

MIGUEL J. BAGAJEWICZ

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<http://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

- * **Sam Wilson Professor.** School of Chemical Engineering and Materials Science. University of Oklahoma.
- * **Director.** Center for Engineering Optimization. University of Oklahoma.
- * **Adjunct Instructor.** Department of Health and Sport Sciences. University of Oklahoma.
Instructor of Martial Arts (without compensation).

HONORS AND AWARDS

- * **Journal Record Inventor of the year** (2009)
- * **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 (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).
- * **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 Samuel Roberts Noble Foundation Presidential Professor.** University of Oklahoma, CEMS, (2001-2005).

EDITORIAL AND OTHER APPOINTMENTS

Associate Editor

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

Advisory Boards

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

Programming Chair

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

CONFERENCE SCIENTIFIC/TECHNICAL COMMITTEES

National

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

International

- **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) and **Italian** (reasonably fluent).

AREAS OF EXPERTISE

- * **Process Systems Engineering.**
 - **Process Plant Data Management:** Data Reconciliation and Fault Analysis
 - **Energy Integration of Process Plants:** Including Heat Integration across Plants and Crude Fractionation
 - **Process Plant Data Management:** Data Reconciliation and Fault Analysis
 - **Process Plant Water Management:** Wastewater reuse and water allocation planning.
 - **Investment Planning and Decision Making:** Optimization algorithms.
- * **Financial Risk Management in Process Engineering Decision Making:** Algorithm development.
- * **Product Design:** Algorithm development.
- * **Optimization Theory:** Algorithm development and Process Design applications.
- * **Reactor Technology:** Modeling of Fluid-Solid Diffusion-Reaction Problems.

FORMER GRADUATE STUDENTS (and their career path)

University of Oklahoma

- * **Mariano Savelski:** (PhD: 1999): Water Management. Now Associate Professor 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): CO₂ 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 PowerCosts (www.Powercosts.com), Norman, OK.
- * **Anantha Koppol:** (MSc: 2002): Water Management in Process Plants. Now a graduate student at Washington University.
- * **Enmanuel Cabrera:** (MSc: 2003): Instrumentation Design and Upgrade and Data Reconciliation. Now at (AllChem Field Services, Oklahoma City, OK).
- * **Ahmed Aseeri:** (MSc: 2003. Fellow from Saudi Aramco): Financial Risk in Process Planning. Now back at Saudi Aramco.
- * **Javier Lavaja** (MSc: 2004): Heat Integration and Decision Making. Now in industry.
- * **Wilfredo Vargas** (MSc: 2005): Natural Gas Master Program.
- * **Mayur Gala** (MSc: 2005): Instrumentation Design and Upgrade. Now at Jacobs (Houston)
- * **Débora Campos Faria** (PhD: 2009): Water Management in Process plants (Brazil).

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** (MSc: 2005): Design and Retrofit of Instrumentation Networks. Co-Advisor in Thailand: Professor *Kitipat Siemanond*.
- * **Narumon Vipaturat** (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*.

Universidad Industrial de Santander (Colombia)

- * **Ariel Uribe**: Instrumentation design and upgrade. Now at Ecopetrol, Colombia.

VISITING 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).

CURRENT GRADUATE STUDENTS

University of Oklahoma

- * **DuyQuang Nguyen**: Design and Retrofit of Instrumentation Networks.
- * **Armando Diaz**: Protein Technology. Acoustic mass pump.

Chulalongkorn University (Thailand)

- * **None currently**

FORMER POSTDOCTORAL FELLOWS (and their career path)

- * **Qiyou Jiang**: (1996-1999): Data Reconciliation. Pursued a career in Computer Science.
- * **Mabel Sánchez**: (1999): Data Reconciliation and Instrumentation Design. Now in Plapiqui, Bahía Blanca, Argentina.
- * **Bilal El-Zahab**: (2007): Acoustic Mass Pump work.

CURRENT RESEARCH AND INTERESTS

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 were 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 industry is underway.
4. ***Heat Integration across Plants***: 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. ***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.
6. ***Decision Making in Process Systems Engineering (Design and Operations)***: The emphasis is on financial risk management.

7. **Acoustic Chemical Engineering:** I have invented the acoustic mass pump, a process that is able to separate close boiling point and other mixtures.
8. **Product Engineering:** We are working on models that consider product composition/structure, manufacturing, marketing and consumer behavior, all at the same time.
9. **Mathematical Optimization Theory:** We are interested in rigorous global optimization methods.
10. **Protein Technology:** We are interested in protein folding, protein solubility, and ionic channels.

ACADEMIC EXPERIENCE

- * **University of Oklahoma Sam Wilson Chair Professor.** University of Oklahoma, CEMS, (2006-).
- * **University of Oklahoma Samuel Roberts Noble Foundation Presidential Professor.** University of Oklahoma, CEMS, (2001-).
- * **Full Professor.** University of Oklahoma, CEMS, (2001-).
- * **Visiting Professor.** Chulalongkorn University, Thailand. (Oct 2003, Oct 2004, Oct 2005, Oct 2006, Oct 2007, Oct 2009, Nov 2009).
- * **Associate Professor.** University of Oklahoma, CEMS, (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-)

- * **At 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)

- * **At Simulation Sciences, Brea, California.** 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)

- * **As a private Consultant (Argentina):** Revision of the Basic Engineering of a 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)

- * **At 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)

- * **For the National Atomic Commission (at INTEC), Argentina:** Member of a Team that developed the Basic Engineering and did 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 developing 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.*

BOOKS

1. Bagajewicz M. **Smart Process Plants: Software and Hardware for Accurate Data and Profitable Operations.** McGraw Hill. To appear, November 2009.
2. 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. **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.

JOURNAL AND CONFERENCE PROCEEDING ARTICLES

(In reversed chronological order)

Total: 200

- *Articles published in Journals: 117*
- *Articles accepted in Journals: 4*
- *Articles submitted: 12*
- *Review Articles: 5 (2 in peer reviewed conference proceedings)*
- *Conference Proceedings to appear: 0*
- *Articles published/accepted in peer-reviewed conference proceedings: 59.*
- *Other Publications: 2*
- *Book reviews: 1*

Statistics by Year

- *2009: 12 articles published/to appear, 12 articles submitted. .*
- *2008: 11 articles published/to appear; 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 proceeding.

Statistics by Journal (impact factors and cited half life are for 2008)

- *Industrial and Engineering Chemistry Research* (Impact factor=1.895, cited half life=6.6): 34 articles, 3 submitted.
- *Computers and Chemical Engineering* (Impact factor=1.7558, cited half life=8.4): 23 articles, 1 review article; 3 submitted.
- *AIChE Journal* (Impact factor=1.883, cited half life >10): 18 articles (2 to appear) and 1 book review, 5 submitted.
- *Chemical Engineering Communications* (Impact factor=0.585, cited half life >10): 8 articles (1 to appear), 1 submitted.
- *Chemical Engineering Science* (Impact factor=1.884, cited half life=8.8): 5 articles.
- *Computer aided Chemical Engineering*: 14 articles.
- *Latin American Applied research* (Impact factor=0.29, cited half life : 5.2): 4 articles and 1 review article.
- *Canadian Journal of Chemical Engineering* (Impact factor=0.497, cited half life >10): 1 article and 1 review article.
- *Latin American Journal of Heat and Mass Transfer*: 2 articles
- *International Journal of Environment and Pollution*: 1 article.
- *Chemical Engineering Research and Design* (Impact factor=0.989, cited half life >10): 1 article.
- *Journal of Process Control* (Impact factor=1.606, cited half life=5.9): 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.
- *Biotechnology and Bioengineering*: 1 article.
- *Other publications (non-journal/invited)*: 2.

Impact factor: Number of citations in current year of papers published the two previous years divided by the total number of papers published the two previous years

Cited Half life: Half of a journal's cited articles were published more recently than the cited half-life.

Statistics by area (some are cross-listed)

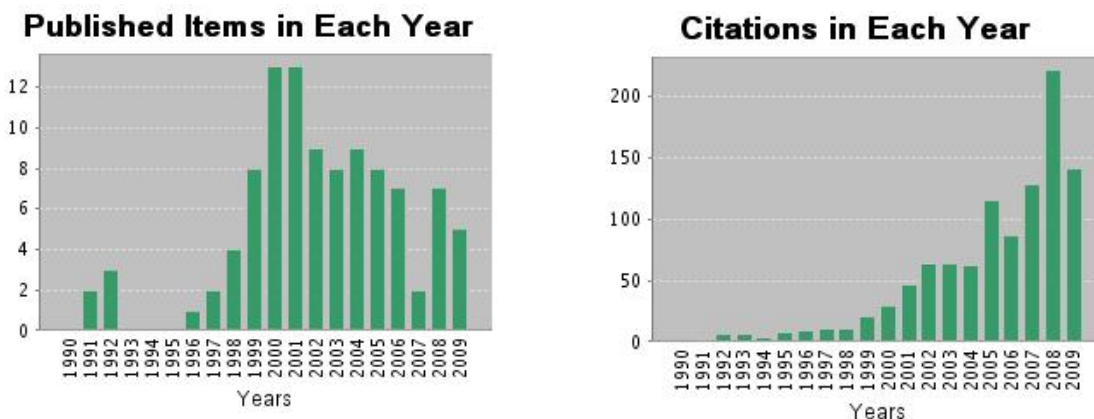
- **Instrumentation Design:** 44, 22 articles published/to appear, 2 articles submitted, 3 review articles (2 in peer reviewed conference proceedings), 1 handbook chapter and 16 peer reviewed conference proceedings.
- **Data Reconciliation:** 32, 21 articles published/to appear, 2 review articles (1 in peer reviewed conference proceedings), 1 handbook chapter and 9 peer reviewed conference proceedings.
- **Environmental Engineering and Water Management:** 30, 15 articles published/to appear, 1 article submitted, 1 review article and 13 peer reviewed conference proceedings.
- **Energy Integration:** 32, 22 articles published/to appear, 1 article submitted and 9 peer reviewed conference proceedings.

- **Plant and Refinery Operations and Design:** 13, 10 articles published/to appear and 3 peer reviewed conference proceedings.
- **Crude Fractionation Design and Retrofit:** 22, 14 articles published/to appear and 8 peer reviewed conference proceedings.
- **Decision Making, Planning and Risk:** 34, 22 articles published/to appear, 1 book chapter and 11 peer reviewed conference proceedings.
- **Product Design:** 9, 5 articles, 1 article submitted and 3 peer reviewed conference proceedings.
- **Mathematical Optimization Theory:** 7, 6 articles submitted.
- **Bioengineering:** 1, 1 article to appear.

Citations:

As of October 2009, M. Bagajewicz's papers have received more than 1,042 citations. Fourteen(18) papers were cited 18 times or more ("h" factor=18). These papers are listed below at the end of the complete list of publications.

The average citation per paper is: 9.83



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

- As of October 2009, M. Bagajewicz while at OU, has involved
 - 37 undergraduate students in the preparation of material and/or as authors of 15 refereed journal articles and peer refereed conference proceedings

LIST OF ARTICLES

Manuscripts Submitted

1. Faria D. and M. Bagajewicz. *On The Degeneracy of The Water/Wastewater Allocation Problem In Process Plants*. Industrial and Engineering Chemistry Research.
2. Nguyen T. D. and M. Bagajewicz. *New breath first efficient methodology for the Design and Upgrade of Sensor Networks*. AIChE Journal
3. Nguyen T. D. and M. Bagajewicz. *Tree search methods to obtain sub-optimal solutions*. Computers and Chemical Engineering.
4. Faria D. and M. Bagajewicz. *A New Approach For Global Optimization Of Minlp Problems With Bilinear And Concave Univariate Terms - Part I: Theory*. AIChE Journal.
5. Faria D. and M. Bagajewicz. *A New Approach For Global Optimization Of Minlp Problems With Bilinear And Concave Univariate Terms - Part I: Case Studies*. AIChE Journal.
6. Faria D. and M. Bagajewicz. *Global Optimization Of Bilinear MINLP Problems Using Bound Contraction through Continuous Relaxation*. Computers and Chemical Engineering.

7. Faria D. and M. Bagajewicz. *Global Optimization using Search over Selected Sub-Spaces*. AIChE Journal.
8. Faria D. and M. Bagajewicz. *Global Optimization Of MINLP Problems Using Function Discretization*. AIChE Journal.
9. Faria D. and M. Bagajewicz. *Global Solutions Of Integral and Differential Algebraic Problems Using Functional Discretization*. Computers and Chemical Engineering
10. Barbaro A., D. Q. Nguyen, N. Vipaturat and M. J. Bagajewicz. *All-at-once and Step-wise Detailed Retrofit of Heat Exchanger Networks Using an MILP Model*. Industrial and Engineering Chemistry Research.
11. Linehan Shawna, Sarosh N. Nizami and Miguel Bagajewicz. *Design of Monitoring Instruments for Wine Fermentation using Microeconomics and Consumer Preferences*. Chemical Engineering Communications.
12. Nguyen Tanth DuyQuang and M. Bagajewicz. *Optimization of Preventive Maintenance in Chemical Process Plants*. Industrial and Engineering Chemistry Research.

Conference Proceedings Submitted

None at this time

Conference Peer Review Articles Accepted (to appear)

None at this time

Review Articles (Peer Reviewed Proceedings are indented)

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).

Articles Accepted (to appear)

1. Diaz A. A., E. Tomba, R. Lennarson, R. Richard, M. Bagajewicz and R. G. Harrison. *Prediction of Protein Solubility in Escherichia coli Using Logistic Regression*. *Biotechnology and Bioengineering*.
2. Bagajewicz M., Season Hill, Amanda Robben, Heyde Lopez, Monica Sanders, Erin Sposato, Curtis Baade, Shamara Manora and Juliana Hey Coradin. *Product Design in Price-Competitive Markets: A case study of a Skin Moisturizing Lotion*. AIChE Journal.
3. Faria Débora C. and M. Bagajewicz. *Comparative Analysis of MILP and MINLP Single Contaminant Models in the Design of Process Water Networks*. Chemical Engineering Communications.
4. Faria D. C. and M. Bagajewicz. *On the Appropriate Modeling of Process Plant Water Systems*. AIChE Journal.

Articles and Peer Reviewed Conference Proceedings Published while at the University of Oklahoma (Peer Reviewed Proceedings are indented)

5. Nguyen Tanth DuyQuang and M. Bagajewicz. *On the Impact of Sensor Maintenance Policies on Stochastic-Based Accuracy*. Computers and Chemical Engineering., 33, 9, pp. 1491-1498 (2009).

6. Bagajewicz M., Thang Cao, Robbie Crosier, Scott Mullin, Jacob Tarver, and DuyQuang Nguyen. *Method for Evaluation of Thermochemical and Hybrid Water-Splitting Cycles*. Industrial and Engineering Chemistry Research. 48, 19, pp. 8985-8998 (2009).
7. Whitnack Craig, Ashley Heller, Michael T. Frow, Susan Kerr and Miguel J. Bagajewicz. *Financial Risk Management in the Design of Products under Uncertainty*. Computers and Chemical Engineering. Vol. 33, No 5, pp. 1056–1066 (2009).
8. Heflin Linden, Sarah Walsh and Miguel Bagajewicz. *Design of Medical Diagnostics Products: A case-Study of a Saliva Diagnosis Kit*. Computers and Chemical Engineering. Vol. 33, No 5, pp. 1067–1076 (2009).
9. Faria D. C. and M. Bagajewicz. *Profit-based Grassroots Design and Retrofit of Water Networks in Process Plants*. Computers and Chemical Engineering. Vol. 33, No 2, 436–453(2009).
10. Guyonnet, P., H. Grant and M. Bagajewicz. *Integrated Model for Refinery Planning Oil Procuring and Product Distribution*. Industrial and Engineering Chemistry Research. Vol 48, No 1, 463–482 (2009).
11. Bagajewicz Miguel J. and Debora C. Faria. *On the appropriate architecture of the water/wastewater allocation problem in process plants*. Computer Aided Chemical Engineering, 26, pp. 1-20 (2009).
12. Nguyen DuyQuang and M. Bagajewicz. *Approximate method for Optimal Instrumentation Network Design*. Computer Aided Chemical Engineering, 26, pp. 315-320 (2009).
13. Bagajewicz. *On the use of net present value in investment/capacity planning models*. Industrial and Engineering Chemistry Research. Vol 47, No 23, pp. 9413-9416 (2008).
14. Miloš Bogataj and M. Bagajewicz. *Synthesis of Non-isothermal Heat Integrated Water Networks in Chemical Processes*. Computers and Chemical Engineering. Vol 32, No 12, pp. 3130–3142 (2008).
15. Lakkhanawat H. and M. Bagajewicz. *Financial Risk Management with Product Pricing in the Planning of Refinery Operations*. Industrial and Engineering Chemistry Research. Vol 47, No 17, 6622-6639 (2008).
16. Nguyen, D. and M. Bagajewicz. *Design of Nonlinear Sensor Networks for Process Plants*. Industrial and Engineering Chemistry Research. Vol 47, No 15, 5529-5542 (2008).
17. Bagajewicz M. and DuyQuang Nguyen. *Stochastic-Based Accuracy of Data Reconciliation Estimators for Linear Systems*. Computers and Chemical Engineering. Vol. 32, 6, 1257–1269, (2008).
18. Nguyen D., Christopher Brammer and M. Bagajewicz. *New Tool for the Evaluation of the Scheduling of Preventive Maintenance for Chemical Process Plants*. Industrial and Engineering Chemistry Research. Vol 47, No 6, 1910-1924 (2008).
19. Street C., J. Woody, J. Ardila and M. Bagajewicz. *Product Design: A Case Study of Slow Release Carpet Deodorizers/Disinfectants*. Industrial and Engineering Chemistry Research. Vol 47, No 4, 1192-1200 (2008).
20. Faria Debora and M. Bagajewicz. *A new approach for the design of multicomponent water-wastewater networks*. Computer Aided Chemical Engineering, 25, pp. 41-48 (2008).
21. Whitnack Craig, Ashley Heller and Miguel J. Bagajewicz. *A Microeconomics-based approach to product design under uncertainty*. Computer Aided Chemical Engineering, 25, pp. 181-186 (2008).
22. Nguyen DuyQuang and M. Bagajewicz. *Optimization of Preventive Maintenance Scheduling in Processing Plants*. Computer Aided Chemical Engineering, 25, pp. 319-324 (2008).
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163. Bagajewicz M. *On the Probability Distribution of Process Plant data and their Impact on Data Reconciliation Techniques*. Proceedings of the Fifth International Symposium on Process System Engineering. Kyongju, Korea, (May 1994).
164. Bagajewicz M. and V. Manousiouthakis. *Mass/Heat-Exchanger Network Representation of Distillation Networks*. AIChE Journal, Vol., 38, 1769-1800, (1992).
165. Bagajewicz M. *Propagation of Reaction Fronts in Non-catalytic-Non-isothermal Gas-Solid Fixed Bed Reactors*. Chemical Engineering Communications, 112, 145-164, (1992).
166. Bagajewicz M. and V. Manousiouthakis. *On the Generalized Benders Decomposition*. Comp. & Chem. Eng., 15, 10, 691-700, (1991).
167. Marcos G., S. Tailleur and M. Bagajewicz *Analytical Approximate Solutions of Certain Nonlinear Equations of Reaction-Diffusion Kind*. Mathematical and Computer Modeling, 5, 8, 77-88, (1991).
168. Bagajewicz M. *Analytical Approximate Solutions of Certain Gas-Solid Reaction Models in Pellets*. Chem. Eng. Communications, 84, 173-189, (1989).
169. Bagajewicz M. *Optimal Design of the Steam and Power System in Chemical Plants*. Latin American Applied Research, Vol. 18, 2, 105, (1989).
170. Marcos G., S. Tailleur and M. Bagajewicz. *Analytical Approximate Solutions of Certain Nonlinear Problems in Heterogeneous Reaction-Diffusion Equations*. Proceedings of the 2nd French-Chilean and Latin American Congress in Applied Mathematics, Santiago de Chile, Chile, (1989).
171. Bagajewicz M., S. Tamhankar, M. Flytzani Stephanopoulos and G. Gavalas *Hydrogen Sulfide Removal by Supported Vanadium Oxide*. Environmental Sci. & Technology, 22, 467-470, (1988).
172. Tamhankar S. S., Bagajewicz M., G. Gavalas, P.K. Sharma and M. Flytzani Stephanopoulos. *Mixed-Oxide Sorbents for High-Temperature Removal of Hydrogen Sulfide* Industrial and Engineering Chemistry. Process Design and Development. Vol. 25, (1986).
173. Bagajewicz M. *Optimal Design of Steam and Power Systems in Chemical Plants*. Proceedings of the II Latin American Congress of Heat and Mass Transfer, (1986).
174. Doldán O., M. Bagajewicz and J. Cerdá. *Designing Heat Exchanger Networks for Existing Chemical Plants*. Computers and Chemical Engineering. Vol. 9, No 5, (1985).
175. Flytzani Stephanopoulos M., S. Tamhankar, G. Gavalas, M. Bagajewicz and P.K. Sharma. *High Temperature Regenerative Removal of H₂S by Porous Mixed Oxide Sorbents*. Symposium on High Temperature Fuel Gas Clean up. American Chemical Society, Chicago, USA, (1985).

176. Tamhankar S., M. Bagajewicz, G. Gavalas, P.K. Sharma and M. Flytzani Stephanopoulos. *High Temperature Regenerative H₂S Removal with Novel Mixed Oxide Sorbents for Fuel Cell Applications*. National Fuel Cell Seminar. Tucson, Arizona, USA, (1985).
177. Flytzani Stephanopoulos M., S. Tamhankar, G. Gavalas, M. Bagajewicz and P.K. Sharma. *High Temperature Regenerative Removal of H₂S by Porous Mixed Oxide Sorbents*. Proceedings of the Symposium on High Temperature Fuel Gas Clean up. American Chemical Society, Chicago, USA, (1985).
178. Tamhankar S., M. Bagajewicz, G. Gavalas, P.K. Sharma and M. Flytzani Stephanopoulos. *High Temperature Regenerative H₂S Removal with Novel Mixed Oxide Sorbents for Fuel Cell Applications*. Proceedings of the National Fuel Cell Seminar. Tucson, Arizona, USA, (1985).
179. Doldán O., M Bagajewicz y J. Cerdá. *Optimal Synthesis of Heat and Power Generation and Recovery Systems. Part Two: Maximum Profitable Heat Recovery*. Latin American Journal of Heat and Mass Transfer. Vol. 9, No 1, (1985).
180. Doldán O., M. Bagajewicz y J. Cerdá. *Optimal Synthesis of Heat and Power Generation and Recovery Systems. Part One: Optimal Heating Utility Assignment*. Latin American Journal of Heat and Mass Transfer. Vol. 8 No 3/4, (1984).

Other publications

1. Bagajewicz M., D. Sujo, D. Martinez and M. Savelski. Boyko Nitzov (Editor). *A Guide To Non-Petroleum Transportation Liquid Fuels: Status, Technology, Economics, Policies. A Comparative Analysis Of Biofuels, Gas-To-Liquids And Coal-To-Liquids*. Prepared for ENCHARTER (Energy Charter Secretariat), Brussels, Belgium, (ISBN 978-90-5948-050-6) Nov. (2006)
2. Davis (Editor), M. Bagajewicz and C. Panagiotis (Sensor Networks section). *Workshop on Cyber Infrastructure (CI) in Chemical and Biological Process Systems: Impact and Directions. A University – Industry - CI Perspective*. September 25 – 26, Arlington, VA (2006)

BOOK REVIEWS

1. Bagajewicz. *Review of the Book: Data Processing and Reconciliation in Chemical Process Operations* By. J. Romagnoli and M. C. Sánchez. Academic Press (2000). AIChE Journal. By invitation. Volume 46, Issue 9, pp. 1900 (2001).

MOST CITED PAPERS (as of October 2009)

98 citations

- 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).

63 citations

- Savelski M. and M. Bagajewicz. *On the Optimality Conditions of Water Utilization Systems in Process Plants with Single Contaminants*. Chemical Engineering Science. Vol. 55, No 21, pp. 5035-5049 (2000).

55 citations

- Tamhankar S. S., Bagajewicz M., G. Gavalas, P.K. Sharma and M. Flytzani Stephanopoulos. *Mixed-Oxide Sorbents for High-Temperature Removal of Hydrogen Sulfide* Industrial and Engineering Chemistry. Process Design and Development. Vol. 25, (1986).

52 citations

- Bagajewicz M. and V. Manousiouthakis. *Mass/Heat-Exchanger Network Representation of Distillation Networks*. AIChE Journal, Vol., 38, 1769-1800, (1992).

51 citations

- Savelski M. and M. Bagajewicz. *On the Use of Linear Models for the Design of Water Utilization Systems in Refineries and Process Plants*. Chemical Engineering Research and Design. Vol. 79, A5, pp. 600-610 (2001).

47 citations

- Bagajewicz M. *Design and Retrofit of Sensor Networks in Process Plants*. AIChE Journal. Vol. 43, No. 9, pp. 2300, Sept. (1997).

43 citations

- Savelski M. and M. Bagajewicz. *Algorithmic Procedure to Design Single Component Water Utilization Systems in Process Plants*. Chemical Engineering Science. 56, 5, pp. 1897-1912 (2001).

27 citations

- Barbaro A. F. and M. Bagajewicz. *Managing Financial Risk in Planning under Uncertainty*. AIChE Journal. Vol 50, No 5., pp. 963-989 (2004).
- Bagajewicz M. Rivas and M. Savelski. *A Robust Method to Obtain Optimal and Sub-Optimal Design and Retrofit Solutions of Water Utilization Systems with Multiple Contaminants in Process Plants*. Computers and Chemical Engineering, 24, No 2-7, pp. 1461-1466 (2000).

26 citations

- Guillén G., F. D. Mele, M. Bagajewicz, A. Espuña and L. Puigjaner. *Multiobjective Supply Chain Design under Uncertainty*. Chemical Engineering Science, Vol. 60, No 6, pp.1535-1553 (2005).

25 citations

- Bagajewicz M. and Q. Jiang. *Gross Error Modeling and Detection in Plant Linear Dynamic Reconciliation*. Computers and Chemical Engineering, 22, 12, 1789-1810 (1998).
- Jiang Q. and M. Bagajewicz. *An Integral Approach to Dynamic Data Reconciliation*. AIChE Journal. Vol. 43, No. 10, p. 2546, October (1997).

24 citations

- Bagajewicz M., H. Rodera and M. Savelski. *Energy Efficient Water Utilization Systems in Refineries and Process Plants*. Computers and Chemical Engineering. Vol. 26, No 1, pp. 56-79 (2002).

22 citations

- Savelski M. and M. Bagajewicz. *On the Necessary Conditions of Optimality of Water Utilization Systems in Process Plants with Multiple Contaminants*. Chemical Engineering Science. Vol 58, No 23-24, pp. 5349-5362 (2003).
- Bonfill A., M. Bagajewicz, A. Espuña and L. Puigjaner. *Risk Management in Scheduling of Batch Plants under Uncertain Market Demand*. Industrial and Engineering Chemistry Research, 43, No 9, pp. 2150-2159 (2004).

20 citations

- Bagajewicz M. and M. Sánchez. *Design and Upgrade of Non-redundant and Redundant Linear Sensor Networks*. AIChE J. Vol. 45, No. 9, pp. 1927-1939. (1999)

19 citations

- Bagajewicz M. and M. Sánchez. *Cost-Optimal Design of Reliable Sensor Networks*. Computers and Chemical Engineering. Vol. 23, 11/12, pp. 1757-1762 (2000).
- Bagajewicz M. and M. Sánchez. *Duality of Sensor Network Design Models for Parameter Estimation*. AIChE J., 45, 3, pp. 661-664 (1999).

18 citations

- Bagajewicz M. and E. Cabrera. *A New MILP Formulation for Instrumentation Network Design and Upgrade*. AIChE J. Vol. 48, No. 10, pp. 2271-2282. (2002).
- Bagajewicz M. and V. Manousiouthakis. *On the Generalized Benders Decomposition*. Comp. & Chem. Eng., 15, 10, 691-700, (1991).

16 citations

- Bagajewicz M., R. Pham and V. Manousiouthakis. *On the State Space Approach to Process Design*. Chemical Engineering Science. 53, 14, 2595-2621 (1998).

14 citations

- Aseeri A. and M. Bagajewicz. *New Measures and Procedures to Manage Financial Risk with Applications to the Planning of Gas Commercialization in Asia*. Computers and Chemical Engineering. Vol. 28 No 12, pp. 2791-2821 (2004).
- Romero J., M. Badell, M. Bagajewicz, and L. Puigjaner. *Integrating Budgeting Models into Scheduling and Planning Models for the Chemical Batch Industry*. Industrial and Engineering Chemistry Research. Vol. 42, No 24, pp. 6125-6134 (2003).
- Savelski M. and M. Bagajewicz. *Design of Water Utilization Systems in Process Plants with a Single Contaminant*. Waste Management, 20 (8), pp. 659-664. (2000).

12 citations

- Sánchez, M., J. Romagnoli, Q., Jiang and M. Bagajewicz. *Simultaneous Estimation of Biases and Leaks in Process Plants*. Computers and Chemical Engineering. 23, 7, 841-858 (1999).

11 citations

- Guillén G., M. Bagajewicz, S. E. Sequeira, A. Espuña and L. Puigjaner. *Management of pricing policies and financial risk as a key element for short term scheduling optimization*. Industrial and Engineering Chemistry Research. Vol 44., No 3, pp. 557-575 (2005).
- Bagajewicz M. and M. Sánchez. *Reallocation and Upgrade of Instrumentation in Process Plants*. Computers and Chemical Engineering. 24, 8, pp. 1961-1980 (2000).
- Bagajewicz M. and H. Rodera. *Energy Savings in the Total Site. Heat Integration across many Plants*. Computers and Chemical Engineering, 24, No 2-7, pp. 1237-1242 (2000).
- Sánchez M. and M. Bagajewicz. *On the Impact of Corrective Maintenance in the Design of Sensor Networks*. Industrial and Engineering Chemistry Research. Vol. 39, no. 4, pp. 977-981 (2000).
- Rodera H. and M. Bagajewicz. *Targeting Procedures for Energy Savings through Heat Integration across Plants*. AIChE J. Vol. 45, No. 8, pp. 1721-1742 (1999).

10 citations

- Barbaro A. F. and M. Bagajewicz. *Use of Inventory and Option Contracts to Hedge Financial Risk in Planning under Uncertainty*. AIChE Journal. Vol 50, No 5., pp. 990-998 (2004).
- Gómez J., M. Savelski and M. Bagajewicz. *On a Systematic Design Procedure Single Component Water Utilization Systems in Process Plants*. Chemical Engineering Communications. Vol. 186, pp. 183-203 (2001).

THESIS READING

- **Hassan Y. Alhammedi**. University of Sydney. Australia. “*Process design and Operation. Incorporating Environmental, Profitability, Heat Integration and Controllability Considerations*”. Fall 2003.
- **H. Prasanth Reddy**. IIT, Madras, India. “*Leak Detection in Pipeline Networks using Transfer Function Based Dynamic Simulation Model*”. Spring 2007.
- **S. Mohan Kumar**. IIT, Madras, India. “*Monitoring and Control of Water Distribution Networks*”. Spring 2008.

PATENTS

- **METHOD OF INCREASING DISTILLATES YIELD IN CRUDE OIL DISTILLATION**. U.S. Patent # 7,172,686 B1. Serial # 10/387,171. Issued February 7, 2007. Provisional application U.S. Serial No. 60/332,244, filed November 16, 2001. Patent submitted Nov 16, 2002. Final patent issued
- **ACOUSTIC/PRESSURE WAVE-DRIVEN SEPARATION DEVICE**. U.S. Patent Application: Attorney Docket: 5837.092

INVENTION DISCLOSURES

- **CONTINUOUS FLOW MICROCHANNEL REACTOR FOR DNA ANALYSIS.** M. Bagajewicz (10.0%), R. Cook (13.5%), S. Knedlik (11.5%), S. Kunapuli (11.5%), S. R. McRory (10.0%), V. Tello (10.0%), D. Welch (10.0%), S. Wilson (21.0%) (Undergraduate Students), J. Harley (2.5%), (OMRF). *Invention disclosure submitted to the Office of Technology Management of the University of Oklahoma, (2001).*
- **MUNICIPAL SOLID WASTE PROCESSING.** M. Bagajewicz (80 %) D. Atkinson, (2.2%), S. Chin (2.2%), A. Claghorn (2.2%), H. Hawthorn (2.2%), C. Keister (2.2%), J. Rasmussen (2.2%), A. Tumblin (2.2%), M. Williams (2.2%), H. Witcher(2.2%) Undergraduate Students). *Invention disclosure submitted to the Office of Technology Management of the University of Oklahoma, (2000).*
- **A METHOD OF PRODUCING BETA-CAROTENE.** M. Bagajewicz (85%) C. Lethgo (3.75%), T. McPartland (3.75%), T. Anderson (3.75%) and D. Ortiz (3.75%) (Undergraduate Students). *Invention disclosure submitted to the Office of Technology Management of the University of Oklahoma, (2000).*
- **HIGH TEMPERATURE TRANSPORTATION OF NATURAL GAS.** M. Bagajewicz (8%), A. Isbell (53%), M. Boone (7%), N. Gawey (7%), G. Gonser (7%), R. Kaneria (11%), C. Manion (7%). *Invention disclosure submitted to the Office of Technology Management of the University of Oklahoma, (2000).*

TECHNICAL REPORTS

- * **Reports related to the Retrofit of Crude Fractionation Units (1998)**
 - Three Reports for Mobil and Phillips Petroleum as part of consulting activities.
- * **Reports related to the design of the Heavy Water Experimental Plant. (1976-1982)**
 - Five Reports with shared responsibility related to the flowsheet and layout selection.
 - Five Reports of my own responsibility related to equipment design and the simulation of different technological alternatives.
 - Four Reports done and supervised as being in charge of the group responsible of the developments of Start-Up policies.
- * **Reports on Rational Use of Energy in Chemical Plants (1981)**
 - Feasibility Study: Energy Integration in the Butadiene Plant of PASA. (Argentina) M. Bagajewicz and J. Cerdá.
 - Energy Integration in the 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

- **2009:** Two (2) students from 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 from 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 from 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 from the Undergraduate Winter Internship Program at the University of Oklahoma: Dolores Gutiérrez Cacciabue. Three (3) student interns the Undergraduate Summer Internship Program at the University of Oklahoma: Kamila Sobeslavova, Jaime Ardila and Zehra Tosun.
- **2005:** One (1) student intern from the University of Oklahoma Undergraduate Summer Internship: Umamaatie Sing
- **2004:** Two (2) students from the University of Oklahoma: Laura Causey (Research for Credit) and Charles T. Watt (NSF undergraduate Intern).
- **2003:** One (1) student from the University of Oklahoma: David Splinter. One (1) international student from France: Remi Duval.
- **2001:** Two (2) international student from Venezuela: Lynddy Garrido and Maria Carolina Gonzales.
- **2000:** One (1) student from the University of Oklahoma: Will James. Two (2) international student, one from France: Paul Charles and one from Venezuela: Enmanuel Cabrera.
- **1999:** Two (2) students from the University of Oklahoma: Le Huy and Casey Kiester. One (1) international student from France: Thomas Bonhomme.
- **1998:** Three (3) students from the University of Oklahoma: Wei Shung Chung, Le Huy, Alvin Lee. One (1) international student from Venezuela: Jose Gomez.
- **1997:** Three (3) students from 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 Sub area Process Simulation of the Industrial Extension Unit of INTEC, Argentina. (1982).
- * In charge of the Group responsible of the planning of the Start-up of the Heavy Water Experimental Plant in Argentina (1979-1980).

AWARDS, HONORS AND SPECIAL APPOINTMENTS

While at the University of Oklahoma

- 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).

Before joining the University of Oklahoma

- Argentine National Research Council and Inter American Development Bank Fellowship to perform graduate studies. (1982-1987).
- Research Fellow. Atomic Energy Commission. (1978).

INCLUSION IN LISTINGS

- Who is Who in Science and Engineering (2008-2009, 2006-2007, 2005-2006).
- Who is Who in Finance and Business (2008-2009, 2007-2008, 2006-2007)
- Who is Who in American Education (2006-2007, 2002-2003).
- Who is Who in America (2006, 2005, 2004, 2003, 2002).
- Who is Who in the World (2006, 2005, 2004, 2003, 2002, 2001).
- The America's Who's Who Registries (2006-2007).
- America's Registry of Outstanding Professionals (2003-2004).
- 2000 Outstanding Scholars of the 21st Century- 1st Edition. (2001).

PLENARY AND KEYNOTE CONFERENCE LECTURES

International

1. **ESCAPE 19 Meeting.** Krakow, Poland, June 2009. **PLENARY LECTURE:** *Review of Water Management Technologies in Process Plants.*
2. **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.*
3. **XXII Chemical Engineering Colombian Congress.** August 2003. Bucaramanga, Colombia. **PLENARY LECTURE:** *Financial Risk Management in Process Design and Operations Planning.* M. Bagajewicz.
4. **Foundation of Computer Aided Operations Conference (FOCAPO) 2003.** January, 2003. Coral Springs, FL. **PLENARY LECTURE:** *Data Reconciliation and Sensor Location.*
5. **Advances in Petrochemicals and Polymers in the New Millennium.** July 2003. Bangkok. Thailand. **KEYNOTE LECTURE** *on Financial Risk Management in Process Design. Process Modeling and Simulation Session.*
6. **Advances in Petrochemicals and Polymers in the New Millennium.** July 2003. Bangkok. Thailand. **KEYNOTE LECTURE** *on Data Reconciliation and Instrumentation Upgrade. Overview and Challenges. Process Modeling and Simulation Session.*
7. **PRES 2002. 5th Conference Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction.** Prague, Czech Republic. August (2002). **KEYNOTE PRESENTATION:** *Financial Risk Management in Process Design.* Co-authors A. Barbaro and A. Koppol.
8. **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. **KEYNOTE PRESENTATION:** *Financial Risk Management in Decision Making.*
9. **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.*
10. **Enpromer'99. Second Congress of Process Engineering of the Mercosur,** Florianopolis Brazil. September 1999. **PLENARY LECTURE:** *Water and Wastewater Management.*

11. **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.*
12. **VII Inter-American Congress on the Environment. Colombia. October 2000.** **PLENARY LECTURE**: *Water use in Industry and the Environment. Can we resolve the conflict?*
13. **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.*

INVITED LECTURES AND PRESENTATIONS

International

14. **Universidad Nacional de Ingenieria.** May 2008. Lima, Peru. **SEMINAR LECTURE**: *New trends in Process Systems Engineering.* M. Bagajewicz.
15. **Chulalongkorn University.** October 2007. Bangkok, Thailand. **SEMINAR LECTURE**: *New trends in Refinery Operations scheduling and Planning.* M. Bagajewicz.
16. **Chulalongkorn University.** October 2006. Bangkok, Thailand. **SEMINAR LECTURE**: *Integrated Sensor Network Design.* M. Bagajewicz.
17. **Chulalongkorn University.** October 2005. Bangkok, Thailand. **SEMINAR LECTURE**: *Product Design: The New Interface of Engineering with Microeconomics, Finances and Marketing.* M. Bagajewicz.
18. **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
19. **Chulalongkorn University.** October 2004. Bangkok, Thailand. **SEMINAR LECTURE**: *Synergy between Microeconomics and Finances with Product and Process Systems Engineering.* M. Bagajewicz.
20. **Universidad de Valladolid.** May 2004. Valladolid, Spain. **SEMINAR LECTURE**: *Data Reconciliation and Instrumentation Upgrade.* M. Bagajewicz.
21. **NEW TRENDS IN CHEMICAL ENGINEERING. Workshop organized by the University of Salamanca, Spain.** February 21-25, 2004. **LECTURE**: *Integration of Decision Making Tools from Process Systems Engineering and Business. Financial Risk Management and other Emerging Procedures.* M. Bagajewicz.
22. **Chulalongkorn University.** October 2003. Bangkok, Thailand. **SEMINAR LECTURE**: *Financial Risk Management in Process Design and Operations.* M. Bagajewicz.
23. **Universitat Rovira i Virgili. Chemical Engineering Department.** Tarragona, Spain. November 15, 2002. **Lecture**: *Financial Risk Management in Design and Decision Making.*
24. **Warsaw University of Technology.** Plock, Poland. October 24, 2002. **LECTURE**: *On the Management of Financial Risk in the Planning of Investment, plant operations and Project decisions.*
25. **Polytechnic of Catalunya. Chemical Engineering Department.** June 2002. Barcelona, Spain. *Risk control in Design and Decision Making.*
26. **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.*
27. **University of Salamanca. Chemical Engineering Department,** (May, 1998) *Process Engineering at the University of Oklahoma.*
28. **Enpromer'97. First Congress of Process Engineering of the Mercosur**, Bahía Blanca, Argentina, September 1997. *Panel on Chemical Engineering Education.*
29. **Beijing University of Chemical Technology.** Beijing, People's Republic of China. (July 1996). *Process Engineering at the University of Oklahoma.*
30. **Hebei University of Chemical Technology.** Tianjin. People's Republic of China. (July 1996). *On the State Space Representation of Distillation Networks.*

National (While at the University of Oklahoma)

31. **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). *Invited Seminar Speaker*.
32. **University of Kansas**. Lawrence, Kansas. *Financial Risk Management in Process design Investment Planning and Process Operations*. Sept 30, (2003). *Invited Seminar Speaker*.
33. **Carnegie Mellon University**. *Review of Sensor Location*. Nov 30, (1999). *Invited Seminar Speaker*.
34. **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*.
35. **AIChE – Trisectional Oklahoma Meeting**. *The Desktop Computation design and Modeling Revolution*. Oklahoma, (April, 1999). *Panelist on Model Validation*.
36. **1999 Spring National AIChE Meeting**. Houston. *Panel discussion on "Potential Benefits of Global Optimization in Industrial Practice"*.
37. **AIChE – University of Oklahoma Student Chapter**. (November 1998). *How to effectively prepare for graduate school. + Judo Demonstration*.
38. **AIChE - Central Oklahoma Section . Norman**, Oklahoma (October, 1998). *Panelist on Design and Optimization*.
39. **Oklahoma State University. Chemical Engineering Department**, (February, 1998). *Data Reconciliation, Gross Error Detection and Optimal Sensor Location. Current Challenges and Future Trends*.
40. **Iowa State University. Chemical Engineering Department**, (February, 1998). *Some recent results in Data Reconciliation, Gross Error Detection and Sensor Location*.
41. **University of Oklahoma Society of Hispanic Engineers (SHE)**, (November, 1997). *How to maximize Chances to get accepted in Graduate School*
42. **Phillips Petroleum. Research and Development**. Bartlesville, Oklahoma, (August, 1997). *Energy Retrofit of Crude Units*.
43. **AIChE - Central Oklahoma Section. Norman**, Oklahoma, (April, 1997). *Dynamic Data Reconciliation*.
44. **KBC Advanced Technologies. User Meeting**. San Antonio, Texas. (March 1996). *Data Reconciliation. Current Challenges and Future Trends*.
45. **Phillips Petroleum. Research and Development**. Bartlesville, Oklahoma, (March, 1996). *Design, Modeling, Simulation and Plant Operations Studies at OU*.
46. **AIChE - Central Oklahoma Section**. Norman, Oklahoma (February 1996). *Distillation Networks are MEN and HEN*.
47. **University Of Tulsa. Department of Chemical Engineering**, Tulsa, Oklahoma, (October, 1995). *On the State Space Approach to Process Design*.
48. **University of Oklahoma, School of Chemical Engineering and Material Science**. Norman, Oklahoma, (May, 1995). *Recent Developments in Process Design and Analysis*.

National (Before Joining the University of Oklahoma)

49. **UCLA, Los Angeles**, (1991). *The Modeling of Heterogeneous Reaction Diffusion Systems*.

In Argentina

50. **INTEC, UNL, Argentina**, (1989). *Teaching Mathematics for Engineers. An Experience using Operator Theory*.
51. **INTEC, UNL, Argentina**, (1986). *Monotone Bounds for Chemical Engineering Elliptic Problems. Gas-Solid Reactions in Pellets*.
52. **Petroquímica General Mosconi**, La Plata, Argentina (1982). *Fundamentals of the Methodology Used in Plant Heat Integration Studies. The General Mosconi Petrochemical Plant Case*. (with J. Cerdá).
53. **Universidad Nacional del Sur (UNS)**, Bahía Blanca, Argentina, (1982). *Profitable Heat Integration of Processes*. (with J. Cerdá).

PARTICIPATION IN CONGRESSES AND WORKSHOPS

International (While at the University of Oklahoma)

- **ESCAPE 19 Meeting.** 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 data 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 Thanh 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. Nogués, 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. Nogués, 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. Nogués, 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. Nogués, 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. Roderer 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.* Qiyu 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. Roderer 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.*

International (Before joining the University of Oklahoma)

- **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.

National (While at the University of Oklahoma)

- **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 Pumpharound 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 he “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 Plant.* 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.
- **ASCE 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 Qiyu 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.

National (Before joining the University of Oklahoma)

- **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.

Meetings in Argentina (1978-1989)

- **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 Profitable 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.

EDUCATIONAL CONFERENCES AND PAPERS

- **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

- **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. *Session: 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. *Session: 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

(2010)

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

(1995-2009)

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

Teaching Evaluations: Among the top of the department. Higher than the average of the College. Selected by the students as best professor of the department in 2003 and 2006.

(2000-2009)

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

(2007-2009)

- * **University of Oklahoma.** *Chemical Engineering Thermodynamics (Undergraduate Class). Summer 2007, 2008 and 2009.*

(2003-2009)

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

(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)

- * **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 days intensive course.*

- * **Chulalongkorn University (Bangkok, Thailand).** *Process Simulation and Design (Graduate Class). Co-instructor: Pierre Boucout. IFP, France. Two weeks intensive format 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

- * **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 days Short course). May 2006.
- * **Amman, Jordan.** Petroleum Refining (5 days 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 days short course). September 2002.
- * **Pemex. Ciudad del Carmen. Mexico.** Principles of Data Reconciliation (7 days short course). July 2002.
- * **Conoco. Ponca City, Oklahoma, USA.** Heat Integration (3 days short course). July 2000.
- * **Ecopetrol. Bucaramanga, Colombia.** Heat Integration (2 days short course). Nov, 2000.
- * **Ecopetrol. Bucaramanga, Colombia.** Principles of Data Reconciliation (3 days short course). Nov. 2000.
- * **Ecopetrol. Cartagena, Colombia.** Principles of Data Reconciliation (3 days short course). Sept 1998.