# Curriculum vitae


Surname: **Rodriguez Banga** Name: **Julio**
DNI: **34949652W** Date of birth: **17/12/1964**
Nationality: **Spanish**


## Current Position

**Research Professor** (Profesor de Investigación) of CSIC
***Spanish Council for Scientific Research (CSIC)***

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(Bio)Process Engineering Group, Instituto de Investigaciones Marinas (IIM),
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## Academic background

Ph.D. Chemical Engineering. (Universidad de Santiago de Compostela, Spain) September 1991
M.Sc. Industrial Chemistry (Universidad de Santiago de Compostela, Spain) June 1987

## Previous research and academic positions

Career/Employment:
April 2009-present: Research Professor (Profesor de Investigación) of CSIC
Sept. 2005-April 2009t: SCIENTIFIC RESEARCHER, C.S.I.C. (Spanish Council for Scientific Research)
May 1995 – Sept. 2005: TENURED SCIENTIST, C.S.I.C. (Spanish Council for Scientific Research)
October 1992 - April 1995: ASSISTANT PROFESSOR OF CHEMICAL ENGINEERING, Department of Chemical Engineering, Universidad de Vigo, Spain.

Research stays at foreign institutions:
Dr. Banga has received several fellowships from the Spanish Government for research stays at:

- ATOCHEM, Lyon, France (summer 1987), as IAESTE fellow
- Oregon State University, USA (Oct-Dec 1990)
- University of California at Davis, USA (Feb.-Oct. 1992), as postdoctoral researcher
- University of Pennsylvania, USA (summer 1994), as visiting professor
- M.I.T., USA (autumn 1995), as visiting researcher

## Research projects

*Selection of projects where Dr Banga has been the principal investigator (PI):*

"NICHE: Network for integrated cellular homeostasis". EU Marie-Curie ITN, FP7-PEOPLE-2011 ITN Grant number 289384. From 01/01/2012 to 31/12/2015

"BIOPREDYN: From data to models: new bioinformatics methods and tools for data-driven predictive dynamic modelling in biotechnological applications". EU project FP7-KBBE-2011-5 Grant number 289434. From 01/10/2011 to30/09/2014

"MULTISCALES: Inference, monitorization, optimization and control: from cells to bioreactors. MICCIN DPI2011-28112-C04-03. January-2012 to Dec-2014.

"BIOREDES: Mathematical modelling of complex reaction networks: new methods based on global optimization". CSIC intramural project ref 201170E018

“MULTISYSBIO: Multi-scale modelling approach to systems biology: application to bioprocess monitoring, optimization and control”. MICCIN DPI2008-06880-C03-02. Enero 2009-Dic 2011.

“BASYSBIO: Towards an understanding of dynamic transcriptional regulation at global scale in bacteria: a systems biology approach”. UE IP FP6-037469. Nov. 2006-Nov. 2010.

"SYSMO: Ion and solute homeostasis in enteric bacteria: integrated view generated from the interface of modeling and biological experimentation". MEC GEN2006-27747-E/SYS. Period from 1-March-2007 to 28-Feb-2010.

"PRISM: Towards knowledge-based processing systems". UE RTN FP6-51223 (Research Training Network). IP: Julio Rodríguez Banga. Periodo: 01/12/2004 hasta: 31/12/2008

"COSBICS: Computational systems biology of cell signaling". UE STREP FP6-512060. IP: Julio Rodríguez Banga. Period: 01/01/2005 hasta: 31/12/2007

"Optimal control of microwave combination ovens for food heating". Comunidad Europea, proyecto FAIR-CT96-1192. *IP:* Dr. Julio R. Banga. *Period:* Oct 1996- Dec 1999.

"Entorno Virtual para el Sector Alimentario". Ministerio de Ciencia y Tecnología PROFIT (FIT-070000-2000-404). IP: Dr. Julio Rodriguez Banga. Period: Nov 2000- Nov 2003

"CALISO: Conservación de Alimentos: Nuevas Metodologías y Herramientas Avanzadas para su Simulación, Optimización y Control". Plan Nacional de I+D+I. (AGL2001-2610-C02-02). IP: Dr. Julio Rodriguez Banga. Period: Dec 2001- Dec 2003

"FIPSEE: Food industry problem-solving electronic environment". UE IST-2001-35121. IP: Julio R. Banga Period : 01/04/2001 -01/04/2002

"FOODPRO: Ohmic heating for food processing". UE COOP-CT-2003-508374. March 2004-March 2006.

"MODISTER: Nuevos métodos para la modelizacion y diseño de procesos". Plan Nacional de I+D+I AGL2004-05206-C02-01/ALI IP: Dr. Julio Rodríguez Banga. Periodo: 28/12/2004 to 27/12/2007

*Selection of projects where Dr Banga has participated:*

DOC-PRO: Diseño, Optimización y Control Integral Avanzado de Procesos Químicos: Desarrollo y Aplicaciones. Plan Nacional de I+D+I. (PPQ2001-3643). IP: Dr. Antonio Alvarez Alonso. Period: Dec 2001- Dec 2003

SUPERA: Control supervisorio integral avanzado del procesamiento térmico. Xunta de Galicia (PGIDIT) empresa Alimentos Arosa (contrato). IP: Dr. Antonio Alvarez Alonso . Period: Oct 2002 – Oct 2005

C-PROS: Control Integral predictivo de Procesos en operación semicontinua: Identificación Estable y Robusta. Plan Nacional de I+D+I. DPI2004-07444-C04-03 : IP: Dr. Antonio Alvarez Alonso. Period: 13/12/2004 to 12/12/2007

Planta multipropósito para la valorización integral de residuos pesqueros de Galicia: Planificación de la producción. Xunta de Galicia. IP: Dr. Antonio Alvarez Alonso Period: 01/10/2004 to 30/09/2007

Desarrollo de herramientas de análisis dinámico, control avanzado y optimización de procesos sobre un entorno de simulación interactivo. MEC PTR1995-0884-OP-02-01. IP: Antonio Alvarez Alonso. Period: 11/04/2005 hasta: 10/04/2007

BE-FAIR: Benign and environmentally friendly fish processing practices to provide added value and innovative solutions for a responsible and sustainable management of fisheries. EU LIFE-environment LIFE05 ENV/E000267. IP (coordinador): Antonio Alvarez Alonso. Period: 01/11/2005 to 01/11/2008

CAFE: Computer Aided Food Process Engineering. European Union FP7-KBBE-2007-1 (Prop number: 212754). IP: Antonio A. Alonso. Period: march 2008-March 2011

## Publications

Google Scholar profile at http://scholar.google.es/citations?user=ycKDH18AAAAJ&hl=en
Full list of papers available at http://www.iim.csic.es/~julio/publications.html

### *Selected research papers (last 5 years)*

BALSA-CANTO E, BANGA JR, EGEA JA, VILLAVERDE AF, DE HIJAS-LISTE GM. 2012. Global optimization in systems biology: stochastic methods and their applications. Advances in Experimental Medicine and Biology, 736: 409-425.

HIGUERA C, VILLAVERDE AF, BANGA JR, ROSS J, MORÁN F. 2012. Multi-criteria optimization of regulation in metabolic networks. PLoS ONE, 7 (7): e41122.

OTERO-MURAS I, BANGA JR, ALONSO AA. 2012. Characterizing multistationarity regimes in biochemical reaction networks. PLos ONE, 7 (7): e39194.

RODRÍGUEZ-FERNÁNDEZ M, BANGA JR, DOYLE FJ. 2012. Novel global sensitivity and analysis methodology accounting for the crucial role of the distribution of input parameters: application to systems biology models. Int. J. of Robust and Nonlinear Control, 22 (10): 1082-1102.

SZEDERKENYI G, BANGA JR, ALONSO AA. 2012. CRNreals: a toolbox for distinguishability and identifiability analysis of biochemical reaction networks. Bioinformatics,28 (11): 1549-1550.

VILAS C, BALSA-CANTO E, GARCÍA S, BANGA JR, ALONSO AA. 2012. Dynamic optimization of distributed biological systems using robust and efficient numerical techniques. BMC systems biology, 6: 79.

VILLAVERDE AF, EGEA JA, BANGA JR. 2012. A cooperative strategy for parameter estimation in large scale systems biology models . BMC Systems Biology, 6: 75.

Szederkenyi G., Banga J.R., Alonso A.A. (2011) Inference of complex biological networks: distinguishability issues and optimization-based solutions. BMC Systems Biology 5:177.

Kothare, M.V. and Banga, J.R. (2011) Editorial - DYCOPS and CAB Special Issue. Journal of Process Control 21(10):1359-1360.

Oana Chis, Julio R. Banga, and Eva Balsa-Canto (2011) Structural Identifiability of Systems Biology Models: A Critical Comparison of Methods. PLoS ONE 27(18):2610-2611.

Oana Chis, Julio R. Banga, and Eva Balsa-Canto (2011) GenSSI: a software toolbox for structural identifiability analysis of biological models. Bioinformatics 27(18):2610-2611.

Villaverde, A., J. Ross, F. Morán, E. Balsa-Canto, J.R. Banga (2011) Use of a Generalized Fisher Equation for Global Optimization in Chemical Kinetics. Journal of Physical Chemistry A115(30):8426-8436.

Balsa-Canto, E. and Julio R. Banga (2011) AMIGO, a toolbox for Advanced Model Identification in systems biology using Global Optimization. Bioinformatics 27(16):2311-2313.

Balsa-Canto, E., J.R. Banga, J.A. Egea, A. Fernandez-Villaverde and G.M. de Hijas-Liste (2011) Global optimization in systems biology: stochastic methods and their applications. I.I. Goryanin and A.B. Goryachev (eds.), Advances in Systems Biology, Advances in Experimental Medicine and Biology 736, accepted, in press.

De Hijas-Liste, G. M., Balsa-Canto, E., & Banga, J. R. (2011) Prediction of activation of metabolic pathways via dynamic optimization. Computer Aided Chemical Engineering 29:1386-1390.

Rodriguez-Fernandez, M., Cardelle-Cobas, A., Villamiel, M., & Banga, J. R. (2011) Detailed kinetic model describing new oligosaccharides synthesis using different ß-galactosidases. Journal of Biotechnology 153(3-4):116-124.

Nicolaï, B. M., Egea, J. A., Scheerlinck, N., Banga, J. R., & Datta, A. K. (2011) Fuzzy finite element analysis of heat conduction problems with uncertain parameters. Journal of Food Engineering 103(1):38-46.

Ross, J., A.F. Villaverde, J.R. Banga, S. Vazquez, F. Moran (2010) A generalized Fisher equation and its utility in chemical kinetics. Proc. Natl. Acad. Sci. USA 107(29):12777-12781.

Georgiadis, Michael C., Julio R. Banga and Efstratios N. Pistikopoulos (Eds) (2010) DYNAMIC PROCESS MODELLING. Wiley-VCH, Weinheim, ISBN-10: 3-527-31684-1.

Vera, J., O. Rath, E. Balsa-Canto, J. R. Banga, W. Kolch and Olaf Wolkenhauer (2010) Investigating dynamics of inhibitory and feedback loops in ERK signalling using power-law models. Mol. BioSyst. 6:2174–2191.

Rodriguez-Fernandez, M. and J.R. Banga (2010). SensSB: A software toolbox for the development and sensitivity analysis of systems biology models. Bioinformatics 26(13):1675-1676.

Sendin, J.O.H., O. Exler & J.R. Banga (2010). Multi-objective mixed integer strategy for the optimisation of biological networks. IET Systems Biology 4(3):236-248.

Balsa-Canto, E., Alonso, A. A., & Banga, J. R. (2010). An iterative identification procedure for dynamic modeling of biochemical networks. BMC Systems Biology 4:11.

Egea, J.A., Martí, R., & Banga, J.R. (2010). An evolutionary method for complex-process optimization. Computers and Operations Research 37(2):315-324.

Balsa-Canto E., J.R. Banga and M.R. García (2010). Dynamic Model Building Using Optimal Identification Strategies, with Applications in Bioprocess Engineering. In "Dynamic Process Modelling", Banga J.R., Georgiadis M., Pistikopoulos E. (eds.), Wiley-VCH, Weinheim..

Balsa-Canto, E., Banga, J.R. (2010). Computational Procedures for Model Identification. In "Systems Biology for Signaling Networks", Sangdun Choi (Ed.), (pp: 111-138), Springer. ISBN: 978-1-4419-5796-2.

Sendin, J. O. H., Alonso, A. A., & Banga, J. R. (2010). Efficient and robust multi-objective optimization of food processing: A novel approach with application to thermal sterilization. Journal of Food Engineering 98(3):317-324.

Otero, I, J. R. Banga, A. A. Alonso (2009) Exploring multiplicity conditions in enzymatic reaction networks. Biotechnology Progress 25(3):619-631.

Hirmajer, T., E. Balsa-Canto and J. R. Banga (2009) DOTcvpSB, a software toolbox for dynamic optimization in systems biology. BMC Bioinformatics 10:199.

Rodriguez-Fernandez, M., & Banga, J. R. (2009). Global sensitivity analysis of a biochemical pathway model. Advances in Soft Computing 49, pp. 233-242

Sendín, J.O.H., Alonso, A. A., & Banga, J. R. (2009). Multi-objective optimization of biological networks for prediction of intracellular fluxes. Advances in Soft Computing 49, pp. 197-205.

Sendín, J. -. H., Banga, J. R., & Csendes, T. (2009). Extensions of a multistart clustering algorithm for constrained global optimization problems. Industrial and Engineering Chemistry Research 48(6):3014-3023.

Schlüter, M., Egea, J.A., Antelo, L.T., Alonso, A.A., & Banga, J.R. (2009). An extended ant colony optimization algorithm for integrated process and control system design. Industrial and Engineering Chemistry Research 48(14):6723-6738.

Egea, J.A., Balsa-Canto, E., García, M.G., & Banga, J.R. (2009). Dynamic optimization of nonlinear processes with an enhanced scatter search method. Industrial and Engineering Chemistry Research 48(9):4388-4401.

Egea, J. A., Vazquez, E., Banga, J. R., & Martí, R. (2009). Improved scatter search for the global optimization of computationally expensive dynamic models. Journal of Global Optimization 43(2-3):175-190.

Schlüter, M., J. A. Egea, J. R. Banga (2009) Extended ant colony optimization for non-convex mixed integer nonlinear programming. Computers & Operations Research 36(7):2217-2229.

Antelo, L., O. Exler, J. R. Banga, A. A. Alonso (2008) Optimal Tuning of Thermodynamic-Based Decentralized PI Control Loops: Application to the Tennessee Eastman Process. AIChE J. 54(11), 2904-2924.

García, M. R., C. Vilas, J. R. Banga, A. A. Alonso (2008) Exponential Observers for Distributed Tubular (Bio)Reactors. AIChE J 54(11), 2943-2956..

Banga, J.R. and E. Balsa-Canto (2008) Parameter estimation and optimal experimental design. Essays in Biochemistry 45:195–210.

Banga, J.R. (2008) Optimization in computational systems biology. BMC Systems Biology, 2:47.

Balsa-Canto, E., M. Peifer, J.R. Banga, J. Timmer, C. Fleck (2008) Hybrid optimization method with general switching strategy for parameter estimation. BMC Systems Biology, 2:26.

Balsa-Canto, E., A.A. Alonso and J.R. Banga (2008) Computational Procedures for Optimal Experimental Design in Biological Systems. IET Systems Biology 2(4):163-172.

Vilas, C., M.R. Garcia, J.R. Banga, A.A. Alonso (2008) Robust Feed-Back Control of Travelling Waves in a Class of Reaction-Diffusion Distributed Biological Systems. Physica D 237(18):2353-2364.

Csendes, T., L. Pal, J.O.H. Sendin, J.R. Banga (2008) The GLOBAL Optimization Method Revisited. Optimization Letters 2(4):445-454.

Antelo, L.T., J.R. Banga and A.A. Alonso (2008) Hierarchical design of decentralized control structures for the Tennessee Eastman Process. Computers & Chemical Engineering 32(9):1995-2015.

Exler, O., L.T. Antelo, J.A. Egea, A.A. Alonso and J.R. Banga (2008) A Tabu search-based algorithm for mixed-integer nonlinear problems and its application to integrated process and control system design. Computers & Chemical Engineering, 32(8):1877-1891.

Balsa-Canto, E., A.A. Alonso and J.R. Banga (2008) Computing optimal dynamic experiments for model calibration in predictive microbiology. Journal of Food Process Engineering, 31:186-206.

Banga, J.R., E. Balsa-Canto, and A.A. Alonso (2008) Quality and Safety Models and Optimization as Part of Computer-Integrated Manufacturing. Comprehensive Reviews in Food Science and Food Safety, 7 (1):168-174.

Scheerlinck, N., N.H. Berhane, C.G. Moles, J.R. Banga, B.M. Nicolaï (2008) Optimal dynamic heat generation profiles for simultaneous estimation of thermal food properties using a hotwire probe: computation, implementation and validation. Journal of Food Engineering, 84(2):297-306.

Egea, J.A., Vries, D., Alonso, A.A. and Banga, J.R. (2007) Global optimization for integrated design and control of computationally expensive process models . Industrial and Engineering Chemistry Research 46(26):9148-9157. (abstract)

Vera, J., E. Balsa-Canto, P. Wellstead, J. R. Banga and O. Wolkenhauer (2007) Power-Law Models of Signal Transduction Pathways. Cellular Signalling 19(7):1531-1541. (abstract)

Garcia, M.R., C. Vilas, J. R. Banga and A. A. Alonso (2007) Optimal Field Reconstruction of Distributed Process Systems from Partial Measurements. Industrial & Engineering Chemistry Research 46(2):530-539. (abstract)

Vilas, C., M.R. García, J.R. Banga and A.A. Alonso (2007) Robust feed-back control of distributed chemical reaction systems. Chemical Engineering Science 62(11):2941-2957. (abstract)

Antelo, L.T., I. Otero-Muras, J. R. Banga and A. A. Alonso (2007) A Systematic Approach to Plant-Wide Control Based On Thermodynamics. Computers & Chemical Engineering 31(5-6):677-691. (abstract)

Egea, J.A., M. Rodriguez-Fernandez, J. R. Banga and R. Martí (2007) Scatter Search for chemical and bioprocess optimization. Journal of Global Optimization 37(3):481-503. (abstract)

Balsa-Canto, E., M. Rodriguez-Fernandez and J.R. Banga (2007) Optimal design of dynamic experiments for improved estimation of kinetic parameters of thermal degradation. Journal of Food Engineering 82(2):178-188. (abstract)

Rodríguez-Fernández, M., E. Balsa-Canto, J. A. Egea and J. R. Banga (2007) Identifiability and Robust Parameter Estimation in Food Process Modeling: Application to a Drying Model. Journal of Food Engineering, 83(3):374-383. (abstract)

Antelo, L.T., I. Otero-Muras, J. R. Banga and A. A. Alonso (2007) La Teoría de Redes en Ingeniería de Control: Aplicación al Análisis Dinámico y al Control de Procesos. Revista Iberoamericana de Automática e Informática Industrial (RIAI) 4(1):24-34. (pdf)

Egea, JA; Vries, D; Alonso, AA; Banga, JR. 2007. Global optimization for integrated design and control of computationally expensive process models. INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH 46 (26): 9148-9157.

Garcia, M.R., C. Vilas, J. R. Banga and A. A. Alonso (2007) Optimal Field Reconstruction of Distributed Process Systems from Partial Measurements. Industrial & Engineering Chemistry Research 46(2):530-539.

Vilas, C., M.R. García, J.R. Banga and A.A. Alonso (2007) Robust feed-back control of distributed chemical reaction systems. Chemical Engineering Science 62(11):2941-2957.

Antelo, L.T., I. Otero-Muras, J. R. Banga and A. A. Alonso (2007) A Systematic Approach to Plant-Wide Control Based On Thermodynamics. Computers & Chemical Engineering 31(5-6):677-691.

Vera, J., E. Balsa-Canto, P. Wellstead, J. R. Banga and O. Wolkenhauer (2007) Power-Law Models of Signal Transduction Pathways. Cellular Signalling 19(7):1531-1541.

Egea, J.A, E. Vazquez, J.R. Banga, R. Martí (2007) Improved scatter search for the global optimization of computationally expensive dynamic models. Journal of Global Optimization, accepted, in press.

Egea, J.A., M. Rodriguez-Fernandez, J. R. Banga and R. Martí (2007) Scatter Search for chemical and bioprocess optimization. Journal of Global Optimization 37(3):481-503.

Balsa-Canto, E., M. Rodriguez-Fernandez and J.R. Banga (2007) Optimal design of dynamic experiments for improved estimation of kinetic parameters of thermal degradation. Journal of Food Engineering 82(2):178-188.

Rodríguez-Fernández, M., E. Balsa-Canto, J. A. Egea and J. R. Banga (2007) Identifiability and Robust Parameter Estimation in Food Process Modeling: Application to a Drying Model. Journal of Food Engineering, 83(3):374-383.

Antelo, L.T., I. Otero-Muras, J. R. Banga and A. A. Alonso (2007) La Teoría de Redes en Ingeniería de Control: Aplicación al Análisis Dinámico y al Control de Procesos. Revista Iberoamericana de Automática e Informática Industrial (RIAI) 4(1):24-34.

García, M.-S.G., E. Balsa-Canto, A. Vande Wouwer and J.R. Banga (2006) Dynamic optimization of a Simulated Moving Bed (SMB) chromatographic separation process. Industrial & Engineering Chemistry Research 45(26): 9033-9041.

Rodriguez-Fernandez, M., J. A. Egea and J. R. Banga (2006) Novel Metaheuristic for Parameter Estimation in Nonlinear Dynamic Biological Systems. BMC Bioinformatics 7:483.

Sendín, J.O.H., I. Otero, A. A. Alonso and J. R. Banga (2006) Improved optimization methods for the multiobjective design of bioprocesses. Industrial & Engineering Chemistry Research 45(25): 8594-8603.

Vilas, C., M. R. Garcia, J. R. Banga and A. A. Alonso (2006) Stabilization of Inhomogeneous Patterns in a Diffusion-reaction System under Structural and Parametric Uncertainties. Journal of Theoretical Biology 241 (2): 295-306 .

Sendin, O. H., J. Vera, N. V. Torres and J. R. Banga (2006) Model Based Optimization of Biochemical Systems Using Multiple Objectives: A Comparison of Several Solution Strategies. Mathematical and Computer Modelling of Dynamical Systems 12 (5): 469-487 .

Rodriguez-Fernandez, M., P. Mendes and J. R. Banga (2006) A hybrid approach for efficient and robust parameter estimation in biochemical pathways. BioSystems 83(2-3):248-265. (citations)

García, M.-S. G., E. Balsa-Canto, A. A. Alonso and J. R. Banga (2006) Computing optimal operating policies for the food industry. Journal of Food Engineering, 74(1):13-23.

Balsa-Canto, E.; Rodríguez-Fernández, M.; Alonso, A.A.; Banga, J.R. (2006) Computational design of optimal dynamic experiments in systems biology: a case study in cell signaling. In: Understanding and Exploiting Systems Biology in Bioprocesses and Biomedicine. (M. Cánovas, J. L. Iborra, A. Manjón eds.), pp. 103-117. Fundación Cajamurcia, Murcia.

Otero-Muras, I.; Banga, J.R.; Alonso, A.A. (2006) A method for detecting bifurcations in biochemical networks. In: Understanding and Exploiting Systems Biology in Bioprocesses and Biomedicine. (M. Cánovas, J. L. Iborra, A. Manjón eds.), pp. 71-78. Fundación Cajamurcia, Murcia.

Vilas, C.; García, M.R.; Banga, J.R.; Alonso, A.A. (2006) Robust Stabilization of Inhomogeneous Patterns in a Reaction-Diffusion Biological Systems. In: Understanding and Exploiting Systems Biology in Bioprocesses and Biomedicine. (M. Cánovas, J. L. Iborra, A. Manjón eds.), pp. 93-100. Fundación Cajamurcia, Murcia.

Antelo, LT; OteroMuras, I; Banga, JR; Alonso, AA (2006) A thermodynamic based plant-wide control design procedure of the Tennessee Eastman process. In: Computer Aided Chemical Engineering, (W. Manquard, C. Pantelides eds.), 1413-1418. Elsevier.

Banga, J. R., E. Balsa-Canto, M. Rodríguez and A. A. Alonso (2005) Model calibration in Systems Biology. BioForum Europe 9:42-43.

Balsa-Canto, E., A. A. Alonso and J. R. Banga (2005) Dynamic optimization of complex distributed process systems. Chemical Engineering Research and Design 83(A8): 1–6.

Banga, J. R., E. Balsa-Canto, C. G. Moles and A. A. Alonso (2005) Dynamic optimization of bioprocesses: Efficient and robust numerical strategies. Journal of Biotechnology 117(4):407-419.

Balsa-Canto, E.; Vassiliadis, V. S.; Banga, J. R. (2005) Dynamic Optimization of Single- and Multi-Stage Systems Using a Hybrid Stochastic-Deterministic Method. Industrial and Engineering Chemistry Research 44(5): 1514-1523.

Garcia, M.R.; Balsa-Canto, E.; Vilas, C.; Banga, J.R.; Alonso, A.A. (2005) An Efficient Real-Time Dynamic Optimisation Architecture for the Control of Non-Isothermal Tubular Reactors. In: Computer Aided Chemical Engineering, vol. 20, no. B, pp. 1333-1338.

Antelo, LT; OteroMuras, I; Banga, JR; Alonso, AA (2005) A Systematic Approach to Plant-Wide Control Based on Thermodynamics. In: Computer Aided Chemical Engineering, vol. 20, no. B, pp. 1105-1110.

Garcia, MG; Balsa-Canto, E; Alonso, AA; Banga, JR (2005) A Software Toolbox for the Dynamic Optimization of Nonlinear Processes. In: Computer Aided Chemical Engineering, vol. 20, no. A, pp. 121-126.

Rodriguez-Fernandez, M; Alonso, AA; Banga, JR (2005) Robust Parameter Estimation in Nonlinear Dynamic Process Models. In: Computer Aided Chemical Engineering, vol. 20, no. A, pp. 37-42.

Full list of papers available at http://www.iim.csic.es/~julio/publications.html

Conference papers available at http://www.iim.csic.es/~julio/conferences.html

## PhD Thesis Supervised

ALGORITMOS EFICIENTES PARA LA OPTIMIZACIÓN DIN¶AMICA DE PROCESOS DISTRIBUIDOS. Eva Balsa Canto. Universidad de Vigo. Dept Ingeniería Química. 26 July 2001.

OPTIMIZACIÓN GLOBAL DE PROCESOS DE LA INDUSTRIA ALIMENTARIA Y BIOTECNOLÓGICA. Carmen Gutierrez Moles. Universidad de Vigo. Dept Ingeniería Química Date: 29 Oct 2003.

MODELADO E IDENTIFICACIÓN DE BIOPROCESOS. María Rodríguez Fernández. Universidad de Vigo. Dept Ingeniería Química. 22-Enero-2007.

MÉTODOS NUMÉRICOS Y SOFTWARE PARA LA OPTIMIZACIÓN DINÁMICA DE BIO-PROCESOS. Sonia García García. Universidad de Vigo, Depto. de Ingeniería Química. 17-Diciembre-2007.

DISEÑO INTEGRADO DE ESTRUCTURAS DE CONTROL DESCENTRALIZADO EN PROCESOS Y PLANTAS QUÍMICAS. Luis Taboada Antelo. Universidad de Vigo. Dept Ingeniería Química. 16-Abril-2008.

MODELLING, SIMULATION AND ROBUST CONTROL OF DISTRIBUTED PROCESSES: APPLICATION TO CHEMICAL AND BIOLOGICAL SYSTEMS. Carlos Vilas Fernández. Universidad de Vigo. Dept Matemática Aplicada. 8-Mayo-2008.

NEW HEURISTICS FOR THE GLOBAL OPTIMIZATION OF COMPLEX BIOPROCESSES. José Alberto Egea Larrosa. Dept Ingeniería Química. Universidad de Vigo. 29-Mayo-2008.

MODELING, DYNAMIC ANALYSIS AND CONTROL OF BIOLOGICAL NETWORKS. Irene Otero Muras. : Depto. de Matemática Aplicada II, ETSII. Universidad de Vigo. 7-Mayo-2010.

## Participation in scientific committees

- member of the IFAC's Technical Committee on Control of Biotechnological Processes
- member of MACSI-net (MAthematics, Computing and Simulation for Industry). Integrated in ECCOMAS (European Community on Computational Methods in Applied Sciences) and ECMI (European Consortium for Mathematics in Industry
- member of the External Advisory Board of OPTEC (Center of Excellence in Optimization in Engineering), Katholieke Universitat Leuven, Belgium

- member of the Editorial Board of BMC Systems Biology.

- member of the scientific committees of the following conferences and meetings: ACoFoP IV, Optimization 2001, ICEF 9, CAB 9, AfoT 2003, FOODSIM '2004, GECCO '2004, CIBCB 2004, MODEL-IT 2005, 7th WCCE, CAB2007, ICEF 10, MODEL-IT 2008
- project evaluator for:
  - Spanish ANEP-CICyT
  - Katholieke Universiteit Leuven (Belgium) 2002-2007
  - Université Libre de Bruxelles, 2011
  - Swiss National Science Foundation, 2011
  - Engineering and Physical Sciences Research Council (EPSRC, Reino Unido), 2002-2007
  - Science Foundation Ireland (Irlanda), 2007.
  - APVV, Slovak Research and Development Agency, 2007
  - Dutch National Science Foundation (NWO), 2007
  - MITACS (Mathematics of Information Technology and Complex Systems) Network, Canada, 2007
  - European Union Europea (5thFP), 2000.

## Other achievements

- Foure research "sexenios de investigación" (1988-93,1994-99,2000-05,2006-11)
- Four "quinquenios de investigación" 88-92, 93-97, 98-2002, 2003-2007

- **Reviewer for:**

Journal of Process Control (Elsevier Sci. Pub., USA), Industrial & Engineering Chemistry Research (American Chemical Society, USA), Chemical Engineering Science (Elsevier Sci. Pub., USA), Chemical Engineering Journal (Elsevier), Computers and Chemical Engineering (Elsevier Sci. Pub., USA), AIChE Journal (AIChE, USA), Optimal Control Applications & Methods (John Wiley & Sons, USA), Applied Soft

Computing Journal (Elsevier Sci. Pub., USA), Computational Optimization and Applications (Kluwer Academic Publishers, USA), Chaos: An Interdisciplinary Journal of Nonlinear Science (AIP, USA), Biotechnology and Bioengineering (John Wiley & Sons, USA), Biotechnology Progress (American Chemical Society y AIChE, USA), IEEE Transactions on Information Technology in BioMedicine (IEEE Press, USA), IEE Systems Biology (IEE Press, UK), Bionformatics (Oxford University Press, UK), BioMed Central (BMC) Biochemistry, BMC Bioinformatics, Royal Society Interface (Royal Society, UK), Mathematical Medicine and Biology (UK), Molecular BioSystems (Royal Society of Chemistry, UK), Nature Reviews (Nature, UK), PLoS Computational Biology (www.plos.org, USA), Journal of Food Engineering (Elsevier Sci. Pub.; USA & UK), Journal of Food Process Engineering (Food & Nutrition Press; USA), International Journal of Food Science and Technology (I.F.S.T., UK), Food Science and Technology International (IATA-CSIC, Spain), International Journal of Food Microbiology (Elsevier Sci. Pub., USA), Journal of Environmental Management (Elsevier Sci. Pub., USA).

- **h-index: 30, over 3200 citations (computed on Feb 2013, using Google Scholar)**
- **http://scholar.google.es/citations?user=ycKDH18AAAAJ&hl=en**