, Filomena Freitas, Loic Hilliou, Joana Pais, Nuno Costa, Mónica Carvalheira, Isabel M. Coelho, Rui Oliveira, Maria A.M Reis, New microbial Galactose-rich Polysaccharide produced from Glycerol: Properties and applications, I-SUP – Innovation for Sustainable Production 2008, Bruges, April 22-25, 2008.
7. V. D. Alves, L. Hilliou, F. D. S. Larotonda, M. P. Gonçalves, A. M. Sereno, I. M. Coelho, Biodegradable composite films for food packaging, BIOPOL - 2007: 1st International conference on biodegradable polymers and sustainable composites, Alicante (Spain), October 2007
8. V. D. Alves, F. Freitas, F.D.S. Larotonda, L. Hilliou, N. Costa, I. M. Coelho, R. Oliveira, M.A.M. Reis, Biodegradable films from a galactose-rich polysaccharide produced by a Pseudomonas strain from glycerol, BIOPOL - 2007: 1st International conference on biodegradable polymers and sustainable composites, Alicante (Spain), October 2007
9. V. D. Alves, L. Hilliou, F. D. S. Larotonda, M. P. Gonçalves, A. M. Sereno, I. M. Coelho, Biodegradable composite films from polysaccharides for food packaging, Permea 2007, Siófok (Hungary), September 2007.
10. Vítor Alves, Nuno Costa, Loic Hilliou, Fábio Larotonda, Maria Gonçalves, Alberto Sereno, Isabel Coelho, "Design of biodegradable composite films for food packaging", Euromembrane 2006, Giardini Naxos, Taormina (Messina) Italy, 24-28 September 2006.
11. V.D. Alves, I.M. Coelho, Concentration of fruit juices by osmotic evaporation and membrane distillation: a comparative study" NAMS 2006, Chicago (USA), May 2006.
12. V.D. Alves, I.M. Coelho, "Effect of hydrodynamic conditions in osmotic evaporation using membrane contactors", 9th International Chemical Engineering Conference (Chempor 2005), September 2005.
13. V.D. Alves, I.M. Coelho, "A Comparative Study of Fruit Juice Concentration by Osmotic Evaporation and Membrane Distillation", 5º Congresso Ibero-americano em Ciência e Tecnologia de Membranas (CITEM), Valencia (Espanha), July 2005.
14. V.D. Alves, I.M. Coelho, "Fruit juice concentration by osmotic evaporation using hollow-fibre membrane contactors", 4º Congresso Ibero-americano em Ciência e Tecnologia de Membranas (CITEM), Florianópolis (Brasil), July 2003.
15. V. D. Alves, B. Koroknai, K. Bélafi-Bakó, I. M. Coelho, "Using membrane contactors for fruit juice concentration", PERMEA 2003, Tatranské Matliare (Eslováquia), September 2003.
16. V.D. Alves, I.M. Coelho, "Influence of operating parameters on the osmotic evaporation process", III Congresso Ibero-Americano em Ciência e Tecnologia de Membranas, Aveiro (Portugal), September 2001.

Comunicações em painel ("poster")

Posters in conferences: 18

1. A. M.M.Sousa, V. D. Alves, S. Morais, C. Delerue-Matos, M. P.Gonçalves. Development and optimization of an eco-friendly agar extraction process from the red seaweed Gracilaria vermiculophylla, Sixth European Conference on Marine Natural Products (6th ECMNP), Porto, Portugal, July 2009.
2. V. D. Alves, N. Costa, I. M. Coelho, Barrier Properties of Biodegradable Composite Films, EWM - Engineering With Membranes 2008, Vale de Lobo (Portugal) May 2008
3. V. D. Alves, I. M. Coelho, Transport Properties of Biodegradable Composite Films for Food Packaging, ICEF 10, Vina del Mar (Chile), April 2008.
4. V. D. Alves, I. M. Coelho, Enhancing barrier properties of polysaccharide films using mica particles, New materials for membranes GKSS 2007, Geesthacht (Germany), June 2007.
5. S. CARMALI; V. D. ALVES; I. M. COELHO; A. M. LOURENÇO; L. M. FERREIRA, Valorization of the Alkaloids in Leaching Waters of Lupinus Albus, 7ENQO, 7th National Meeting of Organic Chemistry, Lisbon, Portugal, Julho 2007.
6. N. NEMESTÓTHY; V. D. ALVES; L. NEVES; P. CSERJÉSI, K. BELÁFI-BAKÓ; I. M. COELHO, Separation of Biohydrogen by Supported Ionic Liquid Membranes, PERMEA 2007, Membrane Science and Technology of Visegrad Countries, Siófok, Hungary, Setembro, 2007.
7. Filomena Freitas, Joana Pais, Cristina Oliveira, Vítor Alves, Rui Oliveira, Maria A. M. Reis, Co-Production

11. Communications in scientific meetings

Language	Reading	Writing	Conversation
English	Very good	Very good	Very good
French	Good	Basic	Basic
Spanish	Good	Basic	Basic