MIGUEL J. BAGAJEWICZ

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bagajewicz@ou.edu, www.ou.edu/class/che-design

EDUCATION

* **Ph.D., CHEMICAL ENGINEERING:** California Institute of Technology (Caltech), 1987.
* **M.Sc., CHEMICAL ENGINEERING:** California Institute of Technology (Caltech), 1984.
* **CHEMICAL ENGINEER:** Universidad Nacional del Litoral, Argentina, 1977.

PRESENT POSITION

* **Visiting Professor.** Universidade Federal do Rio de Janeiro (UFRJ). Brazil. (March 2021-)
* **Adjunct Professor.** Mewbourne Petroleum and Geological Engineering Department. University of Oklahoma (2022-).
* **Visiting Professor.** Zhejiang University, China. Quarter-long undergraduate Class: Chemical Process Analysis and Synthesis. (2021-).
* **Visiting Professor.** King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia. 50% of Master for Saudi Aramco graduate Class: Process Synthesis. (2024-).
* **Professor Emeritus.** School of Sustainable, Chemical, Biological, and Materials Engineering. University of Oklahoma.
* **Owner** of OK-Solutions (Company dedicated to Consulting Services and Technology Transfer).

RECENT POSITIONS

* **Sam Wilson Professor.** School of Sustainable, Chemical, Biological, and Materials Engineering. University of Oklahoma.
* **Samuel Roberts Noble Foundation Presidential Professor.** University of Oklahoma.
* **Judo Adjunct Instructor.** Dept. of Health and Sport Sciences. University of Oklahoma. (Ad-Honorem).

OTHER TEMPORARY POSITIONS

* **Visiting Research Scholar-** Universidad Estadual do Rio de Janeiro (UERJ). Rio de Janeiro, Brazil. March 2020- February 2021.
* **Fulbright US Scholar-BSMP Distinguished Chair in Brazil:** Host: Universidade Federal de Rio de Janeiro- Brazil. July 1-August 31, 2021. – Project Title: Water Management and Pollution Prevention in the Oil and Gas Industry: A Process Engineering Approach"
* **Visiting Professor-** Universidade de Los Andes (UNIANDES). August-October 2017.
* **Visiting Professor-** Universidade Federal de Rio de Janeiro. Brazil. March 2014- June 2015.
* **Visiting Professor-** Chulalongkorn University. Bangkok, Thailand. 2 weeks per year. Master program.
* **Fulbright US Scholar-BSMP Distinguished Chair in Brazil:** Host: Universidade Federal de Rio de Janeiro- Brazil. Sept 1-Dec 31, 2014. – Project Title: Water Management and Pollution Prevention in the Oil and Gas Industry: A Process Engineering Approach"

HONORS AND AWARDS

* **2021 Distinguished Fulbright Chair in Brazil.** Universidade Federal de Rio de Janeiro.
* **2019 Distinguished Fulbright Chair in Brazil.** Universidade Estadual de Rio de Janeiro.
* **2014 Distinguished Fulbright Chair in Brazil.** Universidade Federal de Rio de Janeiro.
* **ACS News Service Weekly PressPac-** Oct 22, 2014. Paper selected. Bagajewicz M. and G. Valtinson. *Leak Detection in Gas Pipelines using Accurate Hydraulic Models.* Ind. & Eng. Chem. Res. 53 44, (2014).
* **American Gas Magazine.** Our paper (*Leak Detection in Gas Pipelines using Accurate Hydraulic Models.* Ind. & Eng. Chem. Res. 53 44, (2014).) was selected to be the object of an article in this journal.
* **Best Poster Paper- PRES 2014. 17th Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction.** August 23-27, 2014. Prague, Czech Republic. *New Heat Exchanger Network Design Model.*
* **2011 AIChE Process Development Division Research Award**, sponsored by Pfizer.

- **Most Cited Paper in AIChE Journal (2010):** On the Appropriate Modeling of Process Plant Water Systems *Faria, DC; Bagajewicz, MJ*
- **Inventor of the year** (2009). The Journal Record (Oklahoma)
- **Conoco-Phillips Energy prize** (2008)
- **Patent Award** (April 2007). University of Oklahoma.
- **Innovator of the Year** (April 2006). The Journal Record (Oklahoma)
- **Best Professor of the Chemical, Biological, and Materials Engineering Department**. This award is chosen entirely by the senior class every year (2003, 2006).
- **Sam Wilson Professor.** University of Oklahoma, CBME (Since January 2006).
- **Regents Award for Superior Accomplishment in Research and Creative Activity**. University of Oklahoma (2003).
- **Samuel Roberts Noble Foundation Presidential Professor.** University of Oklahoma. (Since 2001).

CURRENT RESEARCH INTERESTS

1. ***Optimal Basic Design of Process Units:*** We are interested in heat exchangers, columns, flashes, etc. We introduced a new robust optimization tool (Set Trimming + Enumeration) that rivals Metaheuristics and Mathematical Programming using MINLP procedures.
2. ***Process Synthesis:*** Our experience in HEN synthesis using enumeration in combination with heat exchanger geometrical design is to be extrapolated to clusters of equipment first and then to the enumeration of possible flowsheets.
3. ***Optimization Theory:*** There is continued interest in continuing the bound Contraction methodology in the context of mathematical programming. At the same time, we are pursuing set trimming and enumeration methods to see if they can spill over from equipment and flowsheet synthesis to other areas like operations planning, supply chain, logistics, etc.

OTHER RESEARCH INTERESTS

These are dormant areas where there is no active work.

1. ***Design and Upgrade of Instrumentation for Process Plant Monitoring:*** A new paradigm in the design and upgrade of instrumentation including several new sensor network performance measures was proposed. Ongoing research includes extensions to the design of instrumentation for simultaneous monitoring and fault detection.
2. ***Process Plant Data Reconciliation and Gross Error Detection:*** Methods that are being implemented commercially have been developed. The area has received steady industrial funding from one of the major vendors of data reconciliation software.
3. ***Water and Wastewater Management in Process Plants:*** This research was entirely funded by EPA. Methods guaranteeing global optimality and providing sub-optimal solutions for water minimization and wastewater reuse systems were developed. Testing in the industry is underway.
4. ***Heat Integration across Plants:*** The focus is on total site integration. Our next step is the merging of these targeting and design methods with financial planning for grassroots and retrofit designs.
5. ***Linear optimization models for process equipment design:*** Focus is on heat exchangers, air coolers, and distillation/absorption columns.
6. ***Design and Energy Retrofit of Crude Fractionation Units:*** The focus is on profitable energy efficiency. I have one patent issued and one invention disclosure made on new technologies for fractionation.
7. ***Decision Making in Process Systems Engineering (Design and Operations):*** The emphasis is on financial risk management.
8. ***Acoustic Chemical Engineering****:* I have invented the acoustic mass pump, a process that can separate close boiling point mixtures.
9. ***Product Engineering****:* We are working on models that consider product composition/structure, manufacturing, marketing, and consumer behavior, all at the same time.

EDITORIAL AND OTHER APPOINTMENTS

Advisory Boards

- **Associate Editor/Editorial Board Member:** International Journal of Chemical Engineering. (http://www.hindawi.com/journals/ijce/) (2008-2012).

* **Advisory Board**. Industrial and Engineering Chemistry Research. (2005- 2008)
* **Editorial Board Member:** Recent Patents on Engineering. (http://www.bentham.org/eng/index.htm) (- 2013)
* **Editorial Board Member:** The Open Chemical Engineering Journal [OCE]. (http://www.bentham.org/open/tocengj/EBM.htm) (- 2013)
* **Revista Ingeniería e Investigación**. (http://www.revistaingenieria.unal.edu.co) (-2013)

Programming Chair

* **American Institute of Chemical Engineers (AIChE) Cast Division, Area 10c.** 2005 Programming Chair.

CONFERENCE SCIENTIFIC/TECHNICAL COMMITTEES

United States

* **American Institute of Chemical Engineers (AIChE). Cast Division, Area 10c.** 2005 Programming Chair.

International

- **IX Argentine Chemical Engineering Congress (CAIQ 2017).** Bahia Blanca, Argentina. Member of the Scientific Committee.
- **VIII Argentine Chemical Engineering Congress (CAIQ 2015).** Buenos Aires**,** Argentina. Member of the Scientific Committee.
- **SDEWES 2015. 10th Conference on Sustainable Development of Energy, Water and Environment Systems.** September, 2015, Dubrovnik, Croacia. Member of the Scientific Advisory Board.
- **FOCAPD 2014 (8th International Conference on FOUNDATIONS OF COMPUTER-AIDED PROCESS DESIGN).** *June 2014. Cle Elum, Washington.* Member of the International Technical Committee.
- **11th International Symposium on Process Systems Engineering. (PSE 2012).** *July 2012*. Singapore. Member of the International Scientific Committee.
- **VI Argentine Chemical Engineering Congress (CAIQ 2010).** *September 2010.* Mar del Plata, Argentina. Member of the Scientific Committee.
- **FOCAPD 2009 (7th International Conference on FOUNDATIONS OF COMPUTER-AIDED PROCESS DESIGN).** *June 2009. Breckenridge, Colorado.* Member of the International Technical Committee.
- **ESCAPE 18 (European Symposium on Computer-Aided Process Engineering).** *June 2009.* Krakow, Poland. Member of the International Scientific Committee.
- **10th International Symposium on Process Systems Engineering, PSE'09.** August 16–20, 2009. Salvador-Bahia, Brazil. Member of the International Scientific Committee.
- **ESCAPE 17 (European Symposium on Computer-Aided Process Engineering).** *May 2007.* Bucharest, Romania. Member of the International Scientific Committee.
- **XXII Inter-American Congress of Chemical Engineering.** October, 2006. Buenos Aires, Argentina. Member of the International Scientific Committee. Product Design Area Chair.
- **ICheap-8. Eighth Italian Conference on Chemical and Processing Engineering.** *June 24-27, 2006.* Ischia, Italy. Member of the International Scientific Committee.
- **CISAP-2. 2nd International Conference on Safety & Environment in Process Industry.** May, 2006. Naples, Italy. Member of the International Scientific Committee.
- **PRES 2006 (9th Conference on Process Integration, Modeling and Optimisation).** *August 2006*. Prague. Czech Republic. Member of the International Scientific Committee.
- **Joint PSE 06 (Process Systems Engineering) ESCAPE 16 (European Symposium on Computer Aided Process Engineering),** *July 2006.* Garmisch-Partenkirchen, Germany. Member of the International Scientific Committee.
- **ICheap-7. Seventh Italian Conference on Chemical and Processing Engineering.** *May 15-18, 2005*. Giardini Naxos, Italy. Member of the International Scientific Committee.
- **ESCAPE 15 (European Symposium on Computer Aided Process Engineering),** *May 2005*. Barcelona Spain. Member of the International Scientific Committee.

- **4th International Symposium on Process Integration. In conjunction with the 54th Canadian Chemical Engineering Conference.** *October 2004*. Calgary, Alberta. Member of the International Scientific Committee.
- **PRES 2003 (6th Conference on Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction).** *October 2003*. Hamilton, Ontario, Canada. Member of the International Scientific Committee.
- **ICheap-6. Sixth Italian Conference on Chemical and Processing Engineering.** *June 8-11, 2003*. Pisa, Italy. Member of the Scientific Committee.
- **FOCAPO 2003 (Foundations of Computer Aided Process Operations)** *January 2003*. Florida. Member of the Technical Committee.
- **PRES 2002 (5th Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction)**, *August 2002*. Prague, Czech Republic. Member of the International Scientific Committee.
- **4th IFAC Workshop on On-Line Fault Detection & Supervision in the Chemical Process Industries**, June 8-9, 2001, Seoul, Korea. Member of the International Programming Committee.
- **PRES 2001 (4th Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction)**, *May 2001*. Florence, Italy. Member of the International Scientific Committee.

LANGUAGES

* **English (**fluent)
* **Spanish** (fluent)
* **Polish** (fluent)
* **Portuguese** (fluent)
* **Italian** (reasonably fluent).

AREAS OF EXPERTISE

* **Process Systems Engineering**.
  - **Globally Optimal Design of Process Equipment:** Linear models and mathematical programming-free optimization methods (Set Trimming and Enumeration Techniques).
  - **Globally Optimal Design of Equipment Clusters (Defined Flowsheet):** Linear models and mathematical programming-free optimization methods (Set Trimming and Enumeration Techniques).
  - **Process Plant Data Management:** Data Reconciliation, Fault Analysis
  - **Energy Integration of Process Plants:** Including Heat Integration across Plants
  - **Crude Units:** Retrofit Heat Integration and
  - **Process Plant Instrumentation:** Optimal Allocation.
  - **Process Plant Water Management:** Wastewater reuse and water allocation planning.
  - **Investment Planning and Decision Making:** Optimization algorithms.
  - **Design and Operations under uncertainty:** Applied sample average algorithm to several systems.
* **Financial Risk Management in Process Engineering Decision Making**: Algorithm development.
* **Product Design**: Algorithm development.
* **Optimization Theory**: Algorithm development. Gradien-Free Optimization combined with Set Trimming and Smart Enumeration.
* **Reactor Technology**: Modeling of Fluid-Solid Diffusion-Reaction Problems. Gas-Solid reactors. Catalytic Reactor Globally Optimal Design.

CURRENT COLLABORATORS

* **André Hemerly Costa** (Professor at Universidade do Estado do Rio de Janeiro, Brazil)**:** Process Systems Engineering (Heat exchanger and heat exchanger network models incorporating fouling; basic design of distillation and absorption).
* **Andre Moreira Nahes** (Professor at Universidade do Estado do Rio de Janeiro, Brazil)**:** Process Systems Engineering (Retrofit of Heat Exchanger Networks considering equipment retrofit and design).
* **Eduardo Mach Queiroz** (Professor at Universidade Federal do Rio de Janeiro, Brazil)**:** Process Systems Engineering (Water Management in Process Plants, Heat Exchanger Design).

* **Argimiro Resende Secchi** (Professor at Universidade Federal do Rio de Janeiro-Brazil). Process Systems Engineering (Process Equipment Basic Design).
* **Caliane Bastos Borba Costa** (Professor at the State University of Maringá, Brazil): Process Systems Engineering**.**
* **Chenglin Chang** (Professor at Chongqing University, China). Process Systems Engineering (Heat Exchanger Design).
* **Diego Gabriel Oliva** (Researcher at Ingar: Institute for Development and Design and Professor at Universidad Tecnologica Nacional, Santa Fe, Argentina)**:** Process Systems Engineering (Heat Exchanger Networks, Heat Exchanger Design).
* **Lucas Bonfim Rocha** (Professor at the Universidade Tecnologica Federal de Paraná, Londrina, Brazil): Process Systems Engineering,
* **Qucheng Lin** (Professor at Zhejiang Sci-Tech University, China) Process Systems Engineering: (Heat Exchanger Networks, Work and Heat Exchanger Networks).
* **Rafael Vargas** (Professor at Universidad Adventista del Plata, Argentina)**:** Process Systems Engineering (Estimability of Process Variables from Measurements).
* **Sung Young Kim** (Professor at Kyung Hee University, Korea)**:** Process Systems Engineering (Global Optimization, Heat Exchanger Networks).
* **Yufei Wang** (Professor at China University of Petroleum): Process Systems Engineering (Heat Exchanger Networks and Equipment Design).
* **Zuwei Liao (**Professor at Zhejiang University, China) Process Systems Engineering: (Heat Exchanger Networks, Work and Heat Exchanger Networks).

FORMER COLLABORATORS

* **Mauro A.S.S. Ravagnani** (Professor at Universidade Estadual de Maringá (UEM), Brazil): Process Systems Engineering (Design of Air Coolers).
* **Uthaiporn Suriyapraphadilok** (Professor at the Petroleum and Petrochemical College (PPC), Chulalongkorn University. Bangkok, Thailand): Process Systems Engineering (LNG Systems, Furnace Design).
* **Lidia Yokohama** (Professor Universidade Federal do Rio de Janeiro-Brazil)**:** Process Systems Engineering (Desalination).
* **Carlos Fischer** (Researcher at Ingar: Institute for Development and Design, Santa Fe, Argentina)**:** Process Systems Engineering (Flash Unit Optimal Basic Design).

CURRENT UNDERGRADUATE RESEARCH STUDENTS

Universidade Federal de Rio de Janeiro (UFRJ), Brazil

* **Gabriela Ferreira:** Process Systems Engineering (Comparison of the performance of Set Trimming with Aspen and HTRI on the Optimal Design of Shell and Tube Heat Exchangers). Co-Advisor at UFRJ: Professor *Eduardo Mach Queiroz*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*
* **Gustavo Rabello:** Process Systems Engineering (Optimal Design of Thermosifon Reboilers). Co-Advisor at UFRJ: Professor *Eduardo Mach Queiroz*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*

Universidad Tecnologica Nacional (UTN), Santa Fe, Argentina

* **Luis Utz Goettig:** Process Systems Engineering (Analytical Generative Fabrication Cost of Shell and Tube Heat Exchangers). Co-Advisor at UERJ: Professor *André Hemerly Costa.*

CURRENT GRADUATE STUDENTS

Universidade Federal de Rio de Janeiro (UFRJ), Brazil

* **Alice Peccini (PhD):** Process Systems Engineering (Distillation Colum Design). Co-Advisor at UFRJ: Professor *Eduardo Mach Queiroz*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*
* **Lidiane Moraes da Silva (MSc):** Process Systems Engineering (Heat Exchangers). Co-Advisor at UFRJ: Professor *Eduardo Mach Queiroz*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*
* **Lucas F. S. Jesus (PhD):** Process Systems Engineering (Reactive Distillation Column Design). Co-Advisor at UFRJ: Professor *Argimiro R. Secchi*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*

Universidade Estadual de Rio de Janeiro (UERJ) Brazil

* **Augusto Vieira (PhD):** Process Systems Engineering (Synthesis of Heat Exchanger Networks considering equipment design with fouling considerations). Co-Advisor at UERJ: Professor *André Hemerly Costa*.
* **Caio Menezes dos Santos (MSc):** Process Systems Engineering (Water Distribution Systems). Co-Advisor at UERJ: Professor *André Hemerly Costa*.
* **Ian Costa (MSc):** Process Systems Engineering (Simultaneous Heat Exchanger Network and Heat Exchanger Design for variable flowrate Streams). Co-Advisor at UERJ: Professor *André Hemerly Costa*.
* **Mariana Mello Almeida (MSc):** Process Systems Engineering (Direct Contact Exchanger in exchanger loops). Co-Advisor at UERJ: Professor *André Hemerly Costa*. Co-Advisor at UERJ-Resende: Professor *Alexandre Rodrigues Torres.*
* **Marco Thiago C. do Santos (PhD):** Process Systems Engineering (Simulation and design of air-coolers). Co-Advisor at UERJ: Professor *André Hemerly Costa*.

Universidade Estadual de Maringá (UEM), Brazil

* **Edilaine Duran (PhD):** Process Systems Engineering (Global Optimality Necessary Condition). Co-Advisor at UEM: Professor *Esdras Carvalho*.
* **Fabio Eiji Nishiyama (PhD):** Process Systems Engineering (Global Design-Optimization of Flowsheets with Recycles). Co-Advisor at UEM: Professor *Caliane Bastos Borba Costa*. Co-Advisor at Universidade Tecnológica Federal do Paraná (Londrina, Brazil) - UTFPR: Professor *Lucas Bonfim Rocha*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*
* **Pamela Moreira Tomazim (MsC):** Process Systems Engineering (Clusters of Divided Wall Distillation Columns). Co-Advisor at UEM: Professor *Esdras Carvalho.* Co-Advisor at UERJ: Professor *André Hemerly Costa.*
* **Maria Izabela de Almeida Silva Vicente (MsC):** Process Systems Engineering (Heat Integrated Water Management in Process Plants with Basic Equipment Design). Co-Advisor at UEM: Professor *Esdras Carvalho.* Co-Advisor at UERJ: Professor *André Hemerly Costa.*
* **Pedro Siscato (MsC):** Process Systems Engineering (New approach to supply chain management with Inventory and Product Price Manipulation). Co-Advisor at UEM: Professor *Esdras Carvalho.* Co-Advisor at UERJ: Professor *André Hemerly Costa.*

Zhejiang Sci-Tech University, Hangzhou, China

* **Runqian Shao (PhD):** Process Systems Engineering (Work and Heat Exchanger Network Design). Co-Advisor at Zhejiang University: Professor *Zuwei Liao*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*

China University of Petroleum (CUP), Beijing China

* **Yi-Cui (PhD):** Process Systems Engineering (Globally Optimal Design of Condensers). Co-Advisor at *CUP*: Professor Yufei Wang. Co-Advisor at Chongqing University*:* Prof. *Chenglin Chang*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*

Chongqing University, Chongqing, China

* **Qiqi Zhang (MSc):** Process Systems Engineering (Globally Optimal Design of Spiral Exchangers). Co-Advisor at Chongqing University: Professor *Chenglin Chang*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*

FORMER POSTDOCTORAL FELLOWS

University of Oklahoma

* **Qiyou Jiang**: (1996-1999): Data Reconciliation. Pursued a career in Computer Science.
* **Mabel Sánchez**: (1999): Data Reconciliation and Instrumentation Network Design. Now in Plapiqui, Bahía Blanca, Argentina.
* **Bilal El-Zahab**: (2007): Acoustic Mass Pump work.
* **Kui Qiu:** (2012) Natural Gas Separations. Associate Professor and Dean of the Department of Chemical Engineering at Chongqing University of Science and Technology, Huxi Town, Chongqing, China.
* **Sung Young Kim** (2014-2018)**:** Use of Global Optimization in Process Systems Engineering. (PhD, Kyung Hee University).
* **Chenglin Chang** (2014-2018)**:** Process Systems Engineering (Heat exchanger Networks). Co-Advisor at *Zhejiang Univerity*: Professor *Zuwei Liao.* Co-Advisor at *UERJ:* Professor Andre Costa.

Zhejiang University, Hangzhou, China

* **Chenglin Chang** (2019-2022)**:** Process Systems Engineering (Heat exchanger Networks). Co-Advisor at *Zhejiang Univerity*: Professor *Zuwei Liao.* Co-Advisor at UERJ: Professor *Andre Hemerly Costa.*

Universidade Estadual de Rio de Janeiro (UERJ) Brazil

* **Julia Coelho Lemos:** Process Systems Engineering (Heat Exchanger Optimal Design under Fouling). Co-Advisor at UERJ: Professor *André Hemerly Costa*

FORMER GRADUATE STUDENTS

University of Oklahoma

* **Mariano Savelski**: (PhD: 1999): Water Management. Now Professor and Chemical Engineering Head at Rowan University.
* **Margiori Rivas**: (MSc: 2000, Fullbright Fellow from Venezuela): Water Management. Now in Venezuela.
* **José Soto**: (MSc: 2000, Fullbright Fellow from Venezuela): Design of Crude Units. Now in Venezuela.
* **Hernán Rodera**: (PhD: 2001): Heat Integration in the Total Site. Now at Aspentech, Calgary (Canada).
* **Jose Fernando Cancino**: (MSc: 2001, Fullbright Fellow from Peru): CO_2 reforming of natural gas. Stayed at the University of Oklahoma for an Internship (11/2001-5/2002). Now at Pluspetrol, Peru.
* **Shuncheng Ji**: (PhD: 2001): Design of Crude Units. Patent holder with me. Now at ConocoPhillips (USA).
* **Andres F. Barbaro**: (MSc: 2002): Financial Risk Management in Design. Now at Power Costs (www.Powercosts.com), Norman, OK.
* **Anantha Koppol**: (MSc: 2002): Water Management in Process Plants.
* **Enmanuel Cabrera**: (MSc: 2003): Instrumentation Design and Upgrade and Data Reconciliation. Now at Dow, Houston, USA.
* **Ahmed Aseeri:** (MsC: 2003. Fellow from Saudi Aramco): Financial Risk in Process Planning. Now Executive Director at Gaptech/GCC Energy Innovation Center, Saudi Arabia.
* **Javier Lavaja** (MSc: 2004):at Integration and Decision Making. Now at Power Costs (www.Powercosts.com), Tampa, Fl.
* **Wilfredo Vargas** (MSc: 2005): Natural Gas Master Program.
* **Mayur Gala** (MSc: 2005): Instrumentation Design and Upgrade. Now proprietor of Avita, Mumbai, India.
* **Débora Campos Faria** (PhD: 2009): Water Management in Process plants. Now at Schlumberger (UK).
* **DuyQuang Nguyen Thanh** (PhD: 2009): Design and Retrofit of Instrumentation Networks. Now lecturer at Hồ Chí Minh University, Vietnam.

Chulalongkorn University (Thailand)

* **Arkadej O. Pongsakdi** (MSc: 2004): Refinery Planning under Uncertainty. Co-Advisors in Thailand: Professors *Pramoch Rangsunvigit and Kitipat Siemanond*.
* **Ratakorn Buaboocha** (MSc: 2004): Design and retrofit of Crude Fractionation Units. Co-Advisor in Thailand: Professor *Kitipat Siemanond*.
* **Mayurachat Ounjitti** (MSc: 2004): Financial and Environmental Risk Management in Process Design. Co-Advisors in Thailand: Professor *Rathanawan Magaraphan*.
* **Saran Janjira** (MSc: 2004): Financial and Environmental Risk Management in Process Design. Co-Advisors in Thailand: Professor *Rathanawan Magaraphan*.
* **DuyQuang Nguyen Thanh** (MSc: 2005): Design and Retrofit of Instrumentation Networks. Co-Advisor in Thailand: Professor *Kitipat Siemanond*.
* **Narumon Vipanurat** (MSc: 2005): Design and Retrofit of Crude Fractionation Units. Co-Advisor in Thailand: Professor *Kitipat Siemanond*.
* **Kitisak Junlobol** (MSc: 2006): Design and Retrofit of Crude Fractionation Units. Co-Advisor in Thailand: Professor *Kitipat Siemanond*.
* **Hansa Lakkhanawat** (MSc: 2007): Refinery Planning under Uncertainty. Co-Advisor in Thailand: Professor *Kitipat Siemanond*.
* **Warapon Sripayap** (MSc: 2007): Design and retrofit of Crude Fractionation Units. Co-Advisor in Thailand: Professor *Kitipat Siemanond*.
* **Suppanit Srathongniam** (MSc: 2008): Design and retrofit of Crude Fractionation Units. Co-Advisor in Thailand: Professor *Kitipat Siemanond*.
* **Chortip Kongoun** (MSc: 2008): Design and retrofit of Gas Plants. Co-Advisor in Thailand: Professor *Kitipat Siemanond*.

* **Pitak Jongsuwat (**MSc: 2014): Design of Heat Exchanger Networks. Co-Advisor in Thailand: Professor *Uthaiporn Suriyapraphadilok*
* **Onkamon Saeneewong Na Ayutthaya (**MSc: 2016)**::** Process Systems Engineering (Oil refining and Gas Processing; Refinery Blending Optimization). Co-Advisor in Thailand: Professor *Uthaiporn Suriyapraphadilok.*
* **Yolada Ounahasaree (**MSc: 2016)**:** Process Systems Engineering (Oil refining and Gas Processing; Refinery Blending Optimization). Co-Advisor in Thailand: Professor *Uthaiporn Suriyapraphadilok*
* **Naken Saetang (**MSc: 2017): Process Systems Engineering (LNG Systems Global Optimization). Co-Advisor in Thailand: Professor *Uthaiporn Suriyapraphadilok*
* **Issara Intararit:** Process Systems Engineering (Globally Optimal Fired Heater Design). Co-Advisor in Thailand: Professor *Uthaiporn Suriyapraphadilok.*

Universidad Industrial de Santander (Colombia)

* **Ariel Uribe** (MSc: 2003): Instrumentation design and upgrade. Now at Ecopetrol, Colombia.

Universidade Estadual do Rio de Janeiro (Brazil)

* **Andre Moreira Nahes** (PhD: 2024)**:** Process Systems Engineering (Retrofit of Heat Exchanger Networks considering equipment retrofit and design). Co-Advisor at UERJ: Professor *André Hemerly Costa.*
* **Priscila Alexandre de Souza** (MSc: 2017)**:** Process Systems Engineering (Linear Models for the Design of Air Coolers). Co-Advisor at UERJ: Professor *André Hemerly Costa*
* **Carolina Gonçalves** (MSc: 2017)**:** Process Systems Engineering (Linear Models for Shell and Tube Heat Exchanger Design). Co-Advisor at UERJ: Professor *André Hemerly Costa*
* **Julia Coelho Lemos** (PhD: 2018)**:** Process Systems Engineering (Heat Exchangers and Heat Exchanger Networks with fouling considerations). Co-Advisor at UERJ: Professor *André Hemerly Costa*
* **Alice Peccini** (MSc: 2017)**:** Process Systems Engineering (Double pipe systems design). Co-Advisor at UERJ: Professor *André Hemerly Costa.*
* **Igor P. S. Pereira**: Process Systems Engineering (Condenser Design). Co-Advisor at UERJ: Professor André Hemerly Costa.
* **Aline Rayboltt da Cruz Souza** (PhD, 2023)**:** Process Systems Engineering (Optimization of distillation column internals). Co-Advisor at UERJ: Professor *André Hemerly Costa.*
* **Ana L.L. Levy** (MsC 2022)**:** Process Systems Engineering (Cooling Water Systems with Detailed Exchanger Design). Co-Advisor at UERJ: Professor *André Hemerly Costa*.

Universidade Federal de Rio de Janeiro (UFRJ), Brazil

* **Abdon Parra** (PhD: 2019)**:** Process Systems Engineering (Global Optimization of Hybrid Desalination Systems). Co-Advisor at UERJ: Professor *Lidia Yokohama.*
* **Guilherme de Magalhães Sales**: Process Systems Engineering (Kettle reboiler Design). Co-Advisor at UERJ: Professor André Hemerly Costa. Co-Advisor at UFRJ: Professor Eduardo Mach Queiroz.

Universidade Estadual de Maringá (UEM), Brazil

* **Carolina Borges de Carvalho:** Process Systems Engineering (Air Coolers). Co-Advisor at *UEM*: Professor *Mauro A.S.S. Ravagnani*. Co-Advisor at *UERJ*: Professor *André Hemerly Costa*.

Zhejiang University, Hangzhou, China

* **Qucheng-Lin (**PhD **2022):** Process Systems Engineering (Work and Heat Exchanger Network Design). Co-Advisor at Zhejiang University: Professor *Zuwei Liao*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*
* **Tan-Hui (**PhD **2024):** Process Systems Engineering (Heat Exchanger Network Design). Co-Advisor at Zhejiang University: Professor *Zuwei Liao*. Co-Advisor at UERJ: Professor *André Hemerly Costa.*

FORMER VISITING EXCHANGE GRADUATE ADVISEES

* **Miloš Bogataj:** From University of Maribor, Slovenia. Water Management. Two months (2007 and 2008).
* **Barbara Freire de Souza:** From Federal University of Rio de Janeiro, Brazil. Financial Risk in Planning. Two months (2007).

ACADEMIC EXPERIENCE

* **Research Professor.** Universidade Estadual de Rio de Janeiro. Brazil (2025-).
* **Visiting Professor.** Universidade Estadual de Maringá. Brazil (November, 2024).

- **Visiting Professor.** Universidade Federal de Rio de Janeiro. Brazil (2021-2025).
- **Visiting Professor.** King Fahd University. Saudi Arabia. (2024). Process Synthesis. 50% Intensive Master Level Graduate Class for Saudi Aramco. (One week, On-Site).
- **Visiting Professor.** Zhejiang University China. (2021-). Semester-long Process Synthesis class (One-month On-Site).
- **Visiting Professor.** Universidade Estadual de Rio de Janeiro. Brazil (2019-2020).
- **Visiting Professor.** Chulalongkorn University, Thailand. (2003-2018). Two weeks of intensive teaching.
- **Visiting Professor.** Universidad de los Andes (UNIANDES). Bogota, Colombia. Three months undergraduate class (2017).
- **Visiting Professor.** Universidade Federal de Rio de Janeiro. Brazil (2014-2015).
- **University of Oklahoma Sam Wilson Chair Professor.** University of Oklahoma, CBME, (2006-2016).
- **University of Oklahoma Samuel Roberts Noble Foundation Presidential Professor.** University of Oklahoma, CBME, (2001-2016).
- **Emeritus Professor.** University of Oklahoma, CBME, (2016-).
- **Full Professor.** University of Oklahoma, CBME, (2001-2016).
- **Associate Professor.** University of Oklahoma, CBME, (1995-2001).
- **Visiting Professor.** UCLA. 1995.
- **Research Associate.** UCLA (1990-93)
- **Associate Professor.** INTEC. Universidad Nacional del Litoral. (1985-1991).
- **Member in the Associate Category.** Argentine National Research Council (CONICET), (1985-91)
- **Assistant Professor.** INTEC. Universidad Nacional del Litoral. (1980-1985). In charge of the Sub area Process Simulation of the Industrial Extension Unit of INTEC, Argentina. (1982).
- **Member in the Assistant Category.** Argentine National Research Council (CONICET), (1980-85)
- **Research Fellow.** Argentine National Atomic Energy Commission (CNEA), Argentina. (1976-1977).
- **Research Assistant**. INTEC, UNL, Argentina. (1976-1977).
- **Research Assistant**. Department of Physics, UNL, Argentina. (1972-1976).
- **Physics Instructor**. Department of Physics. (UNL), Argentina. (1974-1976).

PROFESSIONAL EXPERIENCE

 # (2000-)

* **OK-Solutions, Norman, OK.** Chief Executive Officer. I created this company to help speedy transfer of the developments in process systems engineering to industry.

 # (1992- 1995)

* **Simulation Sciences, Brea, California (Currently Aveva).** Senior Development Engineer. Development of Software for Process Plant Data Reconciliation. Dynamic reconciliation and optimal sensor location in process plants. Recycle convergence properties of simulators.

 # (1987-1989)

* **Private Consultant (Argentina):** Revision of the Basic Engineering of an H2O2 New Plant to be built by ATANOR SAM in Argentina. The work undertaken was the verification of a Liquid-Liquid Extraction Section and a Distillation Section of the Plant.
* **As a private entrepreneur (Argentina):** Preparation of a software package for cost-optimal food rations for animals (chicken, pork, rabbit, and cattle). This software was sold in the market by a company in Argentina.

 # (1980-1982)

* **INTEC, (Argentina):** Work was done in the field of rational use of Energy and Process Synthesis. Studies of Existing Plant Revamping were done for local Industries in Argentina. Papers presenting new design methods for Steam and Power Systems in Chemical Plants were presented in Meetings and sent for publication.

#(1976-1980)

* **National Atomic Commission (at INTEC), Argentina:** Member of a Team that developed the Basic Engineering and the supervision of the Detailed Engineering of a Heavy Water Experimental Plant in Argentina. The following are the works performed under that program:
  - *Participation in the development of a Steady State Process Simulation Computer Program*

- *Computer Simulation of different technological alternatives generated in the process of selecting a flowsheet for the Plant.*
- *Generalization of the simulation program to perform Steady State Mechanical Energy Balances.*
- *Participation in the specification of the Layout, piping, pumps, and control valves.*
- *Direct involvement in the preparation of the piping and instrument (P&I) diagram.*
- *Collaboration in the synthesis of the Control Policies of the Plant.*
- *Verification of the Detailed Design, supervising control, and safety valve selection.*
- *In charge of the group that developed the Start-Up strategies of the plant.*

***PUBLICATIONS* -Total: 280**

- *Articles published in Journals: 192*
- *Articles accepted in Journals: 1*
- *Review Articles*: *5 (2 in conference proceedings)*
- *Articles submitted: 4*
- *Book Chapters*: *3*
- *Handbook Chapters*: *6*
- *Conference Proceedings submitted: 0*
- *Articles published/accepted in peer-reviewed conference proceedings: 67*
- *Other Publications*: *2*
- *Book reviews*: *1*

Statistics by Year

- *2025: 1 article published, 1 article accepted, and 5 articles submitted.*
- *2024: 1 article.*
- *2023: 7 articles.*
- *2022: 4 articles.*
- *2021: 7 articles.*
- *2020: 6 articles.*
- *2019: 6 articles, 3 peer-reviewed conference proceedings.*
- *2018: 4 articles.*
- *2017: 5 articles published and 1 peer-reviewed conference proceedings.*
- *2016: 3 articles published and 1 peer-reviewed conference proceedings.*
- *2015: 2 articles published.*
- *2014: 4 articles and 1 peer-reviewed conference proceedings.*
- *2013: 3 articles and 2 peer-reviewed conference proceedings.*
- *2012: 3 articles published.*
- *2011: 10 articles published.*
- *2010: 6 articles published, and 2 peer-reviewed conference proceedings.*
- *2009: 8 articles published,*
- *2008: 11 articles published; 1 peer-reviewed conference proceedings.*
- *2007: 3 articles published.*
- *2006: 6 articles published, 3 peer-reviewed conference proceedings*
- *2005: 12 articles published, 1 peer-reviewed conference proceedings.*
- *2004: 10 articles published, 2 peer-reviewed conference proceedings.*
- *2003: 13 articles, 1 review article, and 7 peer-reviewed conference proceedings.*
- *2002: 8 articles, 1 review article, and 6 peer-reviewed conference proceedings.*
- *2001: 11 articles, 1 review article, 8 peer-reviewed conference proceedings and 1 book review.*
- *2000: 11 articles, 2 review articles, and 4 peer-reviewed conference proceedings.*
- *1999: 8 articles and 13 peer-reviewed conference proceedings.*
- *1998: 5 articles and 1 peer-reviewed conference proceeding.*
- *1997 and previous years: 14 articles and 10 peer-reviewed conference proceedings.*

Statistics by Journal

- *Industrial and Engineering Chemistry Research:* 61 articles

- *Computers and Chemical Engineering:* 28 articles, 1 review article.
- *AIChE Journal:* 33 published articles, 1 book review.
- *Computer-Aided Chemical Engineering:* 16 articles.
- *Chemical Engineering Communications:* 9 articles.
- *Chemical Engineering Science:* 9 articles.
- *Latin American Applied Research:* 5 articles and 1 review article.
- *Canadian Journal of Chemical Engineering:* 1 article and 1 review article.
- *Applied Thermal Engineering:* 2 articles.
- *Latin American Journal of Heat and Mass Transfer:* 2 articles.
- *International Journal of Environment and Pollution:* 1 article.
- *Chemical Engineering Research and Design:* 6 articles.
- *Journal of Process Control:* 1 article.
- *Advances in Environmental Research:* 1 article.
- *Chemical Engineering Transactions:* 2 articles
- *International Journal of Process Economics:* 1 article.
- *Environmental Science and Technology:* 1 article.
- *Waste Management:* 1 article.
- *Chemical Engineering:* 1 article.
- *Mathematical and Computer Modeling:* 1 article.
- *AIChE Symposium Series:* 1 article.
- *Industrial and Engineering Chemistry. Process Design and Development:* 1 article.
- *Hydrocarbon Engineering:* 1 article.
- *International Journal of Oil Gas and Coal Technology:* 1 article.
- *Biotechnology and Bioengineering:* 1 article.
- *Thermal Science and Engineering Progress:* 1 article.
- *Journal of Cleaner Production:* 1 article.
- *Brazilian Journal of Chemical Engineering:* 1 article.

Statistics by area (some are cross-listed)- (By July 16, 2023)

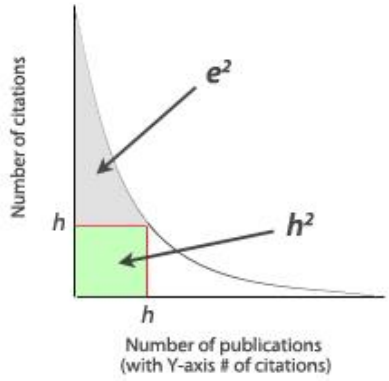
- ***Instrumentation Design:*** 50, 2 related books, 2 handbook chapters, 3 review articles, 30 articles in journals, and 13 congress proceedings articles.
- ***Data Reconciliation:*** 35, 2 related books, 2 handbook chapters, 2 review articles (1 in peer-reviewed conference proceedings), 22 articles, and 7 peer-reviewed conference proceedings.
- ***Environmental Engineering and Water Management:*** 36, 1 review article, 25 articles published, and 10 peer-reviewed conference proceedings.
- ***Energy Integration:*** 43, 31 articles published and 12 peer-reviewed conference proceedings.
- ***Process Equipment Basic Design:*** 6 articles published, and one article submitted.
- ***Plant and Refinery Operations and Design:*** 21, 2 handbook chapters, 15 articles published, and 4 peer-reviewed conference proceedings.
- ***Crude Fractionation Design and Retrofit:*** 32, 22 articles published and 10 peer-reviewed conference proceedings.
- ***Decision Making, Planning, and Risk:*** 40, 1 book chapter, 33 articles published, and 6 peer-reviewed conference proceedings
- ***Product Design:*** 11, 2 book chapters, 6 articles published, and 3 peer-reviewed conference proceedings.
- ***Mathematical Optimization Theory:*** 9, 4 articles published on Theory and 5 articles on Applications
- ***Bioengineering:*** 1, 1 article published.

Citations (As of July 16, 2024)

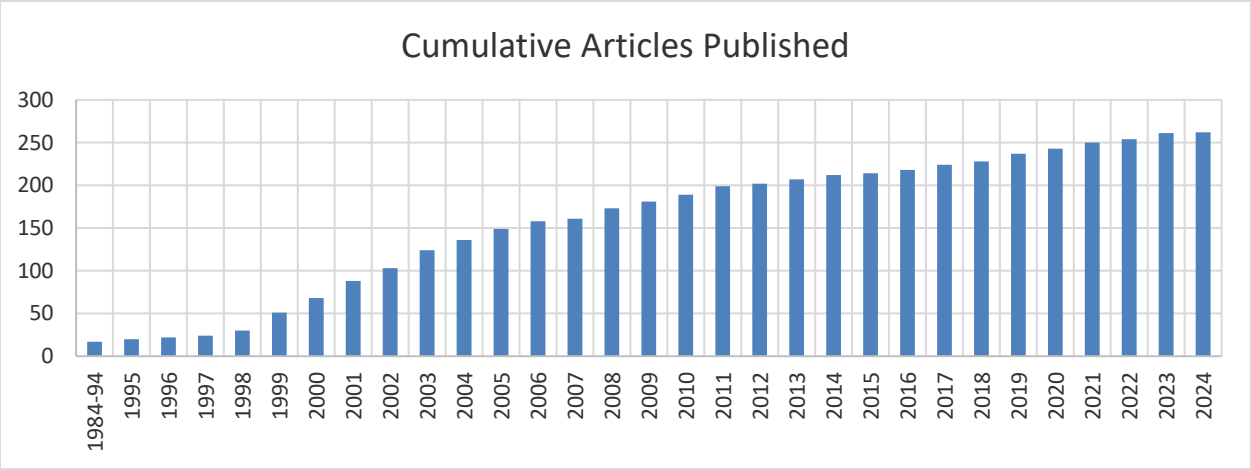
Source: Google Scholar

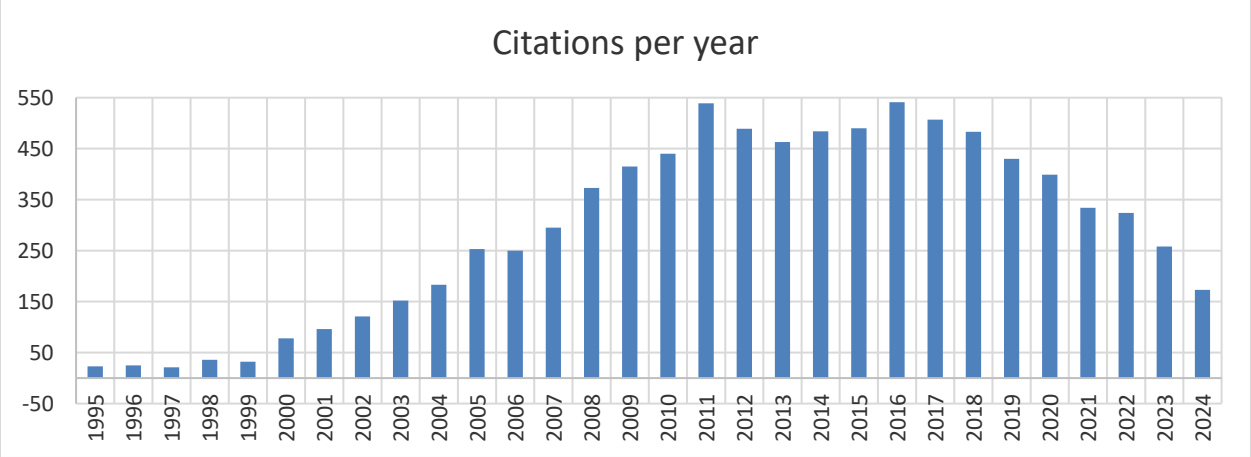
- ***Citations****: 8873 (since 1995), 1918 (since 2019)*
- ***h-index*** *(h papers cited h times): 51, Since 2019: 23*
- ***m-index*** *(h-index divided by the number of years since the first publication, 1985): 1.308 (48/39).*
- ***g-index*** *(*is the largest number such that the top *g* articles received, in total, at least g^2 citations): 86
- ***e-index*** *(*square root of the "excess" citations in the papers that contributed to the h-index): 59.56 (***e^2****=3724)*

- ***i10-index:*** *Number of publications with at least 10 citations: 149, Since 2019: 72*



The g-index is an alternative to the older h-index, which does not average the number of citations. The h-index only requires a minimum of n citations for the least-cited article in the set and thus ignores the citation count of very highly cited papers. Roughly, the effect is that h is the number of papers of a quality threshold that rises as h rises; g allows citations from higher-cited papers to be used to bolster lower-cited papers in meeting this threshold. Therefore, in all cases, g is at least h and is in most cases higher.





Undergraduate Students involvement in refereed research articles (While at OU)

*As of December 2024, M. Bagajewicz has involved **38** undergraduate students in the preparation of material and/or as authors of **17** refereed journal articles and peer-reviewed conference proceedings.*

BOOKS

- Bagajewicz M. **Smart Process Plants: Software and Hardware for Accurate Data and Profitable Operations.** (*ISBN:978-0-07-160471*) McGraw Hill (2010).
- Bagajewicz M. **Process Plant Instrumentation**. **Design and Upgrade** (*ISBN:1-56676-998-1*), (Technomic Publishing Company) (http://www.techpub.com). Now CRC Press (http://www.crcpress.com) (2000).

BOOK CHAPTERS

1. Bagajewicz M. **Integrated Consumer Preferences and Price-Demand Driven Product Design; An Alternative to Stage-Gate Procedures.** Chapter 2 of *Tools for Chemical Product Design, Volume 39. From Consumer Products to Biomedicine.* 1st Edition. Mariano Martín Martín, Mario Eden, Nishanth Chemmangattuvalappil, Editors. Elsevier (2016).
2. Harrison R. and M. Bagajewicz. **Predicting the Solubility of Recombinant Proteins in *Escherichia coli*"** In *Insoluble Proteins. Methods in Molecular Biology Series.* E. Garcia-Fruitos, (Editor), Humana Press, p. 403-410 (2015).
3. Bagajewicz M. **Integration of Process Systems Engineering and Business Decision Making Tools: Financial Risk Management and Other Emerging Procedures.** In *Chemical Engineering Trends and Developments.* M. Galan and E. Martin del Valle, Editors. John Wiley, Chichester, England (2005).

HANDBOOK CHAPTERS

1. Bagajewicz M. (with D. K. Rollins, Iowa State University) **Instrument Engineers' Handbook, 3rd edition. CRC Press (2002).** Chapter on Data Reconciliation.
2. Bagajewicz M. **Instrument Engineers' Handbook, 3rd edition. CRC Press (2002).** Chapter on Sensor Location.
3. Bagajewicz M. (with D. Chmielewski, Illinois Institute of Technology) **Instrument Engineers' Handbook, 4th edition. CRC Press (2011).** Chapter on Instrumentation and Process Automation.
4. Bagajewicz M. (with D. K. Rollins, Iowa State University) **Instrument Engineers' Handbook, 4th edition. CRC Press (2011).** Chapter on Data Reconciliation.
5. Bagajewicz M. **Handbook of Petroleum Refining and Natural Gas Processing.** Publisher: ASTM International, Conshohocken, PA, USA. MNL58. Editors: Riazi M., Eser Semih, Agrawal Suresh, Peña Díaz José Chapter: "*Financial Risk Management in Refinery Operations Planning*." (2013).
6. Bagajewicz M. **Handbook of Petroleum Refining and Natural Gas Processing.** Publisher: ASTM International, Conshohocken, PA, USA. MNL58. Editors: Riazi M., Eser Semih, Agrawal Suresh, Peña Díaz José. Chapter: *Maintenance Simulation and Optimization in Refineries and Process Plants*." (2013).

ARTICLES

Review Articles

1. Bagajewicz M. *Data Reconciliation and Instrumentation Upgrade. Overview and Challenges.* Invited paper and Keynote Presentation. FOCAPO 2003 (Foundations of Computer Aided Process Operations) Coral Springs, FL, USA, January (2003).
2. Bagajewicz M. *A Review of Techniques for Instrumentation Design and Upgrade in Process Plants*. Canadian Journal of Chemical Engineering, Vol. 80, No 1. pp. 3-16 (2002).

3. Bagajewicz M. *Review of Recent Results in Instrumentation Design and Upgrade for Process Plants.* Proceedings of the 4th IFAC Workshop on On-Line Fault Detection & Supervision in the Chemical Process Industries, June 8-9, Seoul, Korea (2001).
4. Bagajewicz M. *A Brief Review of Recent Developments in Data Reconciliation and Gross Error Detection/Estimation*. Latin American Applied Research. Vol. 30, No 4, pp. 335-342, (2000).
5. Bagajewicz M. *A Review of Recent Design Procedures for Water Networks in Refineries and Process Plants.* Computers and Chemical Engineering. Vol. 24, No 9, pp. 2093-2115 (2000).

Manuscripts Submitted

1. Cui Y., C. Chang, Y. Wang, A. L. H. Costa, M. J. Bagajewicz. *Global Design-Optimization of Regular and Intensified Single Component Shell and Tube Condensers using Complete Set Trimming.* Chemical Engineering Science.
2. Hui T., M. J. Bagajewicz, A. L. H. Costa and Z. Liao. *On a Novel Branch and Bound Method for the Synthesis of Globally Optimal Minimal Heat Exchanger Networks: Part I: Methodology*. Chemical Engineering Science.
3. Hui T., M. J. Bagajewicz, A. L. H. Costa and Z. Liao. *On a Novel Branch and Bound Method for the Synthesis of Globally Optimal Minimal Heat Exchanger Networks: Part II: General Superstructures and Parallel Processing.* Chemical Engineering Science.
4. Hajabdollahi H., A. L. H. Costa, M. J. Bagajewicz. *Simultaneous Global Optimization- Design of Water Coolers and Cooling Water Flowrate.* Chemical Engineering Research and Design.
5. Hajabdollahi H., A. L. H. Costa, M. J. Bagajewicz. *Novel Global Optimization Approach for the Simultaneous Design of Heat Exchanger Networks Constrained by Pressure Drop.* Computers and Chemical Engineering

Articles Accepted

1. Bagajewicz M., A. L. M. Nahes, E. M. Queiroz, D. G. Oliva, J. A. Francesconi, A. L. H. Costa. *Globally Optimal Basic Design of Multiple-Unit Heat Exchangers.* AIChE Journal.

Articles

1. Souza A. R. C., M. J. Bagajewicz, A. L. H. Costa. *Improved Correlations for Threshold Flooding and Entrainment in Sieve Trays in Distillation/Absorption Columns.* Industrial & Engineering Chemistry Research. Vol. 64, Issue 4, pp.1859-2490. https://doi.org/10.1021/acs.iecr.4c03115 (2025).
2. da C. Santos M. T., A. R. Secchi, M. J. Bagajewicz, and A. L. H. Costa. *On a New Globally Optimal Method for the Design Optimization of Air Coolers Coupled with Real Fans.* Chemical Engineering Science. 303 120926. https://doi.org/10.1016/j.ces.2024.120926 (2025).
3. Oliva D.G., Nahes A.L.M., J. C. Lemos, A.L.H. Costa, M. J. Bagajewicz. *Globally Optimal Simultaneous Heat Exchanger Network Synthesis and Basic Heat Exchanger Design.* AIChE Journal. Vol. 70, No 8, DOI:10.1002/aic.18450 (2024).
4. Peccini A., L. F. S. Jesus, A. R. Secchi, M. J. Bagajewicz, A. L. H. Costa. *Globally Optimal Distillation Column Design Using Set Trimming and Enumeration Techniques.* Computers and Chemical Engineering. Vol. 174, 108254. (2023).
5. Nahes A. L. M., A. L.H. Costa, M. J. Bagajewicz. *A New Approach for the Globally Optimal Design of Gasketed Plate Heat Exchangers with Variable Properties.* Chemical Engineering Science, Vol., 280, 5, DOI: 10.1016/j.ces.2023.119067 R, 119067 (2023).
6. Nahes A. L. M., A. L.H. Costa, M. J. Bagajewicz. *A novel method for the globally optimal design of fixed bed catalytic reactors.* Chemical Engineering Science, Vol., 271, 5, 118524 (2023).
7. Kim S. Y., A. L. H. Costa, M. J. Bagajewicz. *New Robust Approach for the Globally Optimal Design of Fired Heaters.* Chemical Engineering Research and Design, Vol. 197, 434-448 (2023).
8. Lin, Q., Z. Liao, M. Bagajewicz. *Globally optimal design of Minimal WHEN systems using enumeration.* AIChE Journal. https://doi.org/10.1002/aic.17878 (2023).
9. Peccini A., M.J. Bagajewicz, A. L. H. Costa. *Design of double pipe heat exchanger structures using linear models and smart enumeration*. Brazilian Journal of Chemical Engineering 40: 231–245. https://doi.org/10.1007/s43153-022-00238-2 (2023).

10. Da Cruz Souza A. R., Bagajewicz M J, Costa A L H. *Set Trimming approach for the globally optimal design of sieve trays in separation columns.* AIChE J., 69 (5), DOI: 10.1002/aic.18003 (2023).
11. Nahes A.L.M., M.J. Bagajewicz and A.L.H. Costa. *Simulation of Gasketed Plate Heat Exchangers Using a Generalized Model with Variable Physical Properties.* Applied Thermal Engineering, 217, DOI: 10.1016/j.applthemaleng.2022.119197 (2022).
12. Souza A. R. C., M. J. Bagajewicz, A. L. H. Costa. *Globally Optimal Distillation Tray Design using a Mathematical Programming Approach.* CERD. 180, 1-12 DOI: 10.1016/j.cherd.2022.01.036 (2022).
13. Chang C., Z. Liao, A. L. H. Costa, and M. J. Bagajewicz. *Globally Optimal Design of Intensified Shell and Tube Heat Exchangers using Complete Set Trimming.* Computers and Chemical Engineering. 158, DOI: 10.1016/j.compchemeng.2021.107644 (2022).
14. Lemos, J. C., A. Costa, M. Bagajewicz. *Design of Shell and Tube Heat Exchangers Considering The Interaction of Fouling and Hydraulics*. AIChE J. Vol 68. 5, DOI: 10.1002/aic.17586 (2022)
15. André Nahes, Miguel J. Bagajewicz, André L. H. Costa. *Design Optimization of Double Pipe Heat Exchangers using a Discretized Model.* Ind. Eng. Chem. Res. 60, 48, 17611–17625. DOI: 10.1021/acs.iecr.1c02455 (2021).
16. Parra A., M. Noriega, L. Yokoyama and M. Bagajewicz. *Does Pressure Retarded Osmosis Help Reverse Osmosis in Desalination?* Ind. Eng. Chem. Res. 60, 11, 4366. (2021).
17. Chang C., Z. Liao, A. L. H. Costa, M. J. Bagajewicz. *Globally Optimal Synthesis of Heat Exchanger Networks. Part III: Non-isothermal Mixing in Minimal and Non-minimal Networks*. AIChE Journal. Volume 67, Issue 11 (2021).
18. Sales G. M., E. M. Queiroz, A. Nahes, M. J. Bagajewicz and A. L. H. Costa. *Globally Optimal Design of Kettle Vaporizers.* Thermal Science and Engineering Progress. Volume 25, 1 (2021).
19. Pereira, I. P. S., M. Bagajewicz and A. Costa. *Global Optimization of the Design of Horizontal Shell and Tube Condensers.* Chemical Engineering Science 236 (2021).
20. Chang C., Z. Liao and M. J. Bagajewicz. *New Superstructure-Based Model for the Globally Optimal Synthesis of Hydrogen Networks.* Journal of Cleaner Production. Volume 292, 10 April (2021).
21. Nahes A. L., N. R. Martins, M. J. Bagajewicz, A. L. H. Costa. *A Computational Study of the Use of Set Trimming for the Globally Optimal Design of Gasketed-Plate Heat Exchangers.* Ind. Eng. Chem. Res., 60, 4, 1746–1755 (2021).
22. Chang C., Z. Liao, A.L.H. Costa and M. Bagajewicz. *Globally Optimal Synthesis of Heat Exchanger Networks. Part II: Non-Minimal Networks.* AIChE J. Vol 66, 7 (2020).
23. Chang C., A. Peccini, Y. Wang, A.L.H. Costa and M. Bagajewicz. *Globally Optimal Heat Exchanger Networks Design using Synheat and Linear Models. Part I: Networks featuring Minimum Number of Units.* AIChE J., 66, 7 (2020).
24. Lemos, J. C., André L. H. Costa, M. J. Bagajewicz. *Set Trimming Procedure for the Design Optimization of Shell and Tube Heat Exchangers*. Ind. Eng. Chem. Res. 59, 31, 14048-14054 (2020).
25. Fischer, C. D., A. L. H. Costa, and M.J. Bagajewicz. *Nonlinear Model for the Globally Optimal Design of Vertical Vapor Liquid Separation Vessels*. Ind. Eng. Chem. Res. 59, 48, 21155–21166 (2020).
26. Fischer C.F., A. L. H. Costa and M. J. Bagajewicz. *MILP Approach for the Design of Vertical Vapor-Liquid Separation Vessels- Comparison with Heuristics.* Latin American Applied Research. Vol 50, No 2, pp 65-70 (2020).
27. Costa A. L. H., M. J. Bagajewicz. 110th Anniversary: *On the Departure from Heuristics and Simplified Models towards Globally Optimal Design of Process Equipment.* Ind. & Eng. Chemistry Research. 58, 18684−18702 (2019).
28. Borges de Carvalho C., M.A.S.S. Ravagnani, M. Bagajewicz and A. L. H. Costa. *Globally optimal design of Air Coolers considering Fan Performance*. Applied Thermal Engineering, 161, 114188 (2019).
29. Gonçalves C., A. Hemerly Costa and M. Bagajewicz. *Linear method for the Design of Shell and Tube Heat Exchangers using the Bell–Delaware Method.* AIChE Journal, 65, 8 (2019).
30. Parra A., M. Noriega, L. Yokohama, and M. Bagajewicz. *Reverse Osmosis Network Rigorous Design Optimization.* Ind. Eng. Chem. Res. 58, 3060−3071 (2019)
31. Peccini A., J. C. Lemos, A. L. H. Costa and M. Bagajewicz. *Optimal Design of Double Pipe Heat Exchanger Systems*. Ind. Eng. Chem. Res. 58, 12080−12096 (2019).
32. Levy A. L. L., J. N. M. Souza, M.J. Bagajewicz and A.L.H. Costa. *Globally Optimal Design Optimization of Cooling Water Systems*. Ind. Eng. Chem. Res. 58, 9473−9485 (2019).
33. Lemos J. C., A. L. H. Costa and M. Bagajewicz. *Globally Optimal Linear Approach to the Design of Heat Exchangers Using Threshold Fouling Modeling.* AICHE Journal, 64, 6. p. 2089-2102 (2018).

34. Souza A. P., A. L. H. Costa, and M. Bagajewicz – *Globally Optimal Linear Approach for the Design of Process Equipment: The Case of Air Coolers.* AIChE Journal, v. 64, No 3. p. 886-903, (2017).
35. Gonçalves, C. O., Costa, A. L. H.; Bagajewicz, M. J. *Alternative MILP Formulations for Shell and Tube Heat Exchanger Optimal Design.* Industrial and Engineering Chemistry Research, v.56, p. 5970-5979, (2017).
36. Lemos, J. C., Costa, A. L.H.; Bagajewicz, M. J. *Linear method for the design of shell and tube heat exchangers including fouling modeling*. Applied Thermal Engineering, v. 125, p. 1345-1353, (2017).
37. Nakao A., A. Valdman, A. L. H. Costa, M. Bagajewicz, E. M. Queiroz. *Incorporating Fouling Modeling into Shell-and-Tube Heat Exchanger Design*. Industrial and Engineering Chemistry Research. v.56, 4377−4385 (2017).
38. Costa A.L.H, M. Bagajewicz. *Challenges in Replacing Heuristics-Based Trial-and-Error Procedures by Mathematical Optimization for Basic Equipment Design*. Proceedings of the 13th International Symposium on Process Systems Engineering – PSE, July 1-5, 2018, San Diego, USA. Computer-Aided Chemical Engineering. 44, pp. 439-444 (2017).
39. Kim S. Y. Pitak Jongsuwat, Uthaiporn Suriyapraphadilok and M. Bagajewicz. *Global Optimization of Heat Exchanger Networks. Part I: Stages/Substages Superstructure*. Industrial and Engineering Chemistry Research. v. 56, 5944−5957 (2017).
40. Kim S. Y. and M. Bagajewicz. *Global Optimization of Heat Exchanger Networks. Part II: Stages/Substages Superstructure with variable Cp*. Industrial and Engineering Chemistry Research. v. 56, 5958−5969 (2017).
41. Gonçalves, C. O., Costa, A. L. H., Bagajewicz, M. J. *Shell and tube heat exchanger design using mixed-integer linear programming*. AIChE Journal, v. 63, p. 1907-1922, (2016).
42. Ounahasaree Y., U. Suriyapraphadilok and M. Bagajewicz. *Global Optimization of Gasoline Blending Model using Bound Contraction Technique*. Computer-Aided Chemical Engineering. 38, pp. 1293-1298 (2016).
43. Carvalho M., A. R. Secchi and M. Bagajewicz. *Model Reformulation and Global Optimization of Oil Production Using Gas Lift*. Ind. Eng. Chem. Res., 55 (38), pp 10114–10120. (2016)
44. Kim S. Y. and M. Bagajewicz M. *Global Optimization for Heat Exchanger Network Design using a Generalized Superstructure*. Chem. Eng. Science, 147, pp. 30-46 (2016).
45. Da Silva F. F., M. Bagajewicz, F.L.P Pessoa, E. M. Queiroz. *Extension of the Water Sources Diagram Method to Systems with Simultaneous Fixed Flowrate and Fixed Load Processes*. Chemical Engineering Research and Design. Volume 104, December, Pages 752-772 (2015).
46. Faria D., S. Y. Kim and M. Bagajewicz. *Global Optimization of the Stage-wise Superstructure Model for Heat Exchanger Networks.* Industrial and Engineering Chemistry Research. Vol. 54, No 5, pp 1595–1604 (2015).
47. Bagajewicz M. and G. Valtinson. *On the Minimum Number of Units in Heat Exchanger Networks.* Industrial and Engineering Chemistry Research. Vol. 53, No 44, pp. 16899-16904 (2014).
48. Bagajewicz M., A. Lambeth and G. Valtinson. *New Technologies to Enhance the Distillation Yield of Crude Fractionation Column.* Industrial and Engineering Chemistry Research. Vol. 53, No 44, pp. 16937-16947 (2014).
49. Bagajewicz M. and G. Valtinson. *Leak Detection in Gas Pipelines using Accurate Hydraulic Models*. Industrial and Engineering Chemistry Research. Vol. 53, No 44, pp. 16964-16972. (2014).
50. Bagajewicz M. and G. Valtinson. *On the Computation of Natural Gas Pipeline Hydraulics.* Industrial and Engineering Chemistry Research. Vol. 53, No 26, pp.10707-10720 (2014).
51. Bagajewicz M., G. Valtinson and Q. Nguyen. *Retrofit of Crude Units Pre-Heating Trains: Mathematical Programming vs. Pinch Technology*. Industrial and Engineering Chemistry Research. Vol. 52, No 42, pp. 14913-14926 (2013).
52. Qiu, K., L. Zhu, M. Bagajewicz, M., S. Y. Kim, M. Ozturk. *Simulation Study on the Impact of Operating Conditions on Desulphurisation Selectivity in High-Sulphur Gas Sweetening*. International Journal of Oil, Gas and Coal Technology. Vol. 6, No 3, pp. 348-366 (2013).
53. Nguyen D. and M. Bagajewicz. Efficient *Approximate Methods for the Design and Upgrade of Sensor Networks*. Industrial and Engineering Chemistry Research. 52, 1, 83−90 (2013).
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Peer-Reviewed Conference Proceedings

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-- Energy Integration in section 100 (Magnaforming) of the Petrochemical Complex General Mosconi (Argentina). Economical Analysis and Design of a New Heat Exchanger Network. M. Bagajewicz and J. Cerdá.

* ***Reports on High Temperature Gas Desulfurization Techniques. (1984)***

-- Collaboration in the execution of the following Report: Novel Sorbents for High-Temperature Regenerative H2S Removal. The Report was done by M. Flytzani Stephanopoulos, G. Gavalas, S. Tamhankar, and P.K. Sharma for the Department of Energy of the USA.
-- High Surface Area ZnS Oxidation. The Report was prepared for the United States Department of Energy (DOE) and was part of my Ph.D. Thesis.

UNDERGRADUATE RESEARCH SUPERVISION

- **2025:** One (3) student at the Federal University of Rio de Janeiro: Gabriela Ferreira, Gustavo Rabello, Ronald de Souza Paiva. One Student at Universidad Tecnológica Nacional, Santa Fe, Argentina: Luis Utz Goettig.
- **2024:** Two (2) students at the Federal University of Rio de Janeiro: Mateus Barbio and Gabriela Ferreira. One Student at Universidad Tecnológica Nacional, Santa Fe, Argentina: Luis Utz Goettig.
- **2014:** One student at the University of Oklahoma: Andrew Lambeth.
- **2013:** Two (2) students at the University of Oklahoma: Andrew Lambeth and Devin Griffith.
- **2012:** Two (2) students at the University of Oklahoma: Andrew Lambeth and Devin Griffith.
- **2009:** Two (2) students at the University of Oklahoma: Kiril Bryukhanov and Nicholas Kirch. One (1) student intern from the Undergraduate Exchange Program with Clermont-Ferrand (France): Giovanni Chabot and three exchange students from Colombia: Jairo Diaz, Mary Zuniga, and Jeishner Peniaranda.
- **2008:** One (1) student at the University of Oklahoma: Nathan Liles. One (1) student intern from the Undergraduate Winter Internship Program at the University of Oklahoma: Juliana Hey Coradin. One (1) student intern from the Undergraduate Summer Internship Program at the University of Oklahoma: Enmanuele Tomba. One (1) student intern from the Undergraduate Exchange Program with Clermont-Ferrand (France): Julie Montrogon.
- **2007:** Three (3) students at the University of Oklahoma: Albert Curtis, Sarah Scribner, and Kirill Bryukhanov (NSF undergraduate Interns). One (1) student intern from the Undergraduate Winter Internship Program at the University of Oklahoma: Cecilia Rey. One (1) student intern from the Undergraduate Summer Internship Program at the University of Oklahoma: Jaime Ardila.
- **2006:** One (1) student intern at the Undergraduate Winter Internship Program at the University of Oklahoma: Dolores Gutiérrez Cacciabue. Three (3) student interns in the Undergraduate Summer Internship Program at the University of Oklahoma: Kamila Sobeslavova, Jaime Ardila, and Zehra Tosun.
- **2005:** One (1) student intern at the University of Oklahoma Undergraduate Summer Internship: Umamaatie Sing
- **2004:** Two (2) students at the University of Oklahoma: Laura Causey (Research for Credit) and Charles T. Watt (NSF undergraduate Intern).
- **2003:** One (1) student at the University of Oklahoma: David Splinter. One (1) international student from France: Remi Duval.
- **2001:** Two (2) international students from Venezuela: Lynddy Garrido and Maria Carolina Gonzales.
- **2000:** One (1) student from the University of Oklahoma: Will James. Two (2) international students, one from France: Paul Charles, and one from Venezuela: Enmanuel Cabrera.
- **1999:** Two (2) students at the University of Oklahoma: Le Huy and Casey Kiester. One (1) international student from France: Thomas Bonhomme.
- **1998:** Three (3) students at the University of Oklahoma: Wei Shung Chung, Le Huy, Alvin Lee. One (1) international student from Venezuela: Jose Gomez.
- **1997:** Three (3) students at the University of Oklahoma: Lilan Ren, Steve Stewart, and Alina Bagajewicz.

OTHER POSITIONS

* Central Oklahoma Section of the AIChE. Board Member (1998-1999)
* Representative of INTEC at the Research Commission of the Argentine Petrochemical Institute (IPA) (1981-- 1982).
* In charge of the Subarea Process Simulation of the Industrial Extension Unit of INTEC, Argentina. (1982).
* In charge of the Group responsible for the planning of the Startup of the Heavy Water Experimental Plant in Argentina (1979-1980).

AWARDS, HONORS AND SPECIAL APPOINTMENTS

- Best Professor of the Chemical Engineering and Materials Science Department. This award is chosen entirely by the senior class every year (2006).
- Best Professor of the Chemical Engineering and Materials Science Department. This award is chosen entirely by the senior class every year (2003).
- University of Oklahoma Regents Award for Superior Accomplishment in Research and Creative Activity (2003).
- American Institute of Chemical Engineers (AIChE) Cast Division, Area 10c. Programming Chair for 2005.
- University of Oklahoma Samuel Noble Foundation Presidential Professorship (2001).
- First Place. 2000 Graduate Research Poster Session in the area of Science and Engineering. University of Oklahoma (Hernán Rodera's presentation).
- Undergraduate Research Award Presentation. 2003 Undergraduate Research Day. University of Oklahoma. (David Splinter's Presentation).
- Presidential Travel Award. University of Oklahoma. (1999)
- Presidential Travel Award. University of Oklahoma. (1997)
- Big 12 Universities Faculty Fellowship. (1997).
- Presidential Travel Award. University of Oklahoma. (1996).
- Argentine National Research Council and Inter-American Development Bank Fellowship to perform graduate studies. (1982-1987).
- Research Fellow. Atomic Energy Commission. (1978).

PLENARY CONFERENCE LECTURES

International

1. **XIV Colóquio Anual de Engenharia Química. Programa de Engenharia Química (PEQ) da COPPE/UFRJ.** November 2014. Rio de Janeiro, Brazil**.** Process Systems Engineering in Academia and Industry: Unde venis et quo vadis? M. Bagajewicz.
2. **IV Workshop em Engenharia Química –Universidade Estadual de Rio de Janeiro. UERJ.** October 2014. Rio de Janeiro, Brazil**.** *Advances in Heat Exchanger Network Retrofit. Multipurpose and Multi-plants cases.* M. Bagajewicz.
3. **Workshop On Sustainability of Water & Energy Systems - Summer School In Environmental Engineering Environmental Engineering Program (PEA) – POLI/EQ/UFRJ.** Rio De Janeiro, Brazil, January 2015. *Mathematical Optimization Approach to Water Management in Process Industries*. M. Bagajewicz.
4. **XIV Colóquio Anual de Engenharia Química. Programa de Engenharia Química (PEQ) da COPPE/UFRJ.** November 2014. Rio de Janeiro, Brazil**.** Process Systems Engineering in Academia and Industry: Unde venis et quo vadis? M. Bagajewicz.
5. **IV Workshop em Engenharia Química –Universidade Estadual de Rio de Janeiro. UERJ.** October 2014. Rio de Janeiro, Brazil**.** *Advances in Heat Exchanger Network Retrofit. Multipurpose and Multiplant Cases.* M. Bagajewicz.
6. **ESCAPE 19 Meeting**. Krakow, Poland, June 2009. *Review of Water Management Technologies in Process Plants.*
7. **Enpromer 2005**. **Fourth Congress of Process Engineering of the Mercosur**, Rio de Janeiro, Brazil. August 2004. *On the Integration of Process and Product Design with Microeconomics and Finances.*
8. **XXII Chemical Engineering Colombian Congress.** August 2003. Bucaramanga, Colombia. *Financial Risk Management in Process Design and Operations Planning.* M. Bagajewicz.
9. **Foundation of Computer Aided Operations Conference (FOCAPO) 2003.** *January, 2003.* Coral Springs, FL. *Data Reconciliation and Sensor Location.*
10. **Enpromer'99**. **Second Congress of Process Engineering of the Mercosur**, Florianopolis Brazil. September 1999. *Data Reconciliation and Instrumentation Design/Upgrade for Cost-Effective Plant Data Gathering and Filtering.*

11. **Enpromer'99**. **Second Congress of Process Engineering of the Mercosur**, Florianopolis Brazil. September 1999. *Water and Wastewater Management.*
12. **Enpromer'97**. **First Congress of Process Engineering of the Mercosur**, Bahía Blanca, Argentina, September 1997. *Data Reconciliation. Gross Error Detection and Sensor Network Design. State of the Art and Future Directions.*
13. **VII Inter-American Congress on the Environment. Colombia. October 2000.** *Water use in Industry and the Environment. Can we resolve the conflict?*
14. **50th Canadian Society for Chemical Engineering Conference. Symposium on Process INTEGRATION. Montreal. October 2000.** *Design and Retrofit of Water/Wastewater Systems in Refineries and Process Plants: A Review.*

KEYNOTE CONFERENCE LECTURES

International

15. **APCIL-8:** 8th Asia Pacific Conference on Ionic Liquids and Green Processes. Kaifeng, China. May 2024. *On a new Optimization Method for the PDE Area and the role of Artificial Intelligence.*
16. **WCCE11:** 11th World Congress of Chemical Engineering. Buenos Aires, Argentina. June 2023. *Set Trimming, Smart and Supersmart Enumeration for the Globally Optimal Design of Chemical Process Equipment.* Co-authors: A.M. Nahes, A.L.H. Costa.
17. **SCPPE 2019.** 5th International Conference on Sustainable Chemical Product and Process Engineering**,** June 30-July 3, 2019. Tianjin, China. *Globally optimal Process Equipment Basic Design. A Departure from Heuristics and Rules of Thumb-Based Procedures.* A.L.H. Costa and M.J. Bagajewicz.
18. **3º Congresso Brasileiro de CO_2.** April 2015. Rio de Janeiro, Brazil**.** *New Technology for the Cleaning of Natural Gas*. M. Bagajewicz.
19. **SCPPE 2013. Sustainable Chemical Product and Process Engineering Conference.** Dailan, China, May 2013. *Water Management in Process Industries – Appropriate Architecture and Modeling*
20. **Advances in Petrochemicals and Polymers in the New Millennium.** *July 2003.* Bangkok. Thailand. ***Financial Risk Management in Process Design.*** *Process Modeling and Simulation Session.*
21. **Advances in Petrochemicals and Polymers in the New Millennium.** *July 2003.* Bangkok. Thailand. *Data Reconciliation and Instrumentation Upgrade. Overview and Challenges. Process Modeling and Simulation Session.*
22. **PRES 2002. 5th Conference Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction.** Prague, Czech Republic. August (2002). *Financial Risk Management in Process Design.* Co-authors A. Barbaro and A. Koppol.
23. **ISPC "LEREI-2002". International Scientific-Practical Conference. Logistics and Economics of Resource and Energy Savings in Chemical and Petrochemical Industries.** Moscow, Russia. October 29-31, 2002. *Financial Risk Management in Decision Making.*

INVITED LECTURES

International

1. **Universidade Federal de Rio de Janeiro**. March 2025. Department of Chemical Engineering, Brazil. *On the State of Process Systems Engineering in Academia and Industry-Current Difficulties Associated to Technology Transfer.*
2. **Universidade Estadual de Maringa**. November 2024. Department of Chemical Engineering, Maringa, Brazil. *On the State of Process Systems Engineering in Academia and Industry-Current Difficulties Associated to Technology Transfer.*
3. **Politechnika Krakowska** (Politechnika Krakowskaa). June 2024. Department of Chemical Engineering, Krakow, Poland. *New Optimization Approach for the Design of Process Equipment Clusters and Process Networks.*
4. **Silesian University of Technology** (Politechnika Śląska), May 2024. Department of Thermal Technology. Gliwice, Poland. *New Optimization Approach for the Design of Process Equipment Clusters and Process Networks.*
5. **Zhejiang University.** April 2024. Hangzhou. China. *New Approaches for Global Optimization in Process Systems Engineering.*

6. **China University of Petroleum**. May 2023. Beijing, China. *Set Trimming and Smart/Supersmart Enumeration: A New Alternative to Mathematical Programming for the Global Optimization of Mixed Integer Nonlinear Differential Optimization Models (MINLDOM).*
7. **Chongqing University.** May 2023. Chongqing, China. *Set Trimming and Smart/Supersmart Enumeration: A New Alternative to Mathematical Programming for the Global Optimization of Mixed Integer Nonlinear Differential Optimization Models (MINLDOM).*
8. **INGAR.** Instituto de Desarrollo y Diseño. December 2022. Santa Fe, Argentina. *On a New Rival to Mathematical Programming for the Global Optimization of a Certain Class of Mixed Integer Nonlinear Models (MINLM). Set Trimming and Smart/Supersmart (Parallel) Enumeration.*
9. **Universidade Federal do Rio de Janeiro.** May 2021. Rio de Janeiro, Brazil. *Value of Accurate Information and its relation to Back-off control.*
10. **Universidade Estadual do Rio de Janeiro.** May 2020. Rio de Janeiro, Brazil. *Process Systems Engineering, Past, Present, and Future. Unde venis et quo vadis?*
11. **Zhejiang University.** June 2019. Hangzhou, China. *Process Systems Engineering, Past, Present, and Future. Unde venis et quo vadis?*
12. **China University of Petroleum.** June 2019. Beijing, China. *Process Systems Engineering, Past, Present, and Future. Unde venis et quo vadis?*
13. **Chulalongkorn University.** January 2018. Bangkok, Thailand**.** *Process Systems Engineering, Past, Present, and Future. Unde venis et quo vadis?*
14. **Universidade Estadual de Maringá.** November 2014. Maringá, Brazil**.** *Industrial Experiences in Heat Exchanger Network Retrofit.*
15. **Universidade Federal de Pernambuco.** November 2014. Recife, Brazil**.** *New trends in Process Systems Engineering. Unde venis et quo vadis?*
16. **Petrobras.** November 2014. Rio de Janeiro, Brazil**.** *Multipurpose Heat Exchanger Network Retrofit In Refineries.*
17. **Petrobras.** November 2014. Rio de Janeiro, Brazil**.** *Feasibility and Architecture of "Zero-liquid Discharge" Water Use-Reuse Cycles in Industrial Sites.*
18. **Universidad de los Andes.** September 2014. Bogotá, Colombia. *New Trends in Process Systems Engineering.*
19. **Chulalongkorn University.** November 2010. Bangkok, Thailand**.** *Recent Advances in Refinery Operations Planning Methods.*
20. **Chulalongkorn University.** November 2009. Bangkok, Thailand**.** *Global Optimization in the Oil and Gas Industry.*
21. **Chulalongkorn University.** October 2008. Bangkok, Thailand**.** *Acoustic Mass Pump for Chemical Separations.* M. Bagajewicz.
22. **Universidad Nacional de Ingenieria.** May 2008. Lima, Peru. *New trends in Process Systems Engineering.* M. Bagajewicz.
23. **Chulalongkorn University.** October 2007. Bangkok, Thailand**.** *New trends in Refinery Operations scheduling and Planning.* M. Bagajewicz.
24. **Chulalongkorn University.** October 2006. Bangkok, Thailand**.** *Integrated Sensor Network Design.* M. Bagajewicz.
25. **Chulalongkorn University.** October 2005. Bangkok, Thailand**.** *Product Design: The New Interface of Engineering with Microeconomics, Finances and Marketing.*
26. **Pan American Advanced Studies Institute (PASI) Program on Process Systems Engineering**. Iguazu Falls, Argentina. August 2005. *Instrumentation Upgrade for Improved Process Monitoring.* M. Bagajewicz
27. **Chulalongkorn University.** October 2004. Bangkok, Thailand**.** *Synergy between Microeconomics and Finances with Product and Process Systems Engineering.*
28. **Universidad de Valladolid.** May 2004. Valladolid, Spain. *Data Reconciliation and Instrumentation Upgrade.*
29. **NEW TRENDS IN CHEMICAL ENGINEERING. Workshop organized by the University of Salamanca, Spain.** February 21-25, 2004. *Integration of Decision-Making Tools from Process Systems Engineering and Business. Financial Risk Management and other Emerging Procedures.*
30. **Chulalongkorn University.** October 2003. Bangkok, Thailand**.** *Financial Risk Management in Process Design and Operations.*
31. **Universitat Rovira i Virgili. Chemical Engineering Department.** Tarragona, Spain. November 15, 2002. ***Lecture:*** *Financial Risk Management in Design and Decision Making.*

32. **Warsaw University of Technology.** Plock, Poland. October 24, 2002. *On the Management of Financial Risk in the Planning of Investment, plant operations, and Project decisions.*
33. **Polytechnic of Catalunya. Chemical Engineering Department.** June 2002. Barcelona, Spain. *Risk control in Design and Decision Making.*
34. **50th Gordon Research Conference on Statistics in Chemistry and Chemical Engineering.** *July 22-27, 2001*. New Hampshire. *Data Reconciliation and Sensor Location. DISCUSSANT: Derrick Rollins, Iowa State University.*
35. **University of Salamanca. Chemical Engineering Department** (May 1998) *Process Engineering at the University of Oklahoma.*
36. **Enpromer'97**. **First Congress of Process Engineering of the Mercosur**, Bahía Blanca, Argentina, September 1997. *Panel on Chemical Engineering Education.*
37. **Beijing University of Chemical Technology**. Beijing, People's Republic of China. (July 1996). *Process Engineering at the University of Oklahoma.*
38. **Hebei University of Chemical Technology**. Tianjin. People's Republic of China. (July 1996). *On the State Space Representation of Distillation Networks.*
39. **INTEC, UNL, Argentina**, (1989). *Teaching Mathematics for Engineers. An Experience using Operator Theory*.
40. **INTEC, UNL, Argentina**, (1986). *Monotone Bounds for Chemical Engineering Elliptic Problems. Gas-Solid Reactions in Pellets*.
41. **Petroquímica General Mosconi**, La Plata, Argentina (1982). *Fundaments of the Methodology Used in Plant Heat Integration Studies. The General Mosconi Petrochemical Plant Case*. (with J. Cerdá).
42. **Universidad Nacional del Sur (UNS)**, Bahía Blanca, Argentina, (1982). *Profitable Heat Integration of Processes*. (with J. Cerdá).

United States

43. **Texas Tech University**. Lubbock, Texas. *New Trends in Process Systems Engineering: Integration with Business Decision Making Tools. Financial Risk Management and Other Emerging Procedures. May 4,* (2004).
44. **University of Kansas**. Lawrence, Kansas. *Financial Risk Management in Process design Investment Planning and Process Operations. Sept 30,* (2003).
45. **Carnegie Mellon University**. *Review of Sensor Location. Nov 30,* (1999). *Invited Seminar Speaker.*
46. **AIChE – Trisectional Oklahoma Meeting.** ***The Desktop Computation Design and Modeling Revolution***. Oklahoma, (April, 1999). *Design and Upgrade of Instrumentation for Process Monitoring and Parameter Estimation.*
47. **AIChE – Trisectional Oklahoma Meeting.** ***The Desktop Computation design and Modeling Revolution***. Oklahoma, (April, 1999). *Panelist on Model Validation.*
48. **1999 Spring National AIChE Meeting**. Houston. *Panel discussion on "Potential Benefits of Global Optimization in Industrial Practice".*
49. **AIChE – University of Oklahoma Student Chapter**. (November 1998). *How to effectively prepare for graduate school. + Judo Demonstration.*
50. **AIChE - Central Oklahoma Section. Norman**, Oklahoma (October 1998). *Panelist on Design and Optimization.*
51. **Oklahoma State University. Chemical Engineering Department**, (February 1998). *Data Reconciliation, Gross Error Detection, and Optimal Sensor Location. Current Challenges and Future Trends.*
52. **Iowa State University. Chemical Engineering Department**, (February 1998). *Some recent results in Data Reconciliation, Gross Error Detection, and Sensor Location.*
53. **University of Oklahoma Society of Hispanic Engineers (SHE)**, (November 1997). *How to maximize Chances to get accepted in Graduate School*
54. **Phillips Petroleum. Research and Development**. Bartlesville, Oklahoma (August 1997). *Energy Retrofit of Crude Units.*
55. **AIChE - Central Oklahoma Section. Norman**, Oklahoma (April 1997). *Dynamic Data Reconciliation.*
56. **KBC Advanced Technologies. User Meeting**. San Antonio, Texas (March 1996). *Data Reconciliation. Current Challenges and Future Trends.*
57. **Phillips Petroleum. Research and Development**. Bartlesville, Oklahoma, (March 1996). *Design, Modeling, Simulation, and Plant Operations Studies at OU.*
58. **AIChE - Central Oklahoma Section.** Norman, Oklahoma (February 1996). *Distillation Networks are MEN and HEN.*

59. **University Of Tulsa. Department of Chemical Engineering**, Tulsa, Oklahoma, (October 1995). *On the State Space Approach to Process Design*.
60. **University of Oklahoma, School of Chemical Engineering and Material Science.** Norman, Oklahoma, (May 1995). *Recent Developments in Process Design and Analysis*.
61. **UCLA, Los Angeles**, (1991). *The Modeling of Heterogeneous Reaction Diffusion Systems*.

PARTICIPATION IN CONGRESSES AND WORKSHOPS

International

- **BJCJMM 2024:** The 2nd Brazil-China Joint Mathematical Meeting, Dongguan, China. *Generalized Partition-Free Bound Contraction for Global Optimization of a Class of Nonconvex Problems*. Esdras P. Carvalho, Miguel Bagajewicz
- **PSEBR 2024:** III Congresso Brasileiro em Engenharia de Sistemas em Processos, São Paulo, Brazil. *Global optimization of the retrofit of heat exchanger networks with detailed equipment design.* André Luiz Moreira Nahes, André Luiz Hemerly Costa, Miguel Bagajewicz
- **PSEBR 2024:** III Congresso Brasileiro em Engenharia de Sistemas em Processos, São Paulo, Brazil. *Global Optimization of Mixed-Integer Nonlinear Optimization Problems using Set Trimming and Enumeration.* André Luiz Hemerly Costa, Miguel Bagajewicz
- **WCCE11:** 11th World Congress of Chemical Engineering. Buenos Aires, Argentina. *Set Trimming Procedure and Smart Enumeration for the globally optimal design of cooling towers*. E.H.B. Pacola, E.P. Carvalho, A.L.H Costa, M.J. Bagajewicz.
- **WCCE11:** 11th World Congress of Chemical Engineering. Buenos Aires, Argentina. *Generalization of a bound contraction methodology for the solution of optimization problems in process systems chemical engineering.* E. P. Carvalho, M. J. Bagajewicz.
- **WCCE11:** 11th World Congress of Chemical Engineering. Buenos Aires, Argentina. *On a revised bound contraction method for the globally optimal synthesis of heat exchanger networks* E. P. Carvalho, E. H. B. Pacola, C. B. Carvalho, M. J. Bagajewicz.
- **WCCE11:** 11th World Congress of Chemical Engineering. Buenos Aires, Argentina. *Globally Optimal Design of Distillation Columns using Enumeration Techniques.* L. Santos de Jesus, A. Peccini, E. Mach Queiroz, A. Secchi, A. L. H Costa, M. Bagajewicz.
- **WCCE11:** 11th World Congress of Chemical Engineering. Buenos Aires, Argentina. *Use of Proxy Set Trimming for the Optimal Basic Design of Process Equipment*. A. M. Nahes, S. Y. Kim, A. L. H. Costa, M. J. Bagajewicz.
- **WCCE11:** 11th World Congress of Chemical Engineering. Buenos Aires, Argentina. ***KEYNOTE LECTURE:*** *Set Trimming, Smart, and Supersmart Enumeration for the Globally Optimal Design of Chemical Process Equipment.* A.M. Nahes, M.J. Bagajewicz, A.L.H. Costa.
- **WCCE11:** 11th World Congress of Chemical Engineering. Buenos Aires, Argentina. *Simultaneous Globally Optimal Heat Exchanger Network and Heat Exchanger Synthesis*. D.G. Oliva, J. Lemos, A.L.H. Costa, M.J. Bagajewicz.
- **CLAIO 2022**. XXI Latin Ibero-American Conference on Operations Research. Buenos Aires. December 2022. *State of the Art of Set Trimming and Smart/Super Smart Enumeration for the Globally Optimal Solution of MINLP Problems with Discrete Variables.* A.L.H. Costa, M.J. Bagajewicz.
- **PSEBR 2022:** II Congresso Brasileiro em Engenharia de Sistemas em Processos, Curitiba, Brazil. *Catalytic reactor design optimization using Set Trimming and Smart Enumeration* A. M. Nahes, M.J. Bagajewicz, A. L. H. Costa.
- **HEAT EXCHANGER FOULING & CLEANING CONFERENCE.** Wagrain, Austria, June 2022. *HEATTRAX. A new approach to exchanger fouling management*. K. Vann, T. Matthews, N. Wang, B. Busker, M. Bagajewicz, D. Oliva, R. Vargas.
- **HEAT EXCHANGER FOULING & CLEANING CONFERENCE.** Wagrain, Austria, June 2022. *Fouling Thickness Modeling for Refinery Cleaning Schedule Optimization.* M.J. Bagajewicz, A.M. Nahes, A.L.H. Costa.
- **PSEBR 2022:** II Congresso Brasileiro em Engenharia de Sistemas em Processos, Curitiba, Brazil. *Globally Optimal Design Of Distillation Columns Using Smart Enumeration.* Alice Peccini, L. F. S. de Jesus, A. R. Secchi, M. J. Bagajewicz, A. L. H. Costa.

- **COBEQ 2020:** XXIII Congresso Brasileiro de Engenharia Quimica. September 2020. Fauros, Gramado, Brazil**.** *Global Optimal Design of Double Pipe Exchangers using Set Trimming* J.C. Lemos, A. H. Costa, M. Bagajewicz.
- **ESCAPE 29.** 29th European Symposium on Computer Aided Process Engineering**,** June 16th to 19th, 2019, Eindhoven, The Netherlands**.** *Global Optimization of Counter Current Gasketed Plate Heat Exchanger***.** N. Martins, P. Cheali, A.L.H. Costa and M.J. Bagajewicz.
- **ESCAPE 29.** 29th European Symposium on Computer Aided Process Engineering, June 16th to 19th, 2019, Eindhoven, The Netherlands**.** *Globally Optimal Design of Double Pipe Heat Exchangers using Local Properties and Discretized Models*. A. Peccini, A.L.H. Costa, M.J. Bagajewicz.
- **CAIQ2019.** X Congreso Argentino de Ingeniería Química, Santa Fe, Argentina, August 2019. *New Approach for the Design of Efficient Vertical VLE Flash Vessels.* C.D. Fischer, A.L. H. Costa and M.J. Bagajewicz.
- **SCPPE 2019.** 5th International Conference on Sustainable Chemical Product and Process Engineering**,** June 30-July 3, 2019. Tianjin, China. ***KEYNOTE LECTURE:*** *Globally optimal Process Equipment Basic Design. A Departure from Heuristics and Rules of Thumb-Based Procedures*. A.L.H. Costa and M.J. Bagajewicz.
- **PSE-Brasil 2019.** I Congresso Brasileiro em Engenharia de Sistemas em Processos, Rio de Janeiro, May 2019. *Breaking the Heuristic Paradigm for Chemical Process Equipment Design Using Optimization Techniques.* A.L.H. Costa, M.J. Bagajewicz.
- **PSE-Brasil 2019.** I Congresso Brasileiro em Engenharia de Sistemas em Processos, Rio de Janeiro , May 2019. *New Insights on the Heat Exchanger Design Optimization Exploring Fouling Mitigation.* J. Coelho, A.L.H. Costa, M.J. Bagajewicz.
- **PSE Asia 2019**, Process Systems Engineering Asia. January 2019. Bangkok, Thailand. *Optimal Design of Fired Heaters*. I. Intararit, U. Suriyapraphadilok, A.L.H. Costa, and M.J. Bagajewicz.
- **PSE 2018**- 13th International Symposium on Process Systems Engineering. July 1-5, 2018, San Diego, USA. *Challenges in Replacing Heuristics-Based Trial-and-Error Procedures by Mathematical Optimization for Basic Equipment Design.* Costa A.L.H, M. Bagajewicz.
- **XXII Congresso Brasileiro de Engenharia Quimica. COBEQ** September 2018. São Paulo, Brazil***:*** *Comparação De Diferentes Alternativas De Função Objetivo Na Formulação Do Problema De Projeto Ótimo De Trocadores De Calor Casco-E-Tubo: Massa vs. Área.* C. Gonçalves, N. Martins, G. Carvalho, M. Bagajewicz, A. H. Costa.
- **XXI Congresso Brasileiro de Engenharia Quimica. COBEQ** September 2016. Fortaleza, Brazil***:*** *Otimização Da Síntese de Redes De Trocadores de Calor Considerando o Impacto Dinâmico Da Deposição* (*Heat Exchanger Network Optimization considering the Dynamic Impact of Fouling.)* J. Coelho, A. H. Costa, M. Bagajewicz.
- **ESCAPE 27.** June 2017. Proceedings of the 27th European Symposium on Computer-Aided Process Engineering, Barcelona, Spain. *Heat Exchanger Design Optimization Considering Threshold Fouling Modelling*. A.L.H. Costa, J.C. Lemos, M.J. Bagajewicz.
- **3º Congresso Brasileiro de CO_2.** April 2015. Rio de Janeiro, Brazil**.** ***KEYNOTE LECTURE:*** *New Technology for the Cleaning of Natural Gas*. M. Bagajewicz.
- **Workshop On Sustainability Of Water & Energy Systems - Summer School In Environmental Engineering Environmental Engineering Program (PEA) – POLI/EQ/UFRJ.** Rio De Janeiro, Brazil, January 2015. ***PLENARY LECTURE:*** *Mathematical Optimization Approach to Water Management in Process Industries.* M. Bagajewicz.
- **XIV Colóquio Anual de Engenharia Química. Programa de Engenharia Química (PEQ) da COPPE/UFRJ.** November 2014. Rio de Janeiro, Brazil**.** ***PLENARY LECTURE:*** Process Systems Engineering in Academia and Industry: Unde venis et quo vadis? M. Bagajewicz.
- **IV Workshop em Engenharia Química –Universidade Estadual de Rio de Janeiro. UERJ.** October 2014. Rio de Janeiro, Brazil**.** ***PLENARY LECTURE:*** *Advances in Heat Exchanger Network Retrofit. Multipurpose and Multi-plants cases.* M. Bagajewicz.
- **PRES 2014. 17th Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction.** August 23-27, 2014. Prague, Czech Republic. *New Heat Exchanger Network Design Model*. Pitak Jongsuwat, Uthaiporn Suriyapraphadilok and M. Bagajewicz.

- **SCPPE 2013. Sustainable Chemical Product and Process Engineering Conference.** Dailan, China, May, 2013. ***PLENARY LECTURE:*** *Water Management in Process Industries – Appropriate Architecture and Modeling.*
- **SCPPE 2013. Sustainable Chemical Product and Process Engineering Conference.** Dailan, China, May, 2013. Miguel Bagajewicz and Gary Valtinson. *New Leak Detection Method for Pipelines*
- **SCPPE 2013. Sustainable Chemical Product and Process Engineering Conference.** Dailan, China, May, 2013. Miguel Bagajewicz, Gary Valtinson, and DuyQuang Nguyen. *Energy Retrofit of Crude Units: Pinch Technology vs. Mathematical Programming*
- **ESCAPE 20. 20th European Symposium on Computer-Aided Process Engineering.** Kostin A. M., F. D. Mele, M. J. Bagajewicz, L. Jiménez, G. Guillén-Gosálbez. *Integrating Pricing Policies in the Strategic Planning of Supply Chains: A Case Study of The Sugar Cane Industry in Argentina.* 20 (2010).
- **ALIO-INFORMS Joint Meeting.** Buenos Aires, Argentina, June 2010. *A New Approach for Global Optimization of MINLP Problems.* Debora Campos de Faria and M. Bagajewicz.
- **ALIO-INFORMS Joint Meeting.** Buenos Aires, Argentina, June 2010. *Global Optimization of Water Management and Pooling Problems.* Debora Campos de Faria and M. Bagajewicz.
- **ALIO-INFORMS Joint Meeting.** Buenos Aires, Argentina, June 2010. *On the use of different risk metrics within a muli-objective optimization framework.* Gonzalo Guillén and M. Bagajewicz.
- **ASME 2010 10th Biennial Conference on Engineering Systems Design and Analysis, ESDA2010-24156.** David E. Martinez, Joan Carles Bruno, Miguel Bagajewicz, Alberto Coronas. *Performance analysis of absorption chillers using data reconciliation*, Proceedings of the July 2010, Istanbul, Turkey (2010).
- **ESCAPE 19. 19th European Symposium on Computer-Aided Process Engineering**. Krakow, Poland, June 2009. ***PLENARY LECTURE:*** *Review of Water Management Technologies in Process Plants.*
- **ESCAPE 19 Meeting**. Krakow, Poland, June 2009. *Approximate method for Optimal Instrumentation Network Design.* Nguyen DuyQuang and M. Bagajewicz
- **ESCAPE 18 Meeting**. Lyon, France, June 2008. *Optimization of Preventive Maintenance Scheduling in Processing Plants.* Nguyen DuyQuang and M. Bagajewicz.
- **ESCAPE 18 Meeting**. Lyon, France, June 2008. *New Method for Sensor Network Design.* Bagajewicz Miguel, DuyQuang Nguyen, and Sanjay Kumar Sugumar.
- **ESCAPE 18 Meeting**. Lyon, France, June 2008. *A new approach for the design of multicomponent water-wastewater networks*. Faria Debora and M. Bagajewicz.
- **ESCAPE 18 Meeting**. Lyon, France, June 2008. *A Microeconomics-based approach to product design under uncertainty.* Whitnack Craig, Ashley Heller, and Miguel J. Bagajewicz.
- **ESCAPE 17 Meeting**. Bucharest, Rumania, May 2007. *Design of Non-Isothermal Process Networks.* Miloš Bogataj and M. Bagajewicz.
- **8th NGSC-Natural Gas Conversion.** Symposium, May 27-31, 2006. Natal, Brazil. *Managing Risk in Investment planning of Gas to Liquids Plants under uncertainty in Brazil.* Barbara Souza and M. Bagajewicz
- **XXII Inter-American Congress of Chemical Engineering.** October, 2006. Buenos Aires, Argentina. *Designing Good Products vs. Designing Profitable Products: Unexplored Issues in the Interface of Engineering with Marketing/Microeconomics.* M. Bagajewicz
- **XXII Inter-American Congress of Chemical Engineering.** October, 2006. Buenos Aires, Argentina. *Cost Benefit Analysis of Instrument Maintenance Policies and Data Reconciliation Related to Plant Data Accuracy*. DuyQuang Nguyen and M. Bagajewicz
- **XXII InterAmerican Congress of Chemical Engineering.** October, 2006. Buenos Aires, Argentina. *Cost Retrofit of Water Networks in Process Plants.* Debora Campos de Faria and M. Bagajewicz
- **Pan American Advanced Studies Institute (PASI) Program on Process Systems Engineering**. Iguazu Falls, Argentina. August 2005. ***LECTURE:*** *Instrumentation Upgrade for Improved Process Monitoring.* M. Bagajewicz
- **Enpromer 2005**. **Fourth Congress of Process Engineering of the Mercosur**, Rio de Janeiro, Brazil. August 2004. ***PLENARY LECTURE:*** *On the Integration of Process and Product design with Microeconomics and Finances.* M. Bagajewicz.
- **ESCAPE 15 Meeting**. Barcelona, May 2005. *On the definition of a stochastic-based accuracy concept of date reconciliation-based estimators.* M. Bagajewicz.

- **ESCAPE 15 Meeting**. Barcelona, May 2005. *Effect of pricing, advertisement, and competition in multi-site capacity planning.* M. Bagajewicz.
- **ICheap-7. Seventh Italian Conference on Chemical and Processing Engineering.** *May 15-18, 2005*. Giardini Naxos, Italy. *On the Determination of Downside Financial Loss of Instrumentation Networks in the Presence of Gross Errors*. Nguyen D.Q., Siemanond K., Bagajewicz M.J.
- **PRES 2005. 8th Conference Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction.** *May 15-18, 2005*. Giardini Naxos, Italy. *An MILP model for HEN Retrofit.* Andres Barbaro, Miguel Bagajewicz, Narumon Viparunat and Kitipat Siemanond.
- **VI Congreso Nacional de la Asociación Colombiana de Automática (6th Congress of the Colombian Association of Automatics).** *New Paradigm In Instrumentation Network Design And Upgrade.* Ibagué, Colombia, November 2004. A. Uribe and M. Bagajewicz.
- **4th International Symposium on Process Integration. APCChE 2004**. October 17-21, 2004, Kitakyushu, Japan**.** *Design and retrofit of crude fractionation units.* R. Buaboocha, K. Siemanond, and M. Bagajewicz.
- **FOCAPD 2004. (Foundations of Computer-Aided Process Design)** Princeton, NJ, USA, July 2004. *New Paradigm in Instrumentation Design.* M. Bagajewicz.
- **Symposium on New Trends in Chemical Engineering.** February, 2004. Salamanca Spain. ***PLENARY LECTURE:*** *Integration of Decision-Making Tools from Process Systems Engineering and Business. Financial Risk Management and Other Emerging Procedures.* M. Bagajewicz.
- **ESCAPE 14 Meeting**. Lisbon, May 2004. *Managing Financial in the Planning of Heat Exchanger Cleaning.* J. Lavaja and M. Bagajewicz.
- **XXII Chemical Engineering Colombian Congress.** August 2003. Bucaramanga, Colombia. ***PLENARY LECTURE:*** *Financial Risk Management in Process Design.* M. Bagajewicz.
- **Advances in Petrochemicals and Polymers in the New Millennium.** July 2003. Bangkok. Thailand. ***PLENARY LECTURE:*** *Financial Risk Management in Process Design. Process Modeling and Simulation Session*. M. Bagajewicz.
- **Advances in Petrochemicals and Polymers in the New Millennium.** July 2003. Bangkok. Thailand. ***INVITED LECTURE:*** *Data Reconciliation and Instrumentation Upgrade. Overview and Challenges.* Process Modeling and Simulation Session. M. Bagajewicz.
- **5th IFAC Symposium on Fault Detection, Supervision, and Safety of Technical Processes.** Washington DC, June 2003. *Optimized Sensors Network for Process Monitoring using PCA.* E. Musulin, M. Bagajewicz, J. M. Nougués, A. Espuña, and L. Puigjaner.
- **PSE 2003**. **8th International Symposium on Process Systems Engineering.** China, June 2003. *Integrating Pricing Policies and Financial Risk Management into Scheduling of Batch Plants.* G. Guillén, M. Bagajewicz, S. E. Sequeira, R. Tona, A. Espuña and L. Puigjaner.
- **PSE 2003**. **8th International Symposium on Process Systems Engineering.** China, June 2003. *Design of Sensor Networks to Optimize PCA Monitoring Performance.* E. Musulin, M. Bagajewicz, J. M. Nougués, A. Espuña, and L. Puigjaner.
- **PSE 2003**. **8th International Symposium on Process Systems Engineering.** China, June 2003. *Risk Management in Integrated Budgeting-Scheduling Models for the Batch Industry.* J. Romero, M. Badell, M. Bagajewicz and L. Puigjaner.
- **ESCAPE 13 Meeting**. Lappeenranta, Finland, June 1-4, 2003. *Managing Financial Risk in Scheduling of Batch Plants.* A. Bonfill, J. Cantón, M. Bagajewicz, A. Espuña, and L. Puigjaner.
- **ESCAPE 13 Meeting**. Lappeenranta, Finland, June 1-4, 2003. *Sensor-Placement for Dynamic Processes.* C. Benqlilou, M. Bagajewicz, A. Espuña and L. Puigjaner.
- **ESCAPE 13 Meeting**. Lappeenranta, Finland, June 1-4, 2003. *Management of Financial and Consumer Satisfaction Risks in Supply Chain Design.* G. Guillén, F. D. Mele, M. Bagajewicz, A. Espuña and L. Puigjaner.
- **ESCAPE 13 Meeting**. Lappeenranta, Finland, June 1-4, 2003. *Financial Risk Control in a Discrete Event Supply Chain.* F. Mele, M. Bagajewicz, A. Espuña, and L. Puigjaner.
- **FOCAPO 2003. (Foundations of Computer-Aided Process Operations)** Coral Springs, FL, USA, January 2003. ***PLENARY LECTURE:*** *Data Reconciliation and Sensor Location.* M. Bagajewicz.
- **FOCAPO 2003. (Foundations of Computer-Aided Process Operations)** Coral Springs, FL, USA, January 2003. *Financial Risk Management in Planning under Uncertainty.* A. Barbaro and M. Bagajewicz.

- **FOCAPO 2003. (Foundations of Computer-Aided Process Operations)** Coral Springs, FL, USA, January 2003. *Instrumentation Design and Upgrade using an Unconstrained Method with Pure Economical Objectives.* M. Bagajewicz and M. Markowski.
- **9th Mediterranean Congress of Chemical Engineering.** Barcelona, Spain, November 2002. *Discrete Event Dynamic Modeling for Supply Chain Management with Risk Control.* Fernando Mele, Miguel Bagajewicz, A. Espuña, Lluís Puigjaner.
- **9th Mediterranean Congress of Chemical Engineering.** Barcelona, Spain, November 2002. *Integrated Model for Budgeting and Scheduling of Batch Processes.* J. Romero, M. Badell, M. Graells, M. Bagajewicz and L. Puigjaner.
- **9th Mediterranean Congress of Chemical Engineering.** Barcelona, Spain, November 2002. *Improving PCA Monitoring Performance by the Design of Sensor Networks.* M. Bagajewicz, E. Musulin, C. Benqlilou, J. M. Nougués, A. Espuña, L. Puigjaner.
- **9th Mediterranean Congress of Chemical Engineering.** Barcelona, Spain, November 2002. *A Comparative Study of Linear Dynamic Data Reconciliation Techniques.* C. Benqlilou, M. J., Bagajewicz, A. Espuña and L. Puigjaner.
- **9th Mediterranean Congress of Chemical Engineering.** Barcelona, Spain, November 2002. *Synergy between Dynamic data Reconciliation and Sensor Placement.* C. Benqlilou, E. Musulin, J. M. Nougués, M. J., Bagajewicz, A. Espuña and L. Puigjaner.
- **9th Mediterranean Congress of Chemical Engineering.** Barcelona, Spain, November 2002. *Risk Controlled Scheduling of Batch Plants under Uncertainty.* Anna Bonfill, Jordi Cantón, Miguel Bagajewicz, A. Espuña and Luis Puigjaner.
- **9th Mediterranean Congress of Chemical Engineering.** Barcelona, Spain, November 2002. *Batch Plant Scheduling, Reactive Scheduling, and Rescheduling with consideration of labour costs and availability.* Maria José Arbiza, M. Bagajewicz A. Espuña and L. Puigjaner.
- **9th Mediterranean Congress of Chemical Engineering.** Barcelona, Spain, November 2002. *Simultaneous Scheduling of Batch Plants and product pricing with financial risk control.* M. Bagajewicz, S. E. Sequeira, R. Tona, G. Guillén, A. Espuña and L. Puigjaner.
- **9th Mediterranean Congress of Chemical Engineering.** Barcelona, Spain, November 2002. *Management of financial and consumer satisfaction risk in multiobjective supply chain design.* G. Guillén, F. D. Mele, M. Bagajewicz, A. Espuña and L. Puigjaner.
- **ISPC. LEREI-2002. International Scientific-Practical Conference. "Logistics and Economics of Resource and Energy Savings in Chemical and Petrochemical Industries"** Moscow, Russia. October 20-31, 2002. ***KEYNOTE PRESENTATION:*** *Financial Risk Management in Decision Making.*
- **PRES 2002. 5th Conference Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction.** Prague, Czech Republic. August 2002. *Optimal Design and Efficient Retrofit of Crude Fractionation Units.* Shuncheng Ji, J. Fernando Cancino, Andres Barbaro and Miguel Bagajewicz.
- **PRES 2002. 5th Conference Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction.** Prague, Czech Republic. August 2002. *Financial Risk Management in Process Design.* Andres Barbaro, Anantha Koppol and Miguel Bagajewicz.
- **PRES 2002. 5th Conference Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction.** Prague, Czech Republic. August 2002. *New One-Stage MILP Procedure for HEN Design and Retrofit.* Andres Barbaro and Miguel Bagajewicz.
- **CHISA 2002. 15th International Congress of Chemical and Process Engineering.** Prague, Czech Republic. August 2002. *When is Combined Steam and Dry (CO2) Reforming of Natural Gas Appropriate?* J. Fernando Cancino and Miguel Bagajewicz
- **ESCAPE 12 Meeting**. The Hague, May 2002. *Financial Planning with Risk Control of Energy Recovery in the Total Site.* Miguel J. Bagajewicz and Andres Barbaro.
- **ESCAPE 12 Meeting**. The Hague, May 2002. *An Unconstrained Approach for Instrumentation Network Design and Upgrade.* Miguel Bagajewicz.
- **50th Gordon Research Conference on Statistics in Chemistry and Chemical Engineering.** *July 22-27, 2001.* New Hampshire. ***MAIN PRESENTER:*** *Data Reconciliation and Sensor Location. DISCUSSANT: Derrick Rollins, Iowa State University.*

- ENPROMER 2001. Third Congress of Process Engineering for the Mercosur. **Santa Fe, Argentina. September 2001.** *On the Feasibility of Zero Liquid Discharge Solutions in the Process Industry.* **B. J. Dericks, M. J. Savelski, A. Koppol and M. Bagajewicz.**
- **ENPROMER 2001. Third Congress of Process Engineering for the Mercosur.** Santa Fe, Argentina. September 2001. *A Multiobjective Approach for Instrumentation Network Design and Upgrade.* Enmanuel Cabrera and Miguel Bagajewicz
- **ENPROMER 2001. Third Congress of Process Engineering for the Mercosur.** Santa Fe, Argentina. September 2001. *Financial Planning for Energy Recovery in the Total Site* Andres Barbaro, Paul Charles and Miguel Bagajewicz
- **ENPROMER 2001. Third Congress of Process Engineering for the Mercosur.** Santa Fe, Argentina. September 2001. *Uncertainty and Risk in the Design of Water Reuse Systems* Anantha Koppol and Miguel J. Bagajewicz.
- **4th IFAC Workshop on On-Line Fault Detection & Supervision in the Chemical Process Industries**, June 8-9, 2001, Seoul, Korea. *Review of Recent Results in Instrumentation Design and Upgrade for Process Plants.* Bagajewicz M.
- **4th IFAC Workshop on On-Line Fault Detection & Supervision in the Chemical Process Industries**, June 8-9, 2001, Seoul, Korea. *A New MILP Formulation for Instrumentation Network Design and Upgrade.* Bagajewicz M. and E. Cabrera.
- **4th IFAC Workshop on On-Line Fault Detection & Supervision in the Chemical Process Industries**, June 8-9, 2001, Seoul, Korea. *An MILP Model for Cost Optimal Instrumentation Network Design and Upgrade for Fault Detection.* Bagajewicz M. and A. Fuxman.
- **PRES 2001. 4th Conference Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction**. Florence, Italy. May 2001**.** *Use of Heat Pumps for Integration in the Total Site.* Andres Barbaro, Hernán Rodera and Miguel J. Bagajewicz.
- **50TH CANADIAN SOCIETY FOR CHEMICAL ENGINEERING CONFERENCE. Symposium on Process Integration. Montreal. October 2000.** *On The Use of Heat Belts for Energy Integration among Many Plants in the Total Site.* M. Bagajewicz and Hernán Rodera.
- **50TH CANADIAN SOCIETY FOR CHEMICAL ENGINEERING CONFERENCE. Symposium on Process INTEGRATION. Montreal. October 2000. *PLENARY LECTURE:*** *Design and Retrofit of Water/Wastewater Systems in Refineries and Process Plants: A Review.*
- **VII Inter-American Congress on the Environment. Colombia. October 2000. *PLENARY LECTURE:*** *Water use in Industry and the Environment. Can we resolve the conflict?*
- **ESCAPE 10 Meeting.** Florence, May 2000. *Trade-Off between Complexity and Energy Savings in the Design of Multipurpose Heat Exchanger Network for Crude Fractionation Units.* M. Bagajewicz and J. Soto
- **ESCAPE 10 Meeting.** Florence, May 2000. *Rigorous Targeting Procedure for the Design of Crude Fractionation Units with Pre-Flashing.* S. Ji and M. Bagajewicz
- **PSE 2000. 7th International Symposium on Process Systems Engineering.** *A Robust Method to Obtain Optimal and Sub-Optimal Design and Retrofit Solutions of Water Utilization Systems with Multiple Contaminants in Process Plants*. Bagajewicz M. Rivas and M. Savelski.
- **PSE 2000. 7th International Symposium on Process Systems Engineering.** *Energy Savings in the Total Site. Heat Integration across Many Plants.* Bagajewicz M. and H. Rodera H.
- **Sixth International Petroleum Environmental Conference.** Houston, Nov. 1999. *Watersave: A New Approach to the Design of Water/Wastewater Utilization Systems in Refineries.* M. Savelski and M. Bagajewicz.
- **ENPROMER 99. Second Congress of Process Engineering for the Mercosur.** Florianopolis, Brazil. September 1999. *Heat Exchanger Networks for Petroleum Fractionation Units Handling Crudes of Different Density.* M. Bagajewicz, Ji Shuncheng and José Soto.
- **ENPROMER 99. Second Congress of Process Engineering for the Mercosur.** Florianopolis, Brazil. September 1999. *Efficient Use and Reuse of Water in Refineries and Process Plants*. Mariano Savelski, Margiori Rivas and Miguel J. Bagajewicz
- **ENPROMER 99. Second Congress of Process Engineering for the Mercosur.** Florianopolis, Brazil. September 1999. *Targeting Procedures for Energy Savings in the Total Site.* Hernán Rodera and Miguel J. Bagajewicz

- **ENPROMER 99. Second Congress of Process Engineering for the Mercosur.** Florianopolis, Brazil. September 1999. *Energy Retrofit with Simultaneous Energy Optimization for a Crude Fractionation Unit*. Hernán Rodera, Mariano Savelski, Miguel Bagajewicz (University Of Oklahoma); Fernando Hess and Tim Seidel (Phillips Petroleum).
- **ENPROMER 99. Second Congress of Process Engineering for the Mercosur.** Florianopolis, Brazil. September 1999. *Enhancing Process Plant Monitoring by Reallocation and Upgrade of Instrumentation.* Miguel Bagajewicz and Mabel Sánchez.
- **ENPROMER 99**. **Second Congress of Process Engineering of the Mercosur**, Florianopolis Brazil. September 1999. ***PLENARY LECTURE:*** *Data Reconciliation and Instrumentation Design/Upgrade for Cost-Effective Plant Data Gathering and Filtering.*
- **ENPROMER 99**. **Second Congress of Process Engineering of the Mercosur**, Florianopolis Brazil. September 1999. ***PLENARY LECTURE:*** *Water and Wastewater Management.*
- **ESCAPE 9 Meeting.** Budapest, June 1999. *Sensor Network Design and Upgrade for Plant Parameter Estimation*. M. Bagajewicz and M. Sánchez.
- **ESCAPE 9 Meeting.** Budapest, June 1999. *Performance evaluation of PCA tests for multiple gross error identification.* M. Bagajewicz, Q. Jiang, and M. Sánchez.
- **PRES 99 Meeting.** Budapest, June 1999. *Multipurpose Heat Exchanger Networks for Heat Integration across Plants*. H. Rodera and M. Bagajewicz.
- **PRES 99 Meeting.** Budapest, June 1999. *A New Algorithmic Design Procedure for the Design of Water Utilization Systems in Refineries and Process Plants*: M. Savelski and M. Bagajewicz.
- **3rd IFAC Workshop on On-Line Fault Detection and Supervision in the Chemical Process Industries.** 4-5 June 1998. Solaize (Lyon), France. *Serial Identification with Collective Estimation of Gross Errors and Leaks in Process Plant Measurement.* Q. Jiang and M. Bagajewicz
- **FOCAPO. (Foundations of Computer-Aided Process Operations)** Snowbird, Utah, July 1998. *One Step Collective Gross Error Identification and Compensation in Linear Dynamic and Steady State Data Reconciliation.* Qiyou Jiang and M. Bagajewicz.
- **ENPROMER 97. First Congress of Process Engineering for the Mercosur.** Bahía Blanca, Argentina, September 1997. *Energy Savings through Heat Integration across Plants using Intermediate Fluids.* H. Rodera and M. Bagajewicz
- **ENPROMER 97**. **First Congress of Process Engineering of the Mercosur**, Bahía Blanca, Argentina, September 1997. ***PLENARY LECTURE:*** *Data Reconciliation. Gross Error Detection and Sensor Network Design. State of the Art and Future Directions.*
- **ESCAPE 5 Meeting.** Slovenia, June 1995. *Optimal Sensor Location in Process Plants*. M. Bagajewicz.
- **Second French-Chilean and Latin American Congress in Applied Mathematics.** Santiago de Chile. Chile. (1989). *Analytical Approximate Solutions of Certain Nonlinear Problems in Heterogeneous Reaction-Diffusion Equations.* G. Marcos, S. Tailleur and M. Bagajewicz.
- **II Latin American Congress of Heat and Mass Transfer.** Sao Paulo, Brazil, (1986). *Optimal Design of the Steam and Power System*. M. Bagajewicz.
- **International Conference on New Developments of Low Energy Consuming Technologies.** Santa Fe, Argentina (1983). *Designing Heat Exchanger Networks for Existing Chemical Plants*. O. Dolman, M. Bagajewicz and J. Credo.
- **PSE 94. The Fifth International Symposium of Process System Engineering.** Kyongju, Korea, (May 1994). *On the Probability Distribution of Process Plant Data and their Impact on Data Reconciliation Techniques.* M. Bagajewicz.
- **XV Meeting of Research in Chemical Engineering and Applied Chemistry Sciences**. Neuquén, Argentina (1989). *Efficiency Estimates and Preliminary Design of Steam and Power Systems in Chemical Plants*. M. Bagajewicz.
- **XIII Meeting of Research in Chemical Engineering and Applied Chemistry Sciences.** San Juan, Argentina (1985). *Design of the Total Energy System for a Chemical Plant*. M. Bagajewicz and J. Cerdá.
- **Technological and Scientific Communications Meeting.** UNL, Santa Fe, Argentina (1983). *Optimal Design of the Steam and Power System for a Chemical Plant.* O. Doldán, M. Bagajewicz and J. Cerdá.
- **XII Meeting of Research in Chemical Engineering and Applied Chemistry Sciences.** Tucumán, Argentina (1983). *Maximum Economical Heat Recovery in Chemical Plants.* O. Doldán, M. Bagajewicz and J. Cerdá.

- **X National and VII Latin American Symposium on Oleaginous Grain Processing.** Argentina. (1982). *Vegetable Oil Refinery Plant Simulation*. B. Mandagarán, M. Bagajewicz and A. Cassano.
- **VI Argentine Congress of Petrochemistry.** Bahía Blanca, Argentina, (1982). *Maximum 9rofitable Heat Recovery*. M. Bagajewicz, O. Doldán, D. Tomassi and J. Cerdá.
- **I Argentine Congress on Rational Use of Energy**. Buenos Aires, Argentina (1982). *Heat Integration in Petrochemical Plants. Maximum Economically Convenient Heat Recovery*. M. Bagajewicz O. Doldán and J. Cerdá.
- **Meeting of Informatics in the Chemical Sciences.** Buenos Aires, Argentina (1982). *PROSVES: Mechanical Energy Simulation Program*. G. Perez and M. Bagajewicz.
- **I Latin American Congress of Heat and Mass Transfer.** La Plata, Argentina (1982). *Heat Integration in Petrochemical Plants. Prediction of the Maximum Economically Convenient Heat Recovery*. M. Bagajewicz and J. Cerdá.
- **Technological and Scientific Communications Meeting.** UNL, Santa Fe, Argentina (1982). *Vegetable Oil Refinery Plant Simulation*. B. Mandagarán, M. Bagajewicz, G. Perez and A. Cassano.
- **Technological and Scientific Communications Meeting.** UNL, Santa Fe, Argentina (1982). *Optimal Assignment of Steam Headers to Attend Heat Demand in a Petrochemical Complex*. O. Doldán, M. Bagajewicz and J. Cerdá.
- **Technological and Scientific Communications Meeting.** UNL, Santa Fe, Argentina (1982). *Heat Integration of Plants in a Petrochemical Complex: Prediction of the Maximum Profitable Heat Recovery*. M. Bagajewicz and J. Cerdá.
- **X Meeting of Research in Chemical Engineering and Applied Chemistry Sciences.** Santa Fe, Argentina (1978). *Trichlorosilane Production via Silicon Chloration*. E. De Bernárdez, B. Gottlieb and M. Bagajewicz.

United States

- **AIChE Spring Conference. Houston, TX (2016).** *Experiences on Energy Retrofit of Crude Units.* M. Bagajewicz, G. Valtinson and D. Nguyen.
- **AIChE Spring Conference. Houston, TX (2016).** *New Technology for Selective CO2 Capture from Natural Gas.* M. Bagajewicz.
- **AIChE Spring Conference. Houston, TX (2016).** *Value of Information.* M. Bagajewicz, G. Valtinson, B. Morneau, Roberto Linares.
- **AIChE Southwest Process Technology Conference. Galveston, TX (2013).** *Implementation Experiences in Energy Retrofit of Crude Units Using an Alternative Technology.* Bagajewicz M., G. Valtinson and D. Nguyen.
- **AIChE Annual Meeting. Pittsburgh, PA (2012).** *New Approach to Gas Hydraulics Calculations* Mesude Ozturk, Lutfiye Hacioglu, and Miguel Bagajewicz
- **AIChE Annual Meeting. Pittsburgh, PA (2012).** *Gas Pipeline Leak Detection using Rigorous Hydraulics and Global Optimization.* Mesude Ozturk, Sung Young Kim and Miguel J. Bagajewicz,
- **AIChE Annual Meeting. Pittsburgh, PA (2012).** *Retrofit of Heat Exchanger Networks using superstructure modeling and Global Optimization.* Sung Young Kim, Debora Faria and Miguel J. Bagajewicz.
- **AIChE Annual Meeting. Minneapolis, MN (2011).** *Global Optimization for Refinery Operations Planning Using Complex Unit Models.* Miguel J. Bagajewicz, Mesude Ozturk, and DuyQuang Nguyen.
- **AIChE Annual Meeting. Nashville, TN (2009).** *Planning Model for Water Networks.* Débora C. Faria and Miguel J. Bagajewicz.
- **AIChE Annual Meeting. Nashville, TN (2009).** *On the appropriate modeling of process plant water systems for Zero liquid discharge.* Débora C. Faria and Miguel J. Bagajewicz.
- **AIChE Annual Meeting. Nashville, TN (2009).** *Design of Water Networks Using Rigorous Models.* Débora C. Faria and Miguel J. Bagajewicz.
- **AIChE Annual Meeting. Nashville, TN (2009).** *A Novel Strategy for Global Optimization of MINLP Models.* Débora C. Faria and Miguel J. Bagajewicz.
- **AIChE Annual Meeting. Nashville, TN (2009).** *Efficient Breadth-First Tree Search Method for Nonlinear Sensor Network Design.* DuyQuang Nguyen and Miguel J. Bagajewicz.
- **AIChE Annual Meeting. Nashville, TN (2009).** *MILP Formulation for the Retrofit of Heat Exchanger Networks.* Miguel J. Bagajewicz, DuyQuang Nguyen, and Andres Barbaro.

- **AIChE Annual Meeting. Nashville, TN (2009).** *Smart Plant Approach to Increased Plant Profitability.* Donald Chmielewski and Miguel J. Bagajewicz.
- **AIChE Annual Meeting. Philadelphia, PA (2008).** *Global Optimization of Water Management Problems In Process Plants.* Débora C. Faria, Miguel J. Bagajewicz and David A. Puckett.
- **AIChE Annual Meeting. Philadelphia, PA (2008).** *Novel Method for Global Optimization of Nonconvex MINLP Problems.* Débora C. Faria and Miguel J. Bagajewicz.
- **AIChE Annual Meeting. Philadelphia, PA (2008).** *A Novel Approach For Global Optimization Of Stage-Wise Heat Exchanger Network Models.* Miguel J. Bagajewicz, Miloš Bogataj and Débora C. Faria.
- **AIChE Annual Meeting. Philadelphia, PA (2008).** *Open Discussion, "Overcoming Barriers to Smart Manufacturing Plants". Chairs:* Dr. John Forgac (BP), Dr. Miguel Bagajewicz (OU), Dr. Larry Megan (Praxair).
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Method to Rank Thermochemical and Hybrid Cycles According to Energy Efficiency*. Miguel Bagajewicz, DuyQuang Nguyen, Thung Cao, Robbie Crossier, Terrel Fish, and Matthew Behring.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *New Method for Non-Linear Refinery Operations Planning.* Miguel Bagajewicz, Duyquang Nguyen, Sarah Shobe, Sarah Kuper, and Andrew Hill.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Revamping Crude Units: Pre-Heating Trains and Pumparound Load Adjustment.* Miguel J. Bagajewicz, Kitipat Siemanond and Warapon Sripayap.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Risk Assessment in Refinery Operations Planning Under Demand Uncertainty and Product Pricing*. Miguel Bagajewicz, Kitipat Siemanond and Hansa Lakkhanawat.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *A New Tool for the Evaluation and Optimization of Preventive Maintenance Scheduling in Processing Plants*. Miguel Bagajewicz, Kehinde Adesoye, Christopher Brammer, Joseph Mills Jr, and DuyQuang Nguyen.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Prediction of Protein Solubility in Escherichia Coli Using Discriminant Analysis, Logistic Regression, and Artificial Neural Network Models.* Reese Lennarson, Rex Richard, Armando Diaz, Miguel Bagajewicz, and Roger Harrison.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Capstone Objective: Develop the Skill of Time, Scope, and Depth of Analysis in Complex Projects*. Miguel Bagajewicz.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Teaching Product Design Using Microeconomics* Miguel Bagajewicz.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Business Plans, Investment Planning Models, and Financial Risk in Che Capstone Design Classes.* Miguel J. Bagajewicz.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Designing Wine Under Uncertainty*. Miguel Bagajewicz, Ashley Heller, and Craig Whitnack.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Engineering Roach Killers: Population Models, Pheromone Manufacturing and Consumer Pricing Models.* Miguel Bagajewicz, Doug Beshara, and Anthony Williams.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Skin Lotion Design, Consumer Preferences, and Price Competition.* Miguel Bagajewicz, Shamara Manora and Curtis Baade.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Consumer Preferences and Pricing Models in the Design of Devices.* Miguel Bagajewicz, Blake Ashcraft, and Jennifer Swenton.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Procedure to Design a Quick Saliva Diagnostics* Miguel Bagajewicz, Linden Heflin, and Sarah Walsh.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Slow Release Carpet Deodorizers/disinfectants- An Exercise in Mass Transfer, Microeconomics and Uncertainty Management* Miguel Bagajewicz, Carrie Street, Justin Woody and Jaime Ardila.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *A Device Using Neural Networks and Artificial Noses for the Monitoring of Wine Fermentation.* Miguel J. Bagajewicz, Shawna Linehan and Sarosh Nizami.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Realizing Smart Plants through Smart Design/upgrade of Instrumentation Networks.* Miguel Bagajewicz, Donald Chmielewski and Raghunathan Rengaswamy.

- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Optimal Instrumentation Networks for Maximum Economic Value of Plant Operations*. Duyquang Nguyen and Miguel Bagajewicz.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Nonlinear Sensor Network Design and Upgrade for Optimal Monitoring*. Miguel J. Bagajewicz and DuyQuang Nguyen.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Simultaneous Design and Operations Planning of Natural Gas Transmission Networks.* Debora Faria and Miguel Bagajewicz.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Design of Non-Isothermal Multicomponent Process Water Networks.* Miguel Bagajewicz and Milos Bogataj.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *A Discretized Approach to Design Multicomponent Water Wastewater Network Systems.* Miguel Bagajewicz and Debora Faria.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Profitability of Integrated Water/wastewater Networks in Process Plants.* Debora Faria and Miguel Bagajewicz.
- **36th Biochemical Engineering Symposium. Kansas State University, April (2007).** *Prediction of Protein Solubility in Escherichia Coli Using Discriminant Analysis, Logistic Regression, and Artificial Neural Network Models for an Expanded Protein Database*. Rex Richard, Reese Lennarson, Miguel Bagajewicz, and Roger Harrison.
- **Process Control and Optimization Consortium.- Spring Meeting. Texas Tech University, April (2007).** *Integrated Process Plant Sensor Network Upgrade.* Miguel Bagajewicz, Donald Chmielewski and Raghunathan Rengaswamy.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *Efficient Procedures for Nonlinear Sensor Network Design and Upgrade.* DuyQuang Nguyen and Miguel Bagajewicz.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *New Sensor Network Design Formulation Maximizing Economic Value of Accuracy.* DuyQuang Nguyen and Miguel Bagajewicz.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *Stochastic-Based Accuracy of Data Reconciliation Estimators for Linear Systems.* DuyQuang Nguyen and Miguel Bagajewicz.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *Microeconomics helps seeing that the "Best Product" is not the "Best Product.* Miguel Bagajewicz.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *Engineering Wine.* Miguel Bagajewicz, Susan Kerr, and Michael Frow.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *Engineering Skin Lotions.* Miguel Bagajewicz, Heyde Lopez, Monica Sanders, Erin Sposato, Season Hill, and Amanda Robben.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *Risk Management in the Development of Novel Biomedical Devices and Vaccines*. Miguel. Bagajewicz, Victoria Froude, Emily Burdett, Mark C. Shreve, Erica Clemente-Harl, Melissa L. Martin and Vassilios I. Sikavitsas.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *Capstone Project Design Experiences on Product Design.* Miguel Bagajewicz
- **AIChE Annual Meeting. San Francisco, CA (2006).** *Comparative Analysis of MILP and MILNP Single Contaminant Models in the Design of Water Networks in Industrial Settings.* Débora Campos de Faria and Miguel Bagajewicz.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *Optimization of Water Networks in Industrial Processes from a Management Point of View*. Débora Campos de Faria and Miguel Bagajewicz.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *A Retrofit Model of Water Networks in Industrial Processes.* Débora Campos de Faria and Miguel Bagajewicz.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *New Design Method for Crude Fractionation.* Miguel Bagajewicz , Kitipat Siemanond and Kitisak Junlobol.
- **AIChE Annual Meeting. San Francisco, CA (2006).** *A New Methodology to Screen Water Splitting Cycles for Hydrogen Production.* Miguel Bagajewicz, Scott Mullin, and Jacob Tarver.
- **AIChE Annual Meeting. Cincinnati, Ohio (2005).** *An Improved Methodology to Determine the Stochastic-based Accuracy of Data Reconciliation-Based Estimators in Linear Systems.* Miguel Bagajewicz and DuyQuang Nguyen.
- **AIChE Annual Meeting. Cincinnati, Ohio (2005).** *Use of Pricing and Customer Satisfaction Measures in Consumer Product Design.* Miguel Bagajewicz, Heydee Lopez, Monica Sanders and Erin Sposato
- **AIChE Annual Meeting. Cincinnati, Ohio (2005).** *On a New Rigorous Methodology for Instrumentation Network Design.* Mayur Gala And Miguel Bagajewicz.

- **60TH Annual Instrumentation Symposium for the Process Industries. Texas A&M University. College Station Texas, January (2005).** *Economic Value of Instrumentation*. Miguel Bagajewicz.
- **AIChE Annual Meeting. Austin, Texas (2004).** *Business Planning Tools in Chemical Engineering Education*. Miguel Bagajewicz.
- **AIChE Annual Meeting. Austin, Texas (2004).** *Teaching Design Under Uncertainty And Financial Risk Management In Capstone Design Classes*. Miguel Bagajewicz.
- **AIChE Annual Meeting. Austin, Texas (2004).** *Scheduling of Heat Exchanger Network Cleaning With Throughput Loss Considerations*. Javier Lavaja and Miguel Bagajewicz.
- **AIChE Annual Meeting. Austin, Texas (2004).** *Simultaneous Modeling of Location, Advertisement, and Competition In Investment/Capacity Planning With Risk Management*. Staci Powell, Sarah Hodge, Nickolas Spencer, Jeffrey Godwin and Miguel Bagajewicz.
- **AIChE Annual Meeting. Austin, Texas (2004).** *Financial Risk Management for New Products: Considerations of Plant Location, Pricing and Budgeting*. Javier Lavaja, Adam Adler, Jeremy Jones, Trung Pham, Kristen Smart, David Splinter, Michael Steele and Miguel Bagajewicz.
- **AIChE Annual Meeting. Austin, Texas (2004).** *Financial Risk Management For The Capacity Planning Of Facilities Associated To New Products And Uncertain Contracts*. John Z. McGill, Ryan Posey, and Miguel Bagajewicz.
- **AIChE Annual Meeting. Austin, Texas (2004).** *Modeling of The FDA Approval Process: Connections Between Financial Risk, Early Decision Making And Future Pricing.* Holap Tang, Joseph Azzarello, Tiwalade Ashaye, Benjamin Fairbanks, Mitchell Hargis, Patrick Williams, Brandon Shaw, Ian Klink, Vassilios Sikavitsas and Miguel Bagajewicz
- **AIChE Annual Meeting. Austin, Texas (2004).** *Simultaneous Environmental and Financial Risk Management In The Decision Making Associated To Process Design.* Mayurachat Ounjitti, Saran Janjira, Rathanawan Magaraphan (Chulalongkorn University, Thailand) and Miguel Bagajewicz
- **AIChE Annual Meeting. Austin, Texas (2004).** *Financial Risk Management in the Planning Of Refinery Operations.* Arkadej Pongsakdi, Kitipat Siemanond, Pramoch Rangsunvigit (Chulalongkorn University, Thailand) and Miguel Bagajewicz.
- **AIChE Annual Meeting. Austin, Texas (2004).** *Value Of Instrumentation Networks for Production Accounting.* Miguel Bagajewicz.
- **AIChE Annual Meeting. Austin, Texas (2004).** *Integrated Process Sensor Network Design.* Miguel Bagajewicz, Donald Chmielewski (Illinois Institute Of Technology), Raghunathan Rengaswamy (Clarkson University).
- **54th Canadian Chemical Engineering Conference. 4th International Symposium on Process Integration. Calgary, Alberta, Canada, (2004).** *Instrumentation Network Design addressing Multiple Objectives.* Miguel Bagajewicz (University Of Oklahoma), Raghunathan Rengaswamy (Clarkson University), Donald Chmielewski (Illinois Institute Of Technology)
- **National Petroleum Refiners Association (NPRA) Annual Meeting. San Antonio, TX. (March 2004).** *Scheduling Heat Exchanger Cleaning in Preheating Trains.* Javier Lavaja and Miguel Bagajewicz..
- **Laurance Reid Gas Conditioning Conference. Norman, OK. (February 2004).** *Scheduling Heat Exchanger Cleaning in Preheating Trains.* Javier Lavaja and Miguel Bagajewicz.
- **Laurance Reid Gas Conditioning Conference. Norman, OK. (February 2004).** *Offshore Oil Planning and Scheduling with Budgeting Constraints under Uncertainty.* Miguel Bagajewicz and Ahmed Aseeri.
- **AIChE Annual Meeting. San Francisco, California (2003).** *Consider Accuracy as a Robustness Measure in Instrumentation Design*. Miguel Bagajewicz.
- **AIChE Annual Meeting. San Francisco, California (2003).** *Planning Tools in Capstone Design Classes for Plant Capacity and Location*. Miguel Bagajewicz.
- **AIChE Annual Meeting. San Francisco, California (2003).** *On the Consistency of the Measurement Test and GLR tests.* Miguel Bagajewicz and Derrick Rollins.
- **AIChE Annual Meeting. San Francisco, California (2003).** *Offshore Oil Planning and Scheduling with Budgeting Constraints under Uncertainty.* Miguel Bagajewicz and Ahmed Aseeri.
- **AIChE Annual Meeting. San Francisco, California (2003).** *A new MILP Rigorous Planning Model for HEN Cleaning.* Miguel Bagajewicz and Javier Lavaja.
- **AIChE Annual Meeting. Indianapolis, Indiana, (2002).** *New Approach to Financial Risk in Planning and Scheduling*. Miguel Bagajewicz and A. Barbaro.

- **AIChE Annual Meeting. Indianapolis, Indiana, (2002).** *Gas Commercialization in Asia: Financial Risk Management of Investment Planning under Uncertainty*. Miguel Bagajewicz and A. Aseeri.
- **National Petroleum Refiners Association (NPRA) Annual Meeting. San Antonio, TX. (March 2002).** *New Insights on the Carrier Effect in Crude Distillation.* Miguel Bagajewicz.
- **AIChE Annual Meeting. Reno Nevada, (2001).** *Cost Optimal Robust Sensor Network Design for Simultaneous Fault Detection and State/Parameter Estimation*. Miguel Bagajewicz and A. Fuxman.
- **AIChE Annual Meeting. Reno Nevada, (2001).** *Zero Liquid Discharge: Cost, Uncertainty and Risk in the Design of Water Reuse Systems*. Miguel Bagajewicz and A. Koppol.
- **AIChE Annual Meeting. Reno Nevada, (2001).** *Data reconciliation in Pipeline Systems.* Miguel Bagajewicz and E. Cabrera.
- **AIChE Annual Meeting. Reno Nevada, (2001).** *Incorporation of Risk in the Financial Planning of Energy Recovery in the Total Site*. Miguel Bagajewicz and A. Barbaro.
- **AIChE Annual Meeting. Reno Nevada, (2001). Topical Conference on Separations.** *The Role of the Carrier Effect of Lights in Multicomponent Separations.* Shuncheng Ji and Miguel Bagajewicz.
- **33rd Mid-Atlantic Industrial and Hazardous Waste Conference. Manhattan College, Riverdale, New York. June 18-20 (2001).** *Modeling of the Feasibility of Zero Liquid Discharge Solutions in the Process Industry*. B. J. Dericks, Mariano Savelski (Rowan University), A. Koppol, and Miguel Bagajewicz.
- **5th Annual Green Chemistry and Engineering Conference. Washington, D.C., June (2001).** *Water Usage in Industrial Sites: Reuse, Decentralized Treatment and the Possibility of Zero Liquid Discharge*. Mariano Savelski, B. J. Dericks (Rowan University), A. Koppol and Miguel Bagajewicz
- **AIChE Spring Meeting. Houston, (2001).** Is the Practice of Using Unsteady Data to Perform Steady State Reconciliation Correct? Miguel Bagajewicz and Maria Carolina Gonzales.
- **AIChE Spring Meeting. Houston, (2001).** *Allocating Multiple Decentralized Treatment Units in Water Utilization Systems in Process Plants.* Miguel Bagajewicz and Anantha Koppol.
- **AIChE Spring Meeting. Houston, (2001).** *When is CO2 Reforming of Methane Worthwhile?* Fernando Cancino and Miguel Bagajewicz.
- **AIChE Topical Conference: Energy and the Environment. Process Integration of Material and Energy. Los Angeles, (2000).** *A Robust Method to Allocate Distributed Treatment Units In Water Utilization Systems In Process Plants.* Margiori Rivas and Miguel Bagajewicz.
- **AIChE Topical Conference: Energy and the Environment. Separations in Petroleum and Petrochemical Processes. Los Angeles, (2000).** *On the Energy Efficiency of Stripping-Type Crude Distillation.* Shuncheng Ji and Miguel Bagajewicz.
- **AIChE Annual Meeting. Los Angeles, (2000).** *Mixed-Integer Multiobjective Process Planning under Uncertainty*. Hernán Rodera, Miguel Bagajewicz and T. Trafalis.
- **AIChE Annual Meeting. Los Angeles, (2000).** *Risk Assessment in Process Planning under Uncertainty.* Hernán Rodera and Miguel Bagajewicz.
- **AIChE Annual Meeting. Los Angeles, (2000).** *Addressing Uncertainty in Water Allocation Planning Problems.* Miguel Bagajewicz (OU) and Mariano Savelski (Rowan University).
- **AIChE Annual Meeting. Los Angeles, (2000).** *Zero Water Discharge Solutions in Chemical Plants.* Brian Dericks (Rowan University), Miguel Bagajewicz (OU) and Mariano Savelski (Rowan University).
- **2000 ASEE Annual Conference**. June 18-21, 2000. St Louis, MO. ***Green Engineering: Integration of Industrial Water Management into the Engineering Classroom***. Session 2451M. Savelski and M. Bagajewicz.
- **4th Annual Green Chemistry and Engineering Conference. Washington, D.C., June 27-29, (2000).** *A Comprehensive Method for the Design and/or Retrofit of Water Utilization Systems with Multiple Contaminants in Process Plants*. Miguel J. Bagajewicz, Margiori Rivas and Mariano J. Savelski
- **AIChE Topical Conference: Process Development from Research to Manufacturing. Dallas (1999).** *A New Approach to the Design of Water Utilization Systems with Multiple Contaminants in Process Plants.* Mariano Savelski, Margiori Rivas and Miguel Bagajewicz
- **AIChE Separations Topical Conference. Dallas, (1999).** *A Step-By-Step Targeting Procedure for the Design of Conventional Crude Distillation.* Miguel Bagajewicz and Shuncheng Ji.
- **AIChE Annual Meeting. Dallas, (1999).** *Upgrade of Data Availability by Simultaneous Retrofit of Sensor Networks and Their Corrective Maintenance Policies*. Mabel Sánchez and Miguel Bagajewicz.

- **AIChE Annual Meeting. Dallas, (1999).** *Preventive and Corrective Cost Maintenance Issues In Optimal Sensor Network Design*. Mabel Sánchez and Miguel Bagajewicz.
- **AIChE Annual Meeting. Dallas, (1999).** *Heat Integration across Plants: Targeting Procedures for Energy Savings in the Total Site.* Herman Rodera and Miguel Bagajewicz.
- **AIChE Annual Meeting. Dallas, (1999)**. *On a New Procedure for Data Reconciliation.* Miguel Bagajewicz.
- **AIChE Annual Meeting. Dallas, (1999).** *Multipurpose Heat Exchanger Network for Maximum Energy Efficiency of Crude Fractionation Units*. Miguel Bagajewicz and Jose Soto.
- **AIChE Annual Meeting. Dallas, (1999).** *On the Use of Linear Models for the Solution of the Water/Wastewater Allocation Planning Problem*. Mariano Savelski and Miguel Bagajewicz.
- **AIChE Annual Meeting. Dallas, (1999).** *Retrofit of Water Utilization Systems in Refineries and Process Plants.* Miguel Bagajewicz, Mariano Savelski and Herman Rodera.
- **AIChE Annual Meeting. Dallas, (1999).** *On The Effect of Heat Integration in the Design of Water Utilization Systems in Refineries and Process Plants.* Miguel Bagajewicz, Mariano Savelski and Herman Rodera.
- **Second Regional Meeting in Process Engineering.** Norman. Oklahoma. April 1999. *Minimize Water Usage in Plants using "WaterSave".* Mariano Savelski and M. Bagajewicz
- **Second Regional Meeting in Process Engineering.** Norman. Oklahoma. April 1999. *Energy Retrofit of a Crude Unit.* Fernando Hess and Tim Seidel (Phillips Petroleum), Herman Rodera, Mariano Savelski and M. Bagajewicz
- **Second Regional Meeting in Process Engineering.** Norman. Oklahoma. April 1999. *Heat Integration between an FCC unit and a Crude Unit.* Herman Rodera and M. Bagajewicz
- **Second Regional Meeting in Process Engineering.** Norman. Oklahoma. April 1999. *Upgrading Instrumentation in Process Plants.* M. Bagajewicz
- **1999 Spring National AIChE Meeting**. Houston. *Which Method Is Best For Automatic Gross Error Detection And Estimation?* M. Bagajewicz, Q. Jiang and M. Sánchez.
- **1999 Spring National AIChE Meeting**. Houston. *Accomplish Profitable Savings by Realistically Heat Integrating a Crude Fractionation Unit and A FCC Unit*. H. Rodera and M. Bagajewicz.
- **1999 Spring National AIChE Meeting**. Houston. *Energy Retrofit with Simultaneous Energy Optimization for a Crude Fractionation Unit* M. Bagajewicz H. Rodera, M. Savelski and F. Hess, T. Seidel from Phillips Petroleum.
- **1999 Spring National AIChE Meeting**. Houston. *"Watersave". A New Approach to the Design of Water Utilization Systems in Refineries and Process Plants.* M. Savelski and M. Bagajewicz.
- **1998 Annual National AIChE Meeting**. Miami. *A New Mixed Integer Programming-Based Class of Efficient Techniques for the Estimation of Multiple Gross Errors.* M. Bagajewicz and Q. Jiang.
- **1998 Annual National AIChE Meeting**. Miami. *Comparison of Steady State and Integral Dynamic Data Reconciliation*. M. Bagajewicz and Q. Jiang.
- **1998 Annual National AIChE Meeting**. Miami. *A Comparison of Several Collective Identification and Compensation of Gross Errors in Process Measurements*. M. Bagajewicz and Q. Jiang.
- **1998 Annual National AIChE Meeting**. Miami. *On The Design of Robust and Reliable Sensor Networks*. M. Bagajewicz and M. Sánchez.
- **1998 Annual National AIChE Meeting**. Miami. *A New MILP Model for Heat/Mass Exchanger Networks Featuring Minimum Number of Units*. H. Rodera and M. Bagajewicz.
- **1998 Green Chemistry and Engineering Conference.** Washington DC, June 1998. *A New Approach to the Design of Water Utilization Systems in Refineries and Process Plants.* M. Savelski and M. Bagajewicz.
- **First Regional Meeting in Process Engineering.** Norman. Oklahoma. April 1998. *Optimization of Refinery Wastewater Reuse*. Mariano Savelski and M. Bagajewicz
- **First Regional Meeting in Process Engineering.** Norman. Oklahoma. April 1998. *Comparison of Different Crude Fractionation Designs.* Shuncheng Ji and M. Bagajewicz
- **First Regional Meeting in Process Engineering.** Norman. Oklahoma. April 1998. *A New Collective Compensation Method in Gross Error Detection.* M. Sánchez, J. Romagnoli, Q. Jiang and M. Bagajewicz.
- **First Regional Meeting in Process Engineering.** Norman. Oklahoma. April 1998. *MINLP-based Multiple Gross Error Compensation in Process Plants.* Q. Jiang and M. Bagajewicz.

- **First Regional Meeting in Process Engineering.** Norman. Oklahoma. April 1998. *Direct and Indirect Heat Integration among Plants.* H. Rodera and M. Bagajewicz.
- **1998 Spring National AIChE Meeting**. New Orleans. *Uncertainties in Gross Error Detection in Plant Measurements*. Q. Jiang *and* M. Bagajewicz.
- **1998 Spring National AIChE Meeting**. New Orleans, *Energy Retrofit Opportunities for Crude Fractionation.* Shuncheng Ji, Mariano Savelski and Hernán Rodera and M. Bagajewicz.
- **1997 Annual National AIChE Meeting**. Los Angeles. *An Integral Approach to Gross Error Detection in Linear Dynamic Systems*. Q. Jiang and M. Bagajewicz.
- **1997 Annual National AIChE Meeting**. Los Angeles. *Energy Savings through Heat Integration across Plants Using Intermediate Fluids*. H. Rodera and M. Bagajewicz.
- **1997 Annual National AIChE Meeting**. Los Angeles. *A Comparison of the Energy Efficiency of Alternative Crude Fractionation Designs*. Shuncheng Ji and M. Bagajewicz.
- **1997 Annual National AIChE Meeting**. Los Angeles. *Design and Retrofit of Water Utilization Systems and Zero Discharge Cycles in Refineries and Process Plants.* M. Savelski, S. Lingareddy and M. Bagajewicz.
- **1997 Green Chemistry and Engineering Conference.** Washington DC, June 1997. *Water Utilization Systems in Refineries and Process Plants.* M. Savelski, S. Lingareddy, M. Bagajewicz.
- **1997 Spring National AIChE Meeting**. Houston, *On the Design Flexibility of Atmospheric Crude Fractionation Units*. M. Bagajewicz.
- **1997 Spring National AIChE Meeting**. Houston, *Energy Savings Horizons in the Retrofit of Crude Fractionation Units*. M. Bagajewicz.
- **ASEE Midwest Section Conference**. April 2-4, 1997.Columbia, MO. *Grading By Contract in Chemical Engineering Design Classes.* M. Bagajewicz.
- **1996 Annual National AIChE Meeting**. Chicago. *An Integral Approach to Plant Linear Dynamic Reconciliation*. M. Bagajewicz and Qiyou Jiang.
- **1996 Annual ABET Meeting**. San Diego, *Teaching Optimization in the Chemical Engineering Curriculum.* M. Bagajewicz.
- **1996 Spring National AIChE Meeting**. New Orleans, *Sensor Location in Process Plants*. M. Bagajewicz.
- **1995 Spring Meeting of the American Institute of Chemical Engineers.** (AIChE). Houston, Texas. *Reconciliation of Plant Data. Applications and Future Trends.* , M. Bagajewicz and S. Mullick.
- **1991 Annual Meeting of the American Institute of Chemical Engineers. (AIChE).** Los Angeles. *The Use of the State Space Approach to Perform Pinch Calculations in Simultaneous Heat and Mass Exchanger Networks.* V. Manousiouthakis, M. Bagajewicz and R. Pham.
- **1990 Annual Meeting of the American Institute of Chemical Engineers. (AIChE).** Chicago. *Total Annualized Cost Minimization for Heat/Mass Exchange Networks.* V. Manousiouthakis, M. Bagajewicz and R. Pham.
- **1990 Annual Meeting of the American Institute of Chemical Engineers. AIChE).** Chicago. *Synthesis of Distillation Networks Featuring Minimum Utility Consumption.* M. Bagajewicz and V. Manousiouthakis.
- **1986 Annual Meeting of the American Institute of Chemical Engineers. (AIChE).** Miami Beach, Florida. *High-Temperature Removal of H2S by Regenerable Porous Mixed Metal Oxide.* M. Flytzani Stephanopoulos and K Jothimurugesan (MIT) and G. R. Gavalas, P.K. Sharma and M. Bagajewicz. (CALTECH).
- **Symposium on High-Temperature Fuel Gas Clean Up. American Chemical Society (ACS).** Chicago, USA, (Sept. 1985). *High-Temperature Regenerative Removal of Mixed Oxide Sorbents.* M. Flytzani Stephanopoulos, S. Tamhankar, G. Gavalas, M. Bagajewicz, and P.K. Sharma.
- **National Fuel Seminar.** Tucson, Arizona, USA (1985). *High-Temperature Regenerative H2S Removal with Novel Mixed Oxide Sorbents for Fuel Cell Applications*. S. Tamhankar, M. Bagajewicz, G. Gavalas, P.K. Sharma, and M. Flytzani Stephanopoulos.

EDUCATIONAL CONFERENCES

- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Capstone Objective: Develop the Skill of Time, Scope, and Depth of Analysis in Complex Projects*. Miguel Bagajewicz.
- **AIChE Annual Meeting. Salt Lake City, UT (2007).** *Teaching Product Design Using Microeconomics* Miguel Bagajewicz.

- **AIChE Annual Meeting. San Francisco, CA (2006).** *Capstone Project Design Experiences on Product Design.* Miguel Bagajewicz
- **AIChE Annual Meeting. Austin, Texas (2004).** *Business Planning Tools in Chemical Engineering Education*. Miguel Bagajewicz.
- **AIChE Annual Meeting. Austin, Texas (2004).** *Teaching Design Under Uncertainty And Financial Risk Management In Capstone Design Classes*. Miguel Bagajewicz.
- **AIChE Annual Meeting. San Francisco, California (2003).** *Planning Tools in Capstone Design Classes for Plant Capacity and Location*. Miguel Bagajewicz.
- **ASEE Annual Conference**. June 18-21, 2000. St Louis, MO. ***Green Engineering: Integration of Industrial Water Management into the Engineering Classroom***. Session 2451M. Savelski and M. Bagajewicz.
- **ASEE Midwest Section Conference**. April 2-4, 1997.Columbia, MO. *Grading By Contract in Chemical Engineering Design Classes.* M. Bagajewicz.
- **Enpromer'97**. **First Congress of Process Engineering of the Mercosur**, Bahía Blanca, Argentina, September 1997. *Panel on Chemical Engineering Education.*
- **ABET Annual Meeting**. San Diego. October (1996). Bagajewicz M. *Teaching Optimization in the Chemical Engineering Curriculum.*

CONFERENCE SESSION CHAIRS

- **APCIL-8.** 8th Asia Pacific Conference on Ionic Liquids and Green Processes. Kaifeng, China, May 2024. *Session: Frontier of AI and Cross-Disciplinary Science*.
- **CAIQ2019.** X Congreso Argentino de Ingeniería Química, Santa Fe, Argentina, August 2019.
- **AIChE Annual Meeting**. Salt Lake City, UT. Nov. 2007. *Session: Product Design under Uncertainty.*
- **AIChE Annual Meeting**. Salt Lake City, UT. Nov. 2007. *Session: Advances in Optimization II.*
- **AIChE Annual Meeting**. San Francisco, CA. Nov. 2006. *Session: Product Design*
- **ESCAPE 15 Meeting**. Barcelona, May 2005.*Session: Process Operation and Control.*
- **AIChE Annual Meeting**. Cincinnati, OH. Nov. 2005. *Session: Poster Session Area 10c.*
- **AIChE Annual Meeting**. Austin, TX. Nov. 2004. *Session: Design for Process Monitoring.*
- **AIChE Annual Meeting**. Austin, TX. Nov. 2004. *Poster Session: Computers in Operations and Information Processing*
- **Advances in Petrochemicals and Polymers in the New Millennium.** July 2003. Bangkok. Thailand. Chair, *Session: Process Modeling and Simulation.*
- **AIChE Annual Meeting**. Indianapolis. Nov. 2002. Chair, *Session: Planning and Scheduling*.
- **PRES 2002. 5th Conference Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction**. Prague, Czech Republic. Aug. 2002**.** S*ession: Process Integration.*
- **ENPROMER 2001. Third Congress of Process Engineering for the Mercosur. Santa Fe, Argentina. Sept. 2001.** *Chair a session on Process Design***.**
- **4th IFAC Workshop on On-Line Fault Detection & Supervision in the Chemical Process Industries**, June 8-9, 2001, Korea. *Session: Sensor Location.*
- **4th IFAC Workshop on On-Line Fault Detection & Supervision in the Chemical Process Industries**, June 8-9, 2001, Korea. *Session: Data Reconciliation.*
- **PRES 2001. 4th Conference Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction**. Florence, Italy. May 2001**.** S*ession: Keynote presentations.*
- **AIChE Spring Meeting.** Houston. March 2001. *Session: Practical Challenges in Process Monitoring.*
- **AIChE Annual Meeting**. Los Angeles. November 2000. *Session: Advances in Optimization.*
- **AIChE Spring Meeting.** Atlanta. March 2000. *Session: Process Retrofitting, Debottlenecking, and Improvements.*
- **AIChE Spring Meeting.** Atlanta. March 2000. *Session: Environmental Issues in Design.*
- **AIChE Spring Meeting.** Atlanta. March 2000. *Session: Applications of modeling & optimization in Food, Pharmaceutical, and Agricultural Chemical Design & Production.*
- **AIChE Annual Meeting**. Dallas. Nov. 1999. *Session: Advances in Optimization* I.
- **AIChE Annual Meeting**. Dallas. Nov. 1999. Session*: Advances in Optimization II.*
- **AIChE Spring Meeting.** Houston. March 1999. *Session: Practical Challenges of Data Reconciliation.*
- **AIChE Spring Meeting.** New Orleans. March 1998. *Session: Design for Retrofit.*

- **AIChE Spring Meeting.** New Orleans. March 1998. *Session: Tutorial / Survey of Issues in Process Operations.*
- **AIChE Spring Meeting.** Houston. March 1997. *Session 105.*
- **AIChE Annual Meeting**. Chicago. Nov. 1996. *Session 68.*

TEACHING

 # (2024)

* **State University of Maringá**, Maringá, Brazil. *Workshop: Set Trimming and Smart Enumeration. 3 hours.*
* **Federal University of Rio de Janeiro**, Rio de Janeiro, Brazil. *Thermal Equipment. Semester-long graduate course. Performed lectures on the use of Set Trimming as applied to Heat exchangers (two weeks)..*
* **Federal University of Rio de Janeiro**, Rio de Janeiro, Brazil. *Process Engineering and Integration. Semester-long graduate course.*
* **Zhejiang University**, Hangzhou, China. *Process Synthesis. Semester-long undergraduate course.*
* **King Fahd University of Petroleum and Minerals (KFUPM)**, Dhahran, Saudi Arabia. *Process Synthesis.* Master of Refining and Petrochemicals Engineering**.** *Co-taught 50% with Prof. Umer Zahid Hassan.*

 # (2023)

* **Federal University of Rio de Janeiro**, Rio de Janeiro, Brazil. *Process Intensification. Semester-long graduate course.*
* **Federal University of Rio de Janeiro**, Rio de Janeiro, Brazil. *Introduction to Process Optimization. Semester-long undergraduate course. Twice.*
* **Zhejiang University**, Hangzhou, China. *Process Synthesis. Semester-long undergraduate course.*
* **China University of Petroleum (CUP)**, Beijing, China. *Mathematical Optimization. Five days 15 hs introductory course.*
* **University of Oklahoma**, Norman, OK. *Process Synthesis. Semester-long virtual Master's level course.*

 # (2022)

* **Zhejiang University**, Hangzhou, China. *Process Synthesis. Semester-long undergraduate course.*

 # (2021)

* **Zhejiang University**, Hangzhou, China. *Process Synthesis. Semester-long undergraduate course.*

 # (2020)

* **Zhejiang University**, Hangzhou, China. *Heat Integration. Summer undergraduate course.*

 # (2019)

* **China University of Petroleum (CUP)**, Beijing, China. *Mathematical Optimization. Five days 15 hs graduate level introductory course.*

 # (2017)

* **Universidad de los Andes (UNIANDES; Bogota, Colombia)**. *Product Design. Undergraduate Class.*

 # (2003-2018)

* **Chulalongkorn University (Bangkok, Thailand)**. *Process Simulation and Design (Graduate Class). Co-instructors: Pierre Boucout. IFP, France and Rafiqul Gani (Denmark). Two weeks for each instructor.*

 # (2015)

* **Summer School In Environmental Engineering. Environmental Engineering Program (PEA) – POLI/EQ/UFRJ.** January 2015, Rio de Janeiro, Brazil. Water Management in Process Industries. (Short Course, 3 days).
* **University of Oklahoma**. *Energy and Process Optimization. (Graduate Class).*
* **University of Oklahoma**. *Chemical Engineering Fundamentals.*

 # (2014)

* **Universidade Federal de Rio de Janeiro** (Visiting Professor). Global Optimization.
* **Universidade Federal de Rio de Janeiro** (Visiting Professor). Energy integration in Process Plants. Short Course (1/2 day).
* **University of Oklahoma**. *Energy and Process Optimization. (Graduate Class).*
* **University of Oklahoma**. *Chemical Engineering Fundamentals.*

 # (2013)

* **University of Oklahoma**. *Energy and Process Optimization. (Graduate Class).*

* **University of Oklahoma**. *Chemical Engineering Design I.*

 # (2000-2014)

* **University of Oklahoma**. *Health and Sports Sciences Department. Introduction to Martial Arts. Every Fall and Spring Semester. Unpaid position.*

 # (2007-2015)

* **University of Oklahoma**. *Chemical Engineering Thermodynamics (Undergraduate Class). Summer 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014 and 2015.*

 # (1995-2012)

* **University of Oklahoma**. *Chemical Engineering Department. Instructor in Advanced Process Design (ChE4273).*

  Selected by the students as the best professor of the department in 2003 and 2006.

 # (2011)

* **University of Oklahoma**. *Novel Optimization Methods in Engineering. (Graduate Class).*

 # (2010)

* **Universidad Nacional de Ingeniería (Lima, Perú).** *Simulation of Crude Units (Graduate Class). June 2010.*

 # (2009)

* **University of Oklahoma**. *Simulation, Optimization, and Decision Making in Oil and Gas Processing. (Graduate Class).*

 # (2008)

* **Universidad Nacional de Ingeniería (Lima, Perú).** *Simulation of Crude Units (Graduate Class). May*

 # (2007)

* **University of Oklahoma**. *Simulation, Optimization, and Decision Making in Oil and Gas Processing. (Graduate Class).*

 # (2006)

* **Iraqui Oil Training Program- US Trade and Development Agency- Telecon-Telematique**. Amman. *Natural Gas Engineering. (5 days)*
* **Iraqui Oil Training Program- US Trade and Development Agency- Telecon-Telematique**. Amman. *Petroleum Refining. (5 days)*
* **University of Oklahoma.** *Numerical Methods for Engineers.* Summer 2006.
* **Universidad Nacional de Ingeniería (Lima, Perú).** *Natural Gas Engineering (Graduate Class). Nov*

 # (2005)

* **Pan American Advanced Studies Institute (PASI) Program on Process Systems Engineering**. *Lecturer on Energy Integration (Graduate Class). Iguazu Falls, August.*
* **UPSA (Universidad Privada de Santa Cruz de la Sierra), Santa Cruz Bolivia.** *Financial Risk Management. (Graduate Class). May.*
* **University of Oklahoma**. *Financial Risk, Investment Planning, and Optimal Process Operations (Graduate Class).*

 # (2004)

* **UPSA (Universidad Privada de Santa Cruz de la Sierra), Santa Cruz Bolivia.** *Oil and Gas Process Engineering (Graduate Class). December. Six-day intensive course.*
* **Chulalongkorn University (Bangkok, Thailand)**. *Process Simulation and Design (Graduate Class). Co-instructor: Pierre Boucout. IFP, France. Two weeks intensive format for each instructor. October.*
* **University of Oklahoma**. *Economic Decision Making in the Process Industry (Graduate Class).*

 # (2001)

* **University of Oklahoma**. *Advanced Engineering Mathematics (Graduate Class).*

 # (2000)

* **University of Oklahoma**. *Process synthesis (Graduate Class)*

 # (1995-1998)

* **University of Oklahoma**. *Chemical Engineering Design I (ChE4253).*

 # (1995)

* **UCLA**. *Chemical Engineering Department. Visiting Professor. Instructor in two Chemical Engineering undergraduate courses: Chemical Process Economics and Chemical Process Design.*

 # (1987-1989)

* **INTEC-Argentina.** *Instructor in two Chemical Engineering graduate courses: Applied Linear Algebra and Introductory Engineering Mathematical Methods.*

* **UNL-Argentina.** *Instructor of an undergraduate course in Ordinary Differential Equations (ODE).*

 # (1982-1987)

* **California Institute of Technology.** *Teaching Assistant in the following courses: Chemical Kinetics and Reactor Design and Process Design (a,b).*

 # (1977-1982)

* **Institute for the Technological Development of the Chemical Industry (INTEC), UNL, Argentina.** *Teaching Assistant in the Graduate Course: Vectors, Tensors, and the Balance Equations in Chemical Engineering (1978).*
* **Organization of American States (OAS). Engineering Multinational Project. Regional Program of Scientific and Technological Development.** *Preparation of teaching material for the course offered in Santa Fe, Argentina: Process Industry Basic Engineering Computer Design, on the basis of Alternative Technologies useful to Developing Countries (1979).*
* **Doctorate Program in Chemical Engineering, UNL Argentina.** *Teaching Assistant in the Graduate Course: Optimization Methods in Chemical Engineering (1982).*

 # (1974-1976)

* **Department of Physics. Universidad Nacional del Litoral (UNL). Argentina.** *Teaching Practical and Theoretical Classes of Mechanics and Electromagnetism for Chemical Engineering Students.*

INDUSTRIAL SHORT COURSES

* **Colsein (Colombia).** Workshop on Value of Information (Data Reconciliation, Instrument Maintenance, and Instrumentation Upgrade). April 2017.
* **CDT de Gas (Colombia).** Workshop on Data Reconciliation. August 2011.
* **Ecopetrol (Colombia).** Workshop on Heat Integration. September 2009.
* **Ecopetrol (Colombia).** Workshop on Data Reconciliation and gross error detection. December 2007.
* **ConocoPhillips.** Energy Integration-Pinch Technology. November 2007.
* **Amman, Jordan**. Natural Gas Engineering (5-day short course). May 2006.
* **Amman, Jordan**. Petroleum Refining (5-day short course). March 2006.
* **Chulalongkorn University. Bangkok, Thailand**. Petroleum Fractionation: Simulation, Optimal Operations, Energy Efficiency and Retrofit (2 days short course). October 2003.
* **Colombian Chemical Engineering Association. Bucaramanga, Colombia**. Process Design and Planning Under Uncertainty. (2 days short course). August 2003.
* **Pemex. Ciudad del Carmen. Mexico**. Principles of Data Reconciliation (7-day short course). September 2002.
* **Pemex. Ciudad del Carmen.** Mexico. Principles of Data Reconciliation (7-day short course). July 2002.
* **Conoco. Ponca City, Oklahoma, USA.** Heat Integration (3-day short course). July 2000.
* **Ecopetrol. Bucaramanga, Colombia.** Heat Integration (2-day short course). November 2000.
* **Ecopetrol. Bucaramanga, Colombia**. Principles of Data Reconciliation (3-day short course). Nov. 2000.
* **Ecopetrol. Cartagena, Colombia**. Principles of Data Reconciliation (3-day short course). Sept 1998.

CONSULTING ACTIVITY:

The consulting takes place through a spin-off company of the University: Ok-Solutions. (www.ok-solutions.org).
Projects:

* **Energy Retrofit of Crude Units.** Five (5) crude unit revamps for Thai Oil (Thailand)
* **Investment Planning Models.** Two (2) investment planning models on Biofuels for Ecopetrol (Colombia)
* **Risk management models for Supply Chain Design**
* **Leak Detection in Pipelines.**
* **Data Reconciliation**
* **Scheduling of Heat exchanger network cleaning in crude fractionation units** (Two plants month-to month service)