

Appendix B:
Faculty Resumes

Noel Artiles-León, Ph.D.

Professor

Industrial Engineering Department. University of Puerto Rico

Mayagüez PR 00681-9043

Office tel. (787) 832-4040 ext. 3819; e-mail: nartiles@uprm.edu

Education

Ph. D. Major: Industrial Engineering. Minor: Statistics.

May, 1989. Iowa

State University, Ames, Iowa. GPA: 3.96 of 4.00.

Master of Science. Industrial Engineering, Dec. 1985.

Iowa State

University, Ames, Iowa. GPA: 3.93 of 4.00.

Bachelor of Science. Civil Engineering, Dec. 1979.

National University of

Nicaragua, Managua, Nicaragua. Overall grade point average: 96 of 100.

Professional Experience

Jul. 97 - Present

Full Professor, Industrial Engineering Department, University of Puerto Rico, Mayagüez, PR.

Ago 98 - May 99

Trainer and consultant in Manufacturing Simulation at Medtronic Inc., Villalba, PR.

Sep. 97 - Mar 98

Trainer and consultant in Statistics Aided Manufacturing at Hanes Menswear Inc. Ponce PR.

Sep.- Dec. 97

Trainer and consultant in Applied Industrial Statistics at Allergan Medical Optics. Añasco PR.

Summer 97

Visiting Professor. Industrial Engineering Department, Universidad de los Andes, Bogotá, Colombia.

Sep. 94 - Mar. 97

Consultant in Applied Industrial Statistics at Carborundum Inc. Mayagüez PR.

Jan. 92 - Jun. 97

Acting Director (Dec. 1993 - Jan. 1995), Associate Director (Jan. 1992 -Nov. 1993), and Associate Professor (July 1992 - June 1997). Tenured in July 1994. Industrial Engineering Department, University of Puerto Rico, Mayagüez, PR.

Jan. 89 - Dec. 91

Assistant Professor. Industrial Engineering Department,

University of Puerto Rico, Mayagüez, PR.
Aug. 84 - Dec. 88 Teaching and research assistant. Industrial Engineering
Department, Iowa State University.

Research and Consulting Experience

"Engineering Excellence Awards for Low-income Minority Students." Project sponsored by NSF. Aug. 2000 - May 2004.

"Development of a Test Technology Coverage Analysis Model." Project sponsored by Hewlett-Packard, Aguadilla PR, Jun. 1999 - Dec. 2000.

"Simulation of New Production Lines for Products 6932, 6942, 6943, and 6945." Project sponsored by Medtronic Inc. Villalba PR, Aug. 1998 - March 1999.

"Process and Yield Improvement at Carborundum through SPC, DOE, and Education." Project sponsored by Carborundum Inc. Mayagüez PR. January 1995 - March 1997.

"Development of Multimedia Materials for Teaching Probability and Statistics to Engineering Students". Project funded by NSF through the Curriculum Assessment and Development Center at the Resource Center for Science and Engineering, San Juan PR. January 1996 - May 1997

"Development of Practice-Based Materials for a Quality Control Course." Project funded by NSF through the Curriculum Assessment and Development Center at the Resource Center for Science and Engineering, San Juan PR. January - December 1995.

"Process Assessment and Improvement and Training in Statistics Aided Manufacturing at Carborundum." Project sponsored by Carborundum Inc. Mayagüez PR. September-December 1994.

"Development of a Simulation Game for Teaching Statistics to Engineering and Science Students." Project funded by NSF through the Curriculum Assessment and Development Center at the Resource Center for Science and Engineering, San Juan PR. February 1993.

"Development of an Effective Training Program in Design of Experiments Applied to

Manufacturing." Project sponsored by Abbott Diagnostic Inc. Barceloneta, Puerto Rico.
June 1991 - Oct. 1991

"Assessment by Simulation of Sequencing Rules in a Surface Mount Assembly Line."
Project sponsored by the National Science Foundation (Division of Operations Research
and Production Systems) and Digital Equipment Corporation (Caribbean Operations).
May 1990 - June 1991.

"The Systematic Analysis of a Process Development Project: The Case of Equipment
Calibration for Surface Mount." Research project at Digital Equipment Corporation (San
Germán, PR). June 1989 -May 1990.

Recent Publications

"Satisfaction - A starting point to identify needs and areas for improvement" (with
Sandra L. Dika and Mario Rivera-Borrero). Proceedings of the 2006 International
Conference on Engineering Education (ICEE-2006). San Juan, Puerto Rico, July 23-28,
2006.

"Beyond Accreditation: Using Institutional Data to Foster College-Level Improvement in
Engineering" (with Sandra L. Dika and Mario Rivera Borrero). 6th International
Conference on Information-
Technology Based Higher Education and Training. Santo Domingo, Dominican Republic,
July 2005.

"A Tool for Functional Data Analysis and Experimentation," (with Dennis Rosario-
Román, David González-Barreto, and José R. Deliz Álvarez). 58th Annual Quality
Congress. Toronto, Ontario, Canada. May 2004.

"Dynamic Simulation of Water Distribution System with Probabilistic Demands," (with
Walter Silva) Proceedings of the Sixth Caribbean Islands Water Resources Congress.
Mayaguez PR, February 2001.

"Constructing Confidence Regions for Multiple-Response Problems Using Bootstrapping"
Proceedings of Group Technology / Cellular Manufacturing World Symposium - Year
2000. San Juan, PR. March 2000.

"Factors for Range Control Charts when the Underlying Distribution is Weibull," Proceedings of the 1999 Annual International Conference on Industry, Engineering, and Management Systems (IEMS'99) Cocoa Beach, Florida, March 1999.

"Confidence Intervals for Cpk when the Underlying Distribution is Weibull", Proceedings of the 1998 Annual International Conference on Industry, Engineering, and Management Systems (IEMS'98) Cocoa Beach, Florida, March 1998.

"Diseño de Experimentos en la Industria", 4to Simposio de Ingeniería Industrial, Santo Domingo, República Dominicana, August 1997.

"Optimization of Carborundum's Gas Igniter Furnacing Process using Experimental Design," 21 International Conference on Computers and Industrial Engineering, San Juan PR, March 1997.

"Improvement of Igniters' Quality Characteristics using Experimental Design," 21 International Conference on Computers and Industrial Engineering, San Juan PR, March 1997.

"A Pragmatic Approach to Multiple-Response Problems Using Loss Functions" Quality Engineering. Vol 9 No 2. December 1996.

"Assessment of Igniters' Electrical Characteristics through Experimental Design" Transactions of the 1996 R.I.T.'s Annual Quality Engineering by Design Symposium. April, 1996

"Statistical Optimal Design of Control Charts with Supplementary Stopping Rules." IIE Transactions. Vol. 28, No. 3, March 1996.

"Improving Fabric Finishing Through Experimental Design." Transactions of the 49th Annual Quality Congress. May 1995

"Analysis of Queueing Systems with Unknown Parameters." Transactions of the 1995 Annual International Conference on Industry, Engineering, and Management Systems (IEMS'95) Cocoa Beach, Florida, March 1995.

"Simple Formulas for Statistically Designing Control Charts with Supplementary Stopping Rules." Quality Engineering, Vol 7, No. 4, 1995.

Professional Memberships

American Society for Engineering Education (ASEE)

American Society For Quality (ASQ).

American Statistical Society (ASA)

Other Professional Activities

Reviewer for the Journal of Industrial Engineering Design. The purpose of this journal is to provide a place for undergraduate students to publish summaries of their capstone design project and to provide a forum where faculty involved with such projects can share their experiences. March 1996.

President of the Accreditation Board for the B.S. in Engineering Program at the Caribbean University. Board members are selected by the Council of Higher Education of the Commonwealth of Puerto Rico to provide professional advice about program approval to Licensing and Accreditation Office. January 1996 -July 1997.

Member of the Editorial Review Board of the International Journal of Operations and Quantitative Management (IJOQM). The IJOQM publishes high-quality original research articles dealing with all aspects of operations and quantitative management: international issues, practical experience, and pedagogical aspects.

Referee for "Computers & Industrial Engineering. An International Journal." This journal is aimed at computerized industrial engineering applications, methodology for developing viable computer solutions to industrial engineering problems, as well as the implementation of different industrial engineering techniques on computers.

Referee for "Technometrics", a Journal of Statistics for the Physical, Chemical, and Engineering Sciences published by ASQC and ASA. Reviewer for the Proceedings of the First International Conference on Industry, Engineering, and Management Systems.

Member of the Accreditation Board for the Master in Management Engineering Program at the Polytechnic University of Puerto Rico. Board members are selected by the Council of Higher Education of the Commonwealth of Puerto Rico to provide professional advice about program approval to Licensing and Accreditation Office. January 1992 to February 1993.

Panelist responsible for formally reviewing unsolicited proposals submitted to the Division of Design and Manufacturing Systems of NSF and for providing expert advice about award decisions to program directors. January 1992.

Master's Thesis Directed

Setup Optimization of a Pick-and-Place Machine Using Ant Systems. Andrés Uribe (August 2006).

Prediction Models for the In-control ARL in Phase II of a T Control Chart. Wilfredo Yushimito (May 2006).

Confidence Region Construction for the Location of the Optimal Settings in Multiple Response Problems. Mónica A. Puertas Vásquez (May 2002).

Development of a Bivariate Control Chart for Weibull Distributed Data. Sandro A. Paz Collado (May 2001).

Prediction Regions for Experiments with Multiple Responses using Bootstrapping. Narcisa Meza (Dec. 1998)

Average-Run-Length Properties of Control Charts for Proportions with Supplementary Stopping Rules. Johana Quiñones (May 1998)

Simulation of a Manufacturing Facility for Capacity Improvement. Ricardo Pérez (May 1998)

Development of Multimedia Materials for Teaching Probability and Statistics. Joseph Sefair (Dec. 1997)

Analysis and Design of Multivariate Sampling Plans. María García-Sandoval (Dec. 1997)

Development of Multimedia Materials for Teaching Statistical Quality Control. Eliana Valenzuela (Dec. 1997)

Solving Multiple-Response Problems Using Loss Functions. Rafael Niebles (Dec. 1997)

Usage Optimization of Cutting Diamonds at Carborundum. Alicia Tijerino-Verdugo (Sep 1996)

Quality Improvement by Simulation at the Emergency Room of Perea Hospital. Nilda M. Ríos-Vélez (May 1996).

Development of a Simulation Game to Assist in the Teaching of Statistics to Engineers.

José A. Castro-Figueroa (July 1995).

Robust Design of Multistage Poisson Queueing Systems. Rick Serrano (February 1995).
Application of Experimental Design to Improve the Yield of an Igniter Manufacturing Process. Javier Rodríguez (December 1994)

Application of Experimental Design in Fabrics Finishing. Carolina A. Domenech-La-Paix (May 1994).

ARL for Shewhart Control Charts with Supplementary Stopping Rules and Simple Regression. Mercedes Ferrer (July 1993).

Computation of Average Run Length Using Recurrent Events. Roberto Pérez-Matos (May 1992).

Assessment by Simulation of Sequencing Rules in an Assembly Line. José Colón (May 1992).

Quality Function Deployment in a Medical Service Environment. María Medina (August 1991).

Determination of ARLs for Joint \bar{x} and S Control Charts. Cecil Regalado (June 1991).

Courses Taught Undergraduates courses:

Probability and Statistics for Engineers

Applied Industrial Statistics

Deterministic Models in Operations Research

Stochastic Models in Operations Research

Statistics for Experimenters

Statistical Quality Control

Graduate courses:

Reliability

Network Flows and Graphs

Introduction to Queueing Theory

Advanced Industrial

Experimentation

Quality Control Systems

RUBÉN E. DÍAZ - RIVERA, P.H.D.

ASSISTANT PROFESSOR

DEPARTMENT OF MECHANICAL ENGINEERING

BIO-MICROFLUIDICS RESEARCH GROUP

UNIVERSITY OF PUERTO RICO AT MAYAGÜEZ

PO BOX 9045, MAYAGÜEZ, PR 00681

PHONE 787-832-4040 EXT. 2529 • FAX 787-265-3817

E-MAIL RDIAZ@ME.UPRM.EDU

RESEARCH INTERESTS

Our research and education interest comprehend the analysis and experimentation of transport phenomena in biological systems.

In depth, our research is focused in the analysis, design and fabrication of microfluidic devices to facilitate an electrical interface with isolated biological cells for novel applications such as controlled drug delivery in single cell systems, automated drug discovery, bio-molecular detection, quantitative molecular transport across bio-membranes and fundamental biophysics.

ACADEMIC POSITIONS

University of Puerto Rico, Mayagüez

Assistant Professor, Department of Mechanical

Engineering, January 2006 – present

University of Puerto Rico, Mayagüez Instructor, Department of Mechanical Engineering,

August 2000 – December 2005

EDUCATION

University of California, Berkeley, California

Doctor of Philosophy in Mechanical Engineering, December 2005

Thesis title: “Micro and nano scale bioelectronics in cell micro-electroporation”

Thesis advisor: Boris Rubinsky, Ph.D.

Completed coursework in advanced transport phenomena, micro/nano fabrication technologies, BioMEMS and microscopy.

University of Puerto Rico, Mayagüez, Puerto Rico

Bachelor in Science in Mechanical Engineering, May 2000

Undergraduate research advisor: Jorge E. González, Ph.D.

HONORS AND AWARDS

Sloan Scholar, UC Berkeley, 2002-2005

Compact For Faculty Diversity Scholar, Atlanta, 2004

Puerto Rico Industrial Development Company Scholar, UC Berkeley, 2000-2005

Díaz-Rivera, R. E.

Curriculum Vitae

PEER REVIEWED PUBLICATIONS

Díaz-Rivera, R. E. and B. Rubinsky (2006). “Electrical and thermal characterization of nanochannels between a cell and a silicon based micro-pore.” *Biomedical Microdevices* **8**: 25-34.

Díaz-Rivera, R. E. and B. Rubinsky (2007). “Geometrical Nanoscale Effects on Single Cell Microelectroporation.” Under Review in *Bioelectrochemistry*.

CONFERENCE PROCEEDINGS AND ABSTRACTS

Díaz, R. E. and B. Rubinsky (2004). "A single cell study on the temperature effects of electroporation." Proceedings of the ASME International Mechanical Engineering Congress and Exposition, HTD ; **375**, November 13-19, 2004, Anaheim, California, USA, American Society of Mechanical Engineers.

Díaz, R. E. and B. Rubinsky (2004). "A single cell study on the effects of temperature on electroporation." Abstracts of annual meeting of the society for cryobiology 2004. Cryobiology **49**(3): 328.

Díaz, R. E. and J. González (1999). "Passive Thermal Optimization for Office Buildings in the Caribbean." Proceedings of Sustainable Applications for Tropical Islands States. SATIS '99 PP. 75-80, August 25-27, 1999, San Juan, Puerto Rico

INVITED SEMINARS

"Microfluidic Technology for Cell Electroporation" University of Puerto Rico at Mayagüez, Department of Chemical Engineering, Chemical Engineering Research Seminar Series, March 2007.

"Planar Micro-pore single cell electroporation" University of California at Berkeley, Department of Mechanical Engineering, Heat and mass transfer in biological systems course, April 2006.

"Micro-electroporation for gene therapy" University of Puerto Rico at Mayagüez, Department of Mechanical Engineering, Graduate Seminar, April 2006.

"Micro-electroporation Technologies" University of Puerto Rico at Mayagüez, Department of Mechanical Engineering, Graduate Seminar, November 2005.

MEETINGS AND CONFERENCE PRESENTATIONS

"Site-specific nature of planar micro-pore single cell electropermeabilization" Segunda Jornada de Investigadores en el área de las Ciencias Vivas y la Ingeniería. February 9, 2007 - Mayagüez, Puerto Rico.

"Site-specific nature of planar micro-pore single cell electropermeabilization" 2006 Gordon Research Conference on Bioelectrochemistry, poster forum. September 3-7, 2006 - Aussois, France.

"A single cell study on the temperature effects of electroporation". 2004 ASME International Mechanical Engineering Congress and RD&D Expo (IMECE2004). November 13-19, 2004 - Díaz-Rivera, R. E.

Curriculum Vitae
Anaheim, California.

"A Single Cell Study on the effects of Temperature on Electroporation: Determination of Cell Membrane Status for Applications in Cryobiology". 2004 World Congress of Cryomedicine and Cryobiology (Cryo' 2004), poster forum. July 15-19, 2004 - Beijing, China.

"Passive Thermal Optimization for Office Buildings in the Caribbean". Proceedings of Sustainable Applications for Tropical Islands States (SATIS '99). August 25-27, 1999 - San Juan, Puerto Rico

FUNDING ACTIVITIES

- "Flow-Through Single Cell Electroporation in Microfluidic Channels," R. Díaz-Rivera PI. Awarded by UPRM Research and Development Center Seed Funds, November 2006 – December 2007. **\$10,000**
- "Viability of Single Cells Flowing through Microfluidic Channels Designed for Bioelectronic Applications," R. Díaz-Rivera PI. Awarded by NIH-MBRS SCORE Program Seed Funds for Biomedical Research, February 2007 – February 2008. **\$7,000**
- "MRI: Acquisition of Processing and Testing Equipment for the Integration of Materials Science and Engineering Research at the University of Puerto Rico at Mayagüez," R. Díaz-Rivera Co-PI. Submitted to the National Science Foundation, pending review. **\$454,909**

SERVICE

- Served as a judge in the Southwestern-Region Science Fair held in Aguada, Puerto Rico, February 2007.
- Reviewer for the National Science Foundation, Graduate Research Fellowship Program, February 2007.
- Co-chair of the “Drug Delivery and Biotherapeutics” session in the 2006 American Society of Mechanical Engineers Summer Bioengineering Conference in Jacksonville, FL, June 21-25, 2006.
- Served as a judge in the Regional Science Fair held in Esteban Rosado Báez Middle School, Mayagüez, Puerto Rico, September 2005.
- Academic counselor of the Mechanical Engineering Society “Instituto de Ingenieros Mecánicos – Capitulo de Mayagüez” Spring and Fall 2006.

PROFESSIONAL MEMBERSHIP AND LEADERSHIP

- Member of the American Society of Mechanical Engineers (ASME).
- Member of the Heat and Mass Transfer in Biotechnology Technical Committee (K-17), ASME Heat Transfer Division.

Díaz-Rivera, R. E.

Curriculum Vitae

- Member of Tau Beta Phi. (inducted in 1999).

DAVID R. GONZALEZ-BARRETO

Phone 787-265-3819, Fax 787-265-3820

E-mail: davidg@ece.uprm.edu

EDUCATION

Ph.D., Industrial Engineering, Pennsylvania State University, University Park, Pennsylvania, 1996.
Thesis: "Process-Oriented Basis Representations (POBREP) for Multivariate Process Diagnostics and Control" Advisor: Dr. Russell R. Barton

M.E., Industrial Engineering, Purdue University, West Lafayette, Indiana, 1977. Project: "Manufacturing Facilities Layout using Databases." Advisor: Dr. Colin Moodie

B.S., Industrial Engineering, University of Puerto Rico at Mayagüez, 1983

RESEARCH INTERESTS

Multivariate Analysis, Experimental Design, Statistical Quality Control, Statistical Graphical Methods, Simulation and Institutional Research.

EXPERIENCE

- University of Puerto Rico Planning and Institutional Research Office. Responsible for Institutional Research aspects of the office. (June 2003-present)
- University of Puerto Rico, Department of Industrial Engineering, Associate professor teaching courses in: Statistics, Quality Control, Simulation, and Design of Experiments (2002-present).
- Hewlett Packard, Member of Technical Staff (MTS). Aguadilla, PR. (2000-2001).
- University of Puerto Rico, Department of Industrial Engineering, Assistant/Associate professor teaching courses in: Statistics, Quality Control, Simulation, and Design of Experiments (1996-2000).
- University of Lima (UL), as part of the UPRM-UL agreement. Teach Graduate Course in Experimental Design (Summer 1997).
- Penn State University. Teaching Assistant in the following courses: Statistics Quality Control, Material Handling, Simulation, Design of Experiments, & Electronic Assembly (1992-95).
- Penn State University. Develop Laboratories for Electronic Assembly course (1992-93).
- Hewlett Packard, Aguadilla, PR, Manufacturing Development Engineer (1989-92).

- University of Puerto Rico, Department of Industrial Engineering, Instructor teaching courses in: Statistics, Quality Control, and Design of Experiments (1987-92).
- Baxter Travenol Laboratories, Aibonito PR, Quality Engineer. Responsible for the New Process and Product Laboratory (1985-87).

- Provide training and overall support on Statistical Process Control. (1987-present) Design of Experiments, Sampling Techniques, Simulation of Manufacturing Processes to the following companies and/or institutions:
 Institute of Industrial Engineers-Chapter 236 • Emerson Electronics
 Baxter Travenol Laboratories • Allergan Medical Optics
 Storage Technology Corporation • American Society for Quality Control
 Iolab Corporation • Ink-Jet Business Unit-Hewlett Packard
 PRMO-Hewlett Packard • Lilly del Caribe • Corange • Merck Sharp & Dohme
 Stryker • Guidant • Medtronic

- Provide training and overall support on Facilities Design, Cost Analysis, Work Measurement. Citibank, N.A., Hato Rey, PR (1984)

PUBLICATIONS and PRESENTATIONS

1. González-Barreto, D.R. and Barton, R., *Multivariate SPC using POBREP* (under revision, Journal of Quality Technology).
2. González-Barreto, D. and González-Quevedo, A.A. (2004). "Effective Graphical Representation of Institutional Research Data." Research presentation at the Association for Institutional Research (AIR) 2004 Forum. Boston, MA.
3. Rosario, D., and González-Barreto, D. (2004). *A Tool for Experiments with Functional Data Response*. American Society for Quality Control, Student Session, Toronto Canada.
4. González-Barreto, D.R., Salomon, B., and Otero, V., 2000, *Multivariate Experimental Analysis using POBREP*, Group Technology-Cellular Manufacturing Symposium, San Juan, PR.
5. González-Barreto, D.R. and Vega-Andújar, R.L., 2000, *Process Diagnosis using Hierarchical Process-Oriented Basis Representations*, Group Technology-Cellular Manufacturing Symposium, San Juan, PR.
6. González-Barreto, D.R. and Vega-Andújar, R.L., 1999, *Repeatability and Reproducibility Studies with Multiple Variables*, 34th ACS Junior Technical Meeting, 19th Puerto Rico Interdisciplinary Scientific Meeting University of Puerto Rico, Mayagüez Campus.
7. González-Barreto, D.R. and Vega-Andújar, R.L., 1999, *Process Diagnosis using Hierarchical Process-Oriented Basis Representations*, 8th IERC 99, Industrial Engineering Research Conference, Phoenix, AZ.
8. González-Barreto, D.R. and Barton, R., 1999, *Process-Oriented Basis Representations for Multivariate Process Diagnostics and Control*, Proceedings of the NSF Grantees Conference Long Beach, CA.
9. González-Barreto, D.R., 1997, *Component Registration Diagnosis using POBREP*, Proceedings of the 21st Conference of Computers and Industrial Engineering, San Juan, PR.

SYNERGISTIC ACTIVITIES

- As Coordinator of the Office of Institutional Research, I have contributed in organizing the office and expanding its service to the University. and promoted the use of technology to provide quick and accurate academic data. I attended the Foundation for the Practice of Institutional Research Institute, organized by the Association of Institutional Research (AIR), in Columbus, Ohio from July 25 through 29, 2003
- Currently I collaborate with Hewlett Packard Puerto Rico Division in the process development of the manufacturing of PCB's without lead. I am principal investigator for the experimental aspects of this development.

GRADUATE STUDENTS ADVISED

Rosie Vega Andújar (M.E.)	Héctor Espada (M.E.)
Carlos Jaramillo (M.S.)	Silvana Tarrazaga (M.S.)
Cenilda Ramírez (M.S.)	Benjamín Salomon (M.E.)
Narciza Meza (M.E.)	Ariel Sepúlveda (M.E.)
José Nieves Kim (M.E.)	Frazer Costa (M.E.)
Dennis Rosario (M.S.)	Vivian Otero (M.S.)
Yaleidy Cesarí (M.E)	Valerie Rodríguez (Current Student)

COLLABORATORS

Dr. Antonio González	Dr. Sonia Bartolomei
Dr. Gerson Beauchamp	Dr. Rafael Rodríguez Solís
Dr. Russell R. Barton	Dr. Ariel Sepúlveda
Dr. Pedro Resto	Dr. José Pesante
Dr. Mario Padrón	

Megh R. Goyal, Ph. D.

Professor

Ph.D. Ohio State University
Office Terrats 208, Mayagüez, PR 00680
(787) 832-4040, Ext. 3717
E-Mail: m_goyal@ece.uprm.edu

1. Professional Experience

2002-2003	Visiting Professor in Biomedical Engineering, Florida International University, Miami, FL.
1988-Present	Professor, University of Puerto Rico, Mayagüez Campus.
1983-1988	Associate Professor, University of Puerto Rico, Mayagüez Campus.
1979-1983	Assistant Professor, University of Puerto Rico, Mayagüez Campus
1979, Post Doc-	Res. Assoc., The Ohio State University.
1976-79, Res. Assoc.,	The Ohio State University.
1972-1975	Lecturer, Haryana Agric. University, India.

2. Professional Affiliation

Professional Engineer, College of Engineers & Surveyors of PR, 1986
AMIE (Eng.) Institution of Engineers (India), Calcutta, 1974

3. Professional Preparation

Ph.D. (Engineering), The Ohio State University, 1979
M.Sc. (Engineering), The Ohio State University, 1977
B.Sc. (Engineering) Punjab Agric. University (India), 1971

4. Selected Publications and Presentations

Goyal, Megh R., Editor. 2003. Biofluid Dynamics of Human Body Systems. Conference Proceedings by Biomedical Engineering Department at Florida International University.

Goyal, Megh R., Editor, 2004. Proceedings of the congress on: Engineering Biomechanics: Statics & Dynamics. University of Puerto Rico – Mayaguez Campes.

Goyal, Megh R. 2005. Water consumption by selected crops and climatology: Case study in Trinidad. Corporación Universitaria Santa Rosa de Cabal [UNISARC], Colombia. Boletín: Investigaciones de UNISARC, Volumen 4 No 1, pages 1-18.

Goyal, Megh R. 2006. Advances in Biofluid Mechanics of Human Body. Invited paper at 2006 Medical Device Conference in San Juan – PR.

Goyal, Megh R. and Victor H. Ramirez - Builes. 2006. Elements of Agroclimatology [Spanish]. Chapters 1 – 9. Pages 1-389. Universitaria Santa Rosa de Cabal [UNISARC], Colombia.

Goyal, Megh R. 2006. Agricultural and Biomedical Engineering: Scope and Opportunities. Conference Paper at 24th Annual Meeting of ASABE – Puerto Rico Section.

Goyal, Megh R Goyal and S. F. Shih, 2007. Generation of missing climatic data in Puerto Rico. Corporación Universitaria Santa Rosa de Cabal [UNISARC], Colombia. Boletín: Investigaciones de UNISARC, Volumen 5 No 2

Goyal, Megh R. y Víctor H. Ramírez. 2005. Manejo de Riego Por Goteo. Capítulos 1– 21. Páginas 1- 589. Universitaria Santa Rosa de Cabal [UNISARC], Colombia.

5. Collaborators and Other Affiliations

2002 – Associate Member, Biomedical Engineering Society
1985 -- Life member, Caribbean Studies Association
1982 -- Member, College of Engineers & Surveyors of Puerto Rico
1982 -- Life member, US Committee of ICID
1979 -- Life member, American Society of Agricultural & Biological Engineers
1979 -- Member, Honor Society of Gamma Sigma Delta
1979 -- Member, Honor Society of Alpha

6. Honors and Awards:

1969 Indian Soc. of Agric. Engrs. (ISAE) Best Student Paper Award
1970 Students Soc. of Agric. Engrs. (India) Extension Award
1976 The Ohio State University,: Deptt of Agric Engg Best Graduate Student Award
1981 Puerto Rican Society of Agricultural Sciences (SOPCA) Scientist of the Year
1983 Am. Soc. Agric. Engrs. (ASAE) Blue Ribbon Award
1983 Am. Soc. Agric. Engrs. (ASAE) Research Paper Award
1986 Am. Soc. Agric. Engrs. (ASAE) Blue Ribbon Award.
1987 Am. Soc. Agric. Engrs. (ASAE) Nolan Mitchell Young Extension Worker Award
1989 Am. Soc. Agric. Engrs. (ASAE): Puerto Rico Section Agricultural Engineer of the Year
1989 Gamma Sigma Delta UPR-Mayagüez Research Scientist of the Year
1989 Mayor of Juana Díaz - PR, January 18. Citation
1991 Mayor of Ponce - PR, March 19 Citation
1991 Am. Soc. Agric. Engrs. (ASAE) Blue Ribbon Award
1992 Am. Soc. Agric. Engrs. (ASAE) Membership campaign winner of ASAE: Grand Prize.
2001 UPRM: July Dedication of First BIOFLUID MECHANICS Congress
2001 PR Evangelical Seminary, Hato Rey: May 26 Felix Castro Rodriguez Academic Excellence
2001 Methodist Church of Puerto Rico, Vieques - PR: June 7 Academic Excellence
2002 Friendship Forum of India, New Delhi - India. Rashtrya Ratan Award;
Bharat Excellence Award and Gold Medal:
2002 PR Evangelical Seminary, Hato Rey – PR: January 11 Domingo Marrero Navarro Prize
for top graduate student
2005 Am. Soc. Agric. Engrs. (ASAE): Puerto Rico Section Father of Irrigation Engineering in Puerto Rico
2006 Mayor of Municipality of Moca – Puerto Rico Adopted son of Moca: April 20
2006 University of Puerto Rico – Mayaguez: Graduate School Irrigation Protagonist for June
2007 Mayor of Municipality of Caguas/ Ponce/ Mayaguez – Puerto Rico and
Senate of Puerto Rico: April 2. Proclaimed
“Man of Drip Irrigation Technology in Puerto Rico”

Dr. Bo Hu

Work address: University of Puerto Rico – Mayaguez, Chemical Engineering

Department. P.O. Box 9046, Mayaguez, PR, 00681-9046

Contact address: 40 Calle Las Flores Apt 201, Mayaguez, PR, 00680

Phone: 509-339-3668(cell), 787-832-4040-ext. 2684 (office)

E-mail: bhu@uprm.edu ; hu1979bo@gmail.com

SUMMARY OF SKILLS

Familiarity with:

Process development: including chemical reaction and fermentation, separation, purification, packing and coating, quality control

Bioprocessing such as fermentation and bioseparation

Analysis with GC, HPLC, IC, SEC, SEM, TEM, IR

Microbial community analysis: PCR, T-RFLP, Phylogenetic tree

Software: SAS, Matlab, Aspen, Simulink, MS-office

Experience with: Bench study, pilot study, full scale study, GMP production, scale up, and commercialization with techniques

Language: Native speaker of mandarin Chinese

EDUCATION

Ph.D. in Biological Systems Engineering,

[Washington State University, Pullman, WA](#)

July 2007

Advisor: Shulin Chen

M.S. in Biochemical Engineering,

[Beijing University of Chemical Technology, Beijing, China](#)

Graduated with University Honors and University Scholars, July 2003

Advisor: Tianwei Tan

B.S. in Chemical Engineering,

[Beijing University of Chemical Technology, Beijing, China](#)

Graduated with University Honors and University Scholars, July 2000

EMPLOYMENT-RELATED EXPERIENCE

RESEARCH

Assistant Professor, Department of Chemical Engineering, University of Puerto Rico at Mayaguez (8/2007~present).

Leading projects where new processes are developed for the production of the bio-energy and bioproducts, such as biodiesel, hydrogen and ethanol from waste materials.

Research Assistant, Department of Biological Systems Engineering, Washington State University (8/2004 ~ 7/2007).

Led projects where new processes are developed for the production of the bio-energy, such as ethanol, hydrogen and butanol.

- a. Bioethanol production from wheat straw --- Elimination of acetate inhibition for ethanol fermentation from wheatstraw
- b. Biological hydrogen production via immobilized bacteria --- Granulation of hydrogen producing bacteria

Collaborated with team to produce nutraceuticals and biodiesel lipid from waste using a high-density algae culture process.

Collaborated with team for the utilization of Condensed Distillers Solubles, solid waste from the ethanol fermentation industry.

Facilitated monthly brain storming meeting for the AEBE immobilization team.
Team activity: Fugal pelletization and bacteria granulation.

Research/Teaching Assistant, Beijing Key Lab of Bioprocessing, Beijing University of Chemical Technology (9/2000~7/2003).

Developed the following processes for production of several chemicals and bio-products:

- a. Modified mycelial biomass and its application to heavy metal absorption in wastewater treatment.
- b. A pH-sensitive drug delivery system based on alginate-chitosan hydrogel.

Co-led the chitosan research sub-group. Group activity: Scale-up study of the process to produce oligo-chitosan.

EXTENSION

Engineering Technician, Beijing Key Lab of Bioprocessing, Beijing University of Chemical Technology (9/2000~7/2003).

Served as a technical consultant on process start-up, optimization, troubleshooting and employee training at BenBu Fine Chemical Plant, Anhui, China. The factory produced glucuronolactone.

Provided engineering support for the plant in Dongying, Shandong, China. This factory extracted glucosamine from mycelial biomass.

TEACHING

Assistant Professor, Department of Chemical Engineering, University of Puerto Rico at Mayaguez, (8/2004~present).

Teaching Kinetics to undergraduate students (32) and Biochemical Engineering to graduate students (4)

Instructor, Department of Biotechnology, Beijing Institute of Light Industry Vocational Education (9/2003~3/2004).

Taught Principles of Chemical Engineering to undergraduate students

PROFESSIONAL SERVICES AND MEMBERSHIPS

Reviewer for *Water Environmental Research* (Journal)

Member of American Institute of Chemical Engineers

COMMUNITY SERVICE

Volunteer, Children's Hope International, Beijing, 9/2002~8/2004, Translated application and post-placement files for international adoptions

REFERENCES:

1. Shulin Chen, PhD, PE, Professor, Department of Biological Systems Engineering, Washington State University, Pullman, WA 99164-6120, Work Phone: 509-335-3743; Fax: 509-335-2722; Email: chens@wsu.edu.
2. Marc Beutel, Ph.D., P.E., Assistant professor, Department of Civil and Environmental Engineering; SLOAN 111, PULLMAN, WA 99164-2910, Work Phone: 509-335-3721; Email: mbeutel@wsu.edu.
3. Pius Ndegwa, Ph.D., Assistant professor, Department of Biological System Engineering, Washington State University, Pullman, WA 99164-6120, Work Phone: 509-335-8167; Email: ndegwa@wsu.edu.

PUBLICATIONS:

PATENTS:

1. Bo Hu, Shulin Chen. Integration of hydrogen production via chloroform treated granule with methane production in anaerobic digestion system. Invention disclosure. (In Preparation)
2. Tianwei Tan, Bo Hu, Haijia Su. Method for preparing modified hyphostroma water treatment agent, China Patent, Application No. 02156738.7.

BOOK CHAPTERS:

1. Bo Hu, Shulin Chen. Chapter 17, Undefined Microbial Consortia for Hydrogen Production, Biomass to Biofuels: Strategies for Global Industries. John Wiley & Sons, September 2008 (In Preparation)

PEER-REVIEWED JOURNAL ARTICLES:

1. Bo Hu, Shulin Chen. 2007, Biological Hydrogen Production with Chloroform Treated Methanogenic Granules, Applied Biochemistry and Biotechnology. (In Press)
2. Bo Hu, Shulin Chen. 2007, Pretreatment of Methanogenic Granules for Immobilized Hydrogen Fermentation, International Journal of Hydrogen Energy. (In Press)
3. Bo Hu, Yan Liu, Zhanyou Chi, Shulin Chen. 2007, Biological Hydrogen Production via Bacteria Immobilized in Calcium Alginate Gel Beads, Biological Engineering. (Accepted)
4. Chuanbin Liu, Bo Hu, Shulin Chen, Richard Glass. 2007, Utilization of condensed distillers solubles as nutrient supplement for production of nisin and lactic acid from whey, Applied Biochemistry and Biotechnology 137: 875-884.
5. Zhanyou Chi, Bo Hu, Yan Liu, Craig Frear, Zhiyou Wen, Shulin Chen. 2007, Production of Omega-3 Polyunsaturated Fatty Acids from Cull Potato Using a High Density Algae Culture Process, Applied Biochemistry and Biotechnology 137: 805-815.
6. Bo Hu, Chuanbin Liu, Shulin Chen. 2006, Condensed distillers solubles as bio-adsorbent of Ni ion. Engineering in Life Sciences. (In Reveiw)
7. Chuanbin Liu, Bo Hu, Yan Liu, Shulin Chen. 2006, Stimulation of nisin production from whey by a mixed culture of Lactococcus lactis and Saccharomyces cerevisiae, Applied Biochemistry and Biotechnology, 131(1-3): 751-761.
8. Tianwei Tan, Bo Hu, Haijia Su. 2004, Adsorption of Ni²⁺ on amine-modified mycelium of Penicillium chrysogenum, Enzyme and Microbial Technology, 35(6-7), 508-513.
9. Bo Hu, Xianhua Jin, Tianwei Tan. 2004, Swelling characteristics and the application of compound sodium alginate gel - a pH sensitive chitosan, Zhonguo Linchuang Kangfu (Chinese Journal of Clinic Rehabilitation), 8(11), 2162-2163.
10. Tianwei Tan, Bo Hu, Xianhua Jin. 2003, Release behavior of ketoprofen from chitosan/alginate microcapsules, Journal of Bioactive and Compatible Polymers, 18(3), 207-218.
11. Bo Hu, Haijia Su, Tianwei Tan. 2003, Study of adsorption property of modified mycelial

biomass to Ni²⁺. Huanjing Wuran Zhili Jishu Yu Shebei (Technology and Equipment for Environmental Pollution Control), 4(10), 23~26.

JOURNAL ARTICLES IN PREPARATION:

12. Bo Hu, Shulin Chen. 2007, Community Change during the Chloroform Treatment of Methanogenic Granules.

CONFERENCE AND SYMPOSIUM PRESENTATION:

1. Bo Hu, Shulin Chen, 2007, Immobilized Biological Hydrogen Fermentation with Chloroform Treated Granule. AIChE Annual Meeting, Salt Lake City, UT.
2. Bo Hu, Shulin Chen, 2007, Biological Hydrogen Production with Chloroform Treated Methanogenic Granule. 29th Symposium on Biotechnology for Fuel and Chemicals, Denver, CO.
3. Bo Hu, Shulin Chen, 2007, Pretreatment of Methanogenic Granules for Immobilized Hydrogen Fermentation, 29th Symposium on Biotechnology for Fuel and Chemicals, Denver, CO.
4. Bo Hu, Yan Liu, Zhanyou Chi, Shulin Chen, 2006, Biological Hydrogen Production via Bacteria Immobilized in Calcium Alginate Gel Beads, 28th Symposium on Biotechnology for Fuel and Chemicals, Nashville, TN.
5. Chuanbin Liu, Bo Hu, Shulin Chen, 2005, Acetate Removal from the Hydrolyzate of Lignocelluloses by Methanogens: the Feasibility Study. 27th Symposium on Biotechnology for Fuel and Chemicals, Denver, CO.
6. Tianwei Tan, Bo Hu, Haijia Su. 2003, Preparation of modified mycelial biomass and its adsorption behavior to Ni²⁺, Yabec --- Biochemical Engineering Toward Global Biosociety, The 9th Symposium of Young Asian Biochemical Engineers' Community, Korea.

Sangchul (San) Hwang, Ph.D.

Assistant Professor, Department of Civil Engineering and Surveying
University of Puerto Rico at Mayagüez (UPRM), PR 00680-9041
787-832-4040, ext.3454; shwang@uprm.edu

EDUCATION

Ph.D.	Civil Engineering, University of Akron, OH. 2002
Graduate Study	Civil Engineering, University of Kansas, KS. 1996-1998
Master of Eng.	Civil Engineering, Kyungpook National University, Korea. 1994
Bachelor of Eng.	Civil Engineering, Kyungpook National University, Korea. 1990
Post Doc	National Research Council, 2003 – 2004
Post Doc	Johns Hopkins University, 2002 - 2003

RESEARCH INTEREST

Green-vironmental Engineering	Remediation
Resource Recovery	Rural Community Environment

TEACHING INTEREST

Introduction to Environmental Engineering	Water and Wastewater Treatment
Undergraduate Research & Education	Solid Waste Management

RESEARCH EXPERIENCE

Jan. 2005 - present Assistant Professor, Department of Civil Engineering and Surveying, UPRM

- Tight Zone Remediation (Co-PI, funded by DoE)
- Telemetry Monitoring of Small Water Treatment and Resources (PI, funded by EPA)
- Rural Community Water and Wastewater (PI, funded by Chancellor's Office, UPRM)
- Landfill Biodecomposition and Settlement (PI, funded by AES PR)
- Effect of Surface Vegetation on Explosives Fate and Transport (Co-PI, funded by DoD)
- Treatment of Explosives-Containing Water and Wastewater (PI, funded by R&D Center, UPRM)
- Alternative Landfill Daily Cover (PI, funded by AES PR, *Completed*)
- In situ Sediment Capping Amendments (PI, funded by UPR Sea Grant/AES PR, *Completed*)
- In situ Fenton Oxidation (PI, funded by College of Engineering, UPRM, *Completed*)

Oct. 2003 – Dec. 2004 National Research Council (NRC) Postdoctoral Research Associate

- Worked at U.S. Environmental Protection Agency, National Risk Management Research Laboratory, Ground Water and Ecosystems Restoration Division, Ada, OK
- In-situ chemical oxidation (ISCO) – Process optimization

Feb. 2002 – Sep. 2003 Post-Doctoral Research Fellow, Johns Hopkins University, MD

- Assigned to work at Environmental Laboratory, US Army Engineer Research and Development Center (ERDC), Vicksburg, MS (Mar. 2002 – Sep. 2003).
- ISCO for remediation of dense nonaqueous phase liquids (DNAPLs) in soil & groundwater
- Alkaline hydrolysis, permeable electrolytic barrier, and advanced oxidation (UV/H₂O₂) for remediation of high explosives (TNT and RDX)-contaminated groundwater
- Innovative polymer clarification for confined disposal facilities effluent treatment

Jan. 1999 – Jan. 2002 Research Assistant, Civil Engineering Department, University of Akron, OH

- Sorption, desorption, and biodegradation of PAHs and waste oil
- Assessment of VOC aerobic biodegradability by indigenous bacteria

Aug. 1996 – Dec. 1998 Graduate Student, Civil & Environmental Engineering, University of Kansas, KS

- Source/generation and decay of odor-producing compounds in wastewater treatment plant

Aug. 1992 – Aug. 1994 Research Assistant, Civil Engineering, Kyungpook National University, Korea

- Assistant to wastewater treatment plant design, sludge treatment, solid waste management, environmental impact assessment, and river water quality modeling

TEACHING EXPERIENCE

Jan. 2006 – present Seminar Lecturer, Puerto Rico Transportation Technology Transfer Center

- Environmental Impacts and Considerations in Transportation Practices and Projects
- Practical Guidelines of Solid Waste Disposal

Jan. 2005 – present Assistant Professor, Department of Civil Engineering and Surveying, UPRM

- Graduate classes: Physical and chemical processes in water and wastewater treatment, Biological wastewater treatment
- Undergraduate classes: Introduction to environmental engineering, Solid waste management

Teaching Evaluations (out of 5.0)

Academic Year	Semester	Course Code	Course Name	Student Evaluation
2007 – 2008	1st	INCI5007 INCI6076	Solid Waste Management Physiochemical Processes of Water	
2006 – 2007	2nd	INCI4008 INCI6005	Intro. Environmental Engineering Biological Wastewater Treatment	
	1st	INCI4008 INCI6076	Intro. Environmental Engineering Physiochemical Processes of Water	4.70 4.62
2005 – 2006	2nd	INCI4008 INCI6005	Intro. Environmental Engineering Biological Wastewater Treatment	4.92 4.93
	1st	INCI4008 INCI6076	Intro. Environmental Engineering Physiochemical Processes of Water	4.86 4.73
2004 – 2005	2nd	INCI5007	Solid Waste Management	4.86
		INCI6005	Biological Wastewater Treatment	4.96

Apr. 18, 2001 Special Lecturer, Civil Engineering Department, University of Akron, OH

- Introduction of oxidation ditch for expanding a wastewater treatment plant (in 4300:426/526 Environmental Engineering Design)

Mar. 9, 2001 Special Science Teacher, The Ghent Academy, Copley, OH

- Lecture on fundamentals of microbiology to 6th grade students and led laboratory portion for testing of total and fecal coliforms

Sep. 1994 – Jun. 1996 Part-time Lecturer, Taegu Engineering Institute, Korea

- Lectures on Environ. Eng., Hydraulic & Water Resources Eng., Soil Mechanics and Statics

SCHOLARLY PUBLICATIONS & PRESENTATIONS

Refereed Journal Publications

1. Hwang S., Felt D.R., Bouwer E.J., Brooks M.C., Larson S.L., Davis J.L. (2006) Remediation of RDX-contaminated water using alkaline hydrolysis. *Journal of Environmental Engineering*, 132(2): 256-262
2. Hwang S., Ruff T.J., Bouwer E.J., Larson S.L., Davis J.L. (2005) Applicability of alkaline hydrolysis for remediation of TNT-contaminated water. *Water Research*, 39: 4503 -4511
3. Hwang S., Batchelor C.J., Davis J.L., MacMillan D.K. (2005) Sorption of 2,4,6-trinitrotoluene to natural soils before and after hydrogen peroxide application. *Journal of Environmental Science and Health, Part A-Toxic/Hazardous Substances & Environmental Engineering*, 40(3): 581-592.
4. Hwang S., Bouwer E.J., Larson S.L., Davis J.L. (2004) Decolorization of alkaline TNT hydrolysis effluents using UV/H₂O₂. *Journal of Hazardous Materials*, 108(1-2): 61-67.

5. Hwang S., Cutright T.J. (2004) Evidence of underestimation in PAH sorption/desorption due to system non-equilibrium and interaction mechanisms. *Journal of Environmental Science and Health, Part A-Toxic/Hazardous Substances & Environmental Engineering*, 39(5): 1147-1162.
6. Hwang S., Min K.-S., Cutright T.J. (2004) PAH biodegradation in soil-water suspensions contaminated with waste oil. *Environmental Engineering Research* (Korean Society of Environmental Engineers), 9(1): 1-12.
7. Hwang S., Min K.-S., Davis J.L. (2004) Comparative assessment of nucleophilic alkaline hydrolysis for remediation of high explosives-contaminated groundwater. *Environmental Engineering Research* (Korean Society of Environmental Engineers), 9(1): 13-22.
8. Hwang S., Cutright T.J. (2004) Preliminary evaluation of PAH sorptive changes in soil by Soxhlet extraction. *Environment International*, 30(2): 151-158.
9. Hwang S., Cutright T.J. (2003) Effect of expandable clays and cometabolism on PAH bioavailability. *Environmental Science and Pollution Research*, 10(5) 9A: 277-280.
10. Hwang S., Cutright T.J. (2003) Preliminary exploration of the relationships between soil characteristics and PAH desorption and biodegradation. *Environment International*, 29(7): 887-894.
11. Hwang S., Cutright T.J. (2003) Statistical implications of pyrene and phenanthrene sorptive phenomena: Effects of soil type, SOM and clays, and solute concentration. *Archives of Environmental Contamination and Toxicology* 44: 152-159.
12. Hwang S., Min K.-S. (2003) Improved sludge dewatering by addition of electro-osmosis to belt filter press. *Journal of Environmental Engineering and Science* 2(2): 149-153.
13. Hwang S., Ramirez N., Cutright T.J., Ju L.-K. (2003) The role of soil properties in pyrene sorption and desorption. *Water, Air, and Soil Pollution* 143(1-4): 65-80.
14. Hwang S., Cutright T.J. (2002) Biodegradability of aged pyrene and phenanthrene in a natural soil. *Chemosphere* 47(9): 891-899.
15. Hwang S., Cutright T.J. (2002) Impact of clay minerals and DOM on the competitive sorption/desorption of PAHs. *Soil and Sediment Contamination* 11(2): 269-291.
16. Hwang S., Cutright T.J. (2002) The impact of contact time on pyrene sorptive behavior by a sandy-loam soil. *Environmental Pollution* 117(3): 371-378.
17. Hwang S., Cutright T.J. (2002) Statistical impacts of the extent of desorption, compound aging and bacteria inoculation on PAH biodegradation. *Polycyclic Aromatic Compounds* 22(5): 1057-1074.
18. Min K.-S., Kim H.-T., Hwang S., Ahn Y.-H., Nam K.-H., Seo K.-H. (1995) A study on sludge dewatering using electroosmotic belt press filter. *Journal of Korean Solid Wastes Engineering Society* 12(5): 544-551.
19. Min K.-S., Ahn Y.-H., Hwang S., Um W.-T., Lee S.-H. (1994) The characteristics and heating values analysis of municipal solid wastes. *Journal of Korean Solid Wastes Engineering Society* 11(4): 75-87.

B. Books, Technical Reports, Proceedings, and Other Publications

- Padilla, I., De Lourdes, M., Gutierrez, J., Torres, A., Hwang, S. (2007). "Transport of Explosives Related Chemicals from Point Sources", Proceedings of SPIE on Detection and Remediation Technologies for Mines and Minelike Targets, XII SPIE Defense and Security Symposium, Orlando, FL, Vol. 6553, 2007.
- Rodriguez, S., Padilla, I., Hwang, S. (2007). "Development of a multi-scale parking methodology for evaluating fate and transport processes of explosives-related chemicals in clayey soils", Proceedings of SPIE on Detection and Remediation Technologies for Mines and Minelike Targets, XII SPIE Defense and Security Symposium, Orlando, FL, Vol. 6553, 2007.
- Torres, A., Padilla, I., Hwang, S. (2007). "Physical Modeling of 2,4-DNT Gaseous Diffusion Through Unsaturated Soil", Proceedings of SPIE on Detection and Remediation Technologies for Mines and Minelike Targets, XII SPIE Defense and Security Symposium, Orlando, FL, Vol. 6553, 2007.
- Anaya, A., Padilla, I., Hwang, S. (2007). "Influence of Environmental Conditions on the Fate and Transport of ERCs in a Physical 3D Model: Spatial and Temporal Assessment Effects in a Sandy Soil", Proceedings of SPIE on Detection and Remediation Technologies for Mines and Minelike Targets, XII SPIE Defense and Security Symposium, Orlando, FL, Vol. 6553, 2007.
- Bailey, S. E., S. Hwang, M. C. Brooks, and P. R. Schroeder (2006). Evaluation of chemical clarification polymers and methods for removal of dissolved metals from CDF effluent. DOER Technical Notes (ERDC TN-DOER-R10), U.S. Army Engineer Research and Development Center, Vicksburg, MS

- Pando M., Hwang S. (2006) "Possible Applications for Circulating Fluidized Bed Coal Combustion By-products from the Guayama AES Power Plant". Technical Report. Civil Infrastructure Research Center, University of Puerto Rico at Mayagüez, PR
- Cutright T.J., Hwang S. (2006) "Polycyclic Aromatic Hydrocarbons (PAHs)." Pp. 2291-2299. In: Encyclopedia of Chemical Processing (Lee, S. Ed.). Marcel Dekker, Inc. New York, NY.
- Hwang S. (2006) "Advanced Oxidation." Pp. 41-49. In: Encyclopedia of Chemical Processing (Lee, S. Ed.). Marcel Dekker, Inc. New York, NY.
- Hwang S., Bouwer E.J., Felt D.R., Batchelor C.J., Larson S.L., Davis J.L. (2006) "Treatment Train of Alkaline Hydrolysis and UV/H₂O₂ for Remediation of TNT-Contaminated Water". ERDC/EL TR-05-xx. U.S. Army Engineer Research and Development Center, Vicksburg, MS (under review)
- Hwang S., Bouwer E.J., Brooks M.C., Felt D.R., Larson S.L., Davis J.L. (2006) "Removal Efficiency and Cost Estimation of Alkaline Hydrolysis for RDX-Contaminated Groundwater." ERDC/EL TR-05-xx, U.S. Army Engineer Research and Development Center, Vicksburg, MS (under review)
- Hwang S., Felt D.R., Bouwer E.J., Brooks M.C., Larson S.L., Davis J.L. (2003) "Alkaline hydrolysis is an effective treatment technology for RDX-contaminated groundwater." The 225th American Chemical Society National Meeting, New Orleans, LA. 43(1): 1127-1130.
- Hwang S., Cutright T.J. (2001) "Effects of aging, bacterial source and desorption on PAH biodegradation." In: Bioremediation of Energetics, Phenolics, and Polycyclic Aromatic Hydrocarbons, V. 3, pp. 235-241, Sixth Int'l In Situ and On-Site Bioremediation Symposium (Margar V.S., Johnson, G., Ong, S.K., Leeson, A. Eds.). Battelle Press, Columbus, OH.
- Hwang S., Ramirez N., Cutright T.J. (2000) "Sequestration of pyrene by clay minerals in a natural soil." The 220th American Chemical Society National Meeting. Washington DC. 40(2): 158-159.
- Hwang S. (2002) "Effect of soil properties, compound aging, and presence of cosolute on sorption, desorption, and biodegradation of polycyclic aromatic hydrocarbons in natural soils." Ph.D. Dissertation. University of Akron, OH.
- Hwang S. (1994) "Sludge dewatering using electroosmotic belt press filter." Master Thesis. Kyungpook National University, Korea.

Platform Presentations

- Padilla, I. (speaker), Hwang, S. "Development of Physical Systems for Fate and Transport Measurements of TNT and DNT in Variably-Saturated Soils", AGU 2007, Acapulco, Mexico, May 23 – 25, 2007.
- Padilla, I. (speaker), De Lourdes, M., Gutierrez, J., Torres, A., Hwang, S. "Transport of Explosives Related Chemicals from Point Sources", SPIE 2007, Orlando, FL, April 9-13, 2007.
- Rodriguez, S. (speaker), Padilla, I., Hwang, S. "Development of a multi-scale parking methodology for evaluating fate and transport processes of explosives-related chemicals in clayey soils", SPIE 2007, Orlando, FL, April 9-13, 2007.
- Del Moral, A. (speaker), Hwang, S. "The Use of Coal Combustion Byproducts for In-Situ Capping Amendment in the Sequestration of Heavy Metals", COINAR 2007, Bayamon, Puerto Rico, March 17, 2007.
- Fonseca, A. (speaker), Hwang, S. "Agremax as an alternative Landfill Daily Cover", COINAR 2007, March 17, 2007, Bayamon, Puerto Rico
- Hwang S. (speaker), Davis J.L. "High Explosives Alkaline Hydrolysis in Continuous Stirred Tank Reactor." The 4th Latin American and Caribbean Consortium of Engineering Institution (LACCEI). Mayagüez, PR. June 21-23, 2006
- Hwang S. (speaker), Davis J.L. "Remediation of TNT-Contaminated Water with Coupled Alkaline Hydrolysis and UV/H₂O₂ Oxidation." 2005 World Federation of Engineering Organizations (WFEO2005). San Juan, PR. October 16-22, 2005
- Hwang S. (speaker), Felt D.R., Bouwer E.J., Larson S.L., Davis J.L. "Kinetics and treatability of aqueous alkaline hydrolysis for hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)." Air & Waste Management Association's 96th Annual Conference & Exhibition. San Diego, CA. June 22-26, 2003.
- Hwang S. (speaker), Cutright T.J. "Bioavailability of phenanthrene and pyrene aged for 0 and 200-d in a silty-sand soil." Division of Industrial and Engineering Chemistry, The 222nd American Chemical Society National Meeting. Chicago, IL. August 26-30. 2001.
- Hwang S. (speaker), Cutright T.J. "Effect of aging, bacterial source and desorption on PAH biodegradation." The 6th International In-Situ and On-site Bioremediation Symposium. San Diego, CA. June 4-7, 2001.

Hwang S. (speaker), Cutright T.J. "The effect of desorbability on biodegradation of pyrene in a natural soil." The 1st Great Lakes Civil Engineering Graduate Student Research Symposium. Case Western Reserve University, OH. May 31, 2000.

Poster Presentations

- Hwang, S., Pando, M., Pagan, I., Godoy, L., Rossi, J., Ruiz, A., Watlington, N. "A Joint Industrial Byproducts Reutilization Initiative", 2007 World of Coal Ash Conference, Cincinnati, OH, May 7 – 10, 2007.
- Hwang, S., Pando, M., Maldonado, V., Del Moral, A. "Utilization of Coal combustion Byproducts as Capping Amendments for Heavy Metals Sequestration", 2007 World of Coal Ash Conference, Cincinnati, OH, May 7 – 10, 2007.
- Del Moral, A., Hwang, S. "Containment of Heavy Metals in Sediments with an Industrial By-product", XII Sigma Xi, University of Puerto Rico, Mayagüez, PR, April 26, 2007.
- Fonseca, A., Feliciano, I., Ortiz, M., Torres, P., Padilla, I., Hwang, S.. "Research and Education Advancement through Laboratory (REAL) Experience: INCI 4998_Spring 2007 Semester", XII Sigma Xi, University of Puerto Rico, Mayagüez, PR, April 26, 2007.
- Torres, A., Padilla, I., Hwang, S. "Physical Modeling of 2,4-DNT Gaseous Diffusion Through Unsaturated Soil", SPIE 2007, Orlando, FL, April 9-13, 2007.
- Anaya, A., Padilla, I., Hwang, S. "Influence of Environmental Conditions on the Fate and Transport of ERCs in a Physical 3D Model: Spatial and Temporal Assessment Effects in a Sandy Soil", SPIE 2007, Orlando, FL, April 9-13, 2007.
- Irizarry, M., Baez, R., Benitez, L., Concepcion, D., Torres, P., Padilla, I., Hwang, S. "Chemistry Experiences with Environmental Engineering Projects through the Class INCI4998: Undergraduate Research Experience in Environmental Laboratory (UREEL)", Expochem 2006, Mayagüez, PR. Nov. 9 – 11, 2006.
- Del Moral, A., Huling, S., Hwang, S. "Understanding of Fenton Oxidation Pathways for Effective Remediation of VOCs in Environmental Matrix", Hispanics in Engineering National Conference (HENC 2006), San Juan, PR. Nov. 14 – 17, 2006.
- Vazquez M., Padilla I., Hwang S. "Effect of Surface Vegetation on the Fate, Transport and Detection of Explosives-Related Compounds" XVII Undergraduate Research Symposium 2006, Universidad Metropolitana (UMET), Model Institutions for Excellence (MIE), San Juan, PR. Sep. 15-16, 2006.
- Del Moral A. Huling S., Hwang S. "Hydrogen Peroxide – Iron Catalyzed Oxidation and Synergistic Effects" XVII Undergraduate Research Symposium 2006, Universidad Metropolitana (UMET), Model Institutions for Excellence (MIE), San Juan, PR. Sep. 15-16, 2006
- Maldonado V., Del Moral A., Roman F., Hwang S. "Coal Combustion Byproducts as Low-Cost, Active Capping Amendments for Sequestration of Heavy Metals in Sediments" XVII Undergraduate Research Symposium 2006, Universidad Metropolitana (UMET), Model Institutions for Excellence (MIE), San Juan, PR. Sep. 15-16, 2006.
- Del Moral A. Huling S., Hwang S. "Sustaining H₂O₂ Concentrations and Synergistic Binary Effects in Fenton-like Oxidation" The 4th Latin American and Caribbean Consortium of Engineering Institution (LACCEI). Mayagüez, PR. June 21-23, 2006.
- Del Moral A. Huling S., Hwang S. "Improved Understanding of Fenton Reaction Mechanisms" The 6th Sigma Xi. University of Puerto Rico ay Mayagüez, PR. April 6, 2006.
- Felt D.R., Nestler C.C., Davis J.L., Ruff T., Brooks M.L., Hwang S., Santiago Rodriguez L.C. "Application of Alkaline Hydrolysis to Remediate Explosive- and Propellant-Contaminated Groundwater." The 4th International Conference on Remediation of Chlorinated and Recalcitrant Compounds. Monterey, CA. May 24-27, 2004.
- Waisner S.A., Zappi M., MacMillan D., French T., Hwang S., Harden J., Johnson J. "Elucidation of Key Mechanistic Processes Impacting Effective Application of In-situ Chemical Oxidation." Partners in Environmental Technology, 2003 SERDP and ESTCP Symposium & Workshop. Washington, DC. December 2-4, 2003.
- Hwang S., Felt D.R., Bouwer E.J., Brooks M.C., Larson S.L., Davis J.L. "Alkaline hydrolysis is an effective treatment technology for RDX-contaminated groundwater." Division of Environmental Chemistry, The 225th American Chemical Society National Meeting. New Orleans, LA. March 23-27, 2003.
- Hwang S., Cutright T.J. "Soil characteristics and PAH biodegradation." The 2nd Great Lakes Civil Engineering Graduate Student Research Symposium. Case Western Reserve University, OH. May 15, 2001.

Hwang S., Ramirez N., Cutright T.J. "Sequestration of pyrene by clay minerals in a natural soil." Division of Environmental Chemistry, The 220th American Chemical Society National Meeting. Washington DC. August 20-25, 2000.

HONORS, CERTIFICATES, & LICENSES

Apr. 2007	Outstanding Professor of Civil Engineering, 2005-2006: College of Engineering, University of Puerto Rico, Mayagüez.
Oct. 2006	Coal Combustion Products Partnership (C2P2) Award, US EPA
May 2006	Marquis Who's Who in Science and Technology
Oct. 2003	Research Associateship Award, National Research Council, USA
Dec. 2001	Tau Beta Pi, The Engineering Honor Society
May 14-18, 2001	40-hr Hazardous Materials Incident Response Operations, U.S. EPA
Sep. 2000	Scholarship for academic excellence, NAFSA: Association of Int'l Educators
Mar. 1990 – Jun. 1992	Korean Army ROTC Officer, 1113 Army Corps of Engineer, Korea
1991	Korean Environmental Engineer License
Mar. 1986 – Feb. 1990	Scholarships for academic excellence, Kyungpook Nat'l University, Korea
Mar. 1989	Best Performance Award, 109 ROTC Headquarter, Korea
1989	Korean Civil Engineer License

JOURNAL REVIEW

Environmental Science & Technology	Water Research	Journal of Contaminant Hydrology
Journal of Hazardous Materials	Soil Biology and Biochemistry	

PROFESSIONAL ORGANIZATION AFFILIATIONS

American Water Works Association (AWWA)	American Society of Civil Engineers (ASCE)
American Chemical Society (ACS)	Tau Beta Pi (TBP)

Eduardo J. Juan, PhD, PE
Associate Professor
Department of Electrical and Computer Engineering
University of Puerto Rico at Mayagüez
Mayagüez, PR 00681
Phone: (787) 832-4040 x3205 Fax: (787) 831-7564
ejuan@ece.uprm.edu

Education:

- Ph.D. Electrical Engineering, Purdue University, May 2001
- B.S. Electrical Engineering, University of Puerto Rico at Mayagüez, May 1997

Professional Experience:

- | | |
|--------------|---|
| 7/04-present | Associate Professor, Department of Electrical and Computer Engineering, University of Puerto Rico at Mayagüez, Mayagüez, PR |
| 2/05-present | Co-Founder and Scientific Advisor, SonarMed, Inc., IN, USA |
| 7/01-6/04 | Assistant Professor, Department of Electrical and Computer Engineering, University of Puerto Rico at Mayagüez, Mayagüez, PR |
| 1/98-5/01 | Research Assistant, Biomedical Acoustics Laboratory, School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN |
| Spring 2000 | Teaching Assistant, biomedical instrumentation course, School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN |

Research Interests:

Biomedical acoustics, medical instrumentation, biosensors.

Funded Research Projects:

- *Acoustical Guidance of Liquid-Filled Catheters*. Funded by NIH-MBRS Program; \$111,361. 5/01/03-4/30/07
- *Non-Invasive Stress Level Assessment Using a Hydrogel-Based Biosensor*. Funded by Tropical Center for Earth and Space Studies (TCESS-NASA); \$60,000, 10/02-10/03.
- *Biomedical Research and Education Experiences (BReEd) at UPRM*. Funded by NSF; \$99,653, 9/03-8/04.
- *Development of Technologies for the Manufacture of Cardiac Pacing and Defibrillation Leads: Phase I*. Funded by Medtronic, Inc. \$45,863, 8/03-12/03.
- *Development of Technologies for the Manufacture of Cardiac Pacing and Defibrillation Leads: Phase II*. Funded by Medtronic, Inc. \$65,363, 1/04-9/04.

Journal Articles:

Juan, E.J., Mansfield, J.P., Wodicka, G.R., *Miniature Acoustic Guidance System for Endotracheal Tubes*, IEEE Transactions on Biomedical Engineering, vol.49, pp. 584-596, 2002.

Conference Articles:

A.M. Kyle, G. Albors, G.R. Wodicka, E.J. Juan, *Sound Propagation in Liquid-Filled Arterial Segments: Measurements and Model Predictions*, Proceedings of the 29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Lyon, France, August 2007.

G. Albors, A.M. Kyle, G.R. Wodicka, E.J. Juan, *Computer Simulation Tool for Predicting Sound Propagation in Air-Filled Tubes with Acoustic Impedance Discontinuities*, Proceedings of the 29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Lyon, France, August 2007.

Goenaga M., Juan, E.J., *Modeling Impermeable Membranes as Acoustic Filters for Biomedical Applications*, Proceedings of the 28th Annual International Conference of the IEEE Engineering in Medicine and Biology Society IEEE. New York City, NY, 2006.

Figueroa H., Juan, E.J., *Estimation of Tube Wall Compliance Using Pulse-Echo Acoustic Reflectometry*, Proceedings of the 28th Annual International Conference of the IEEE Engineering in Medicine and Biology Society IEEE. New York City, NY, 2006.

Ugarte D., Santana J., Velázquez L., Juan, E.J., *Acoustical Characterization of Impermeable Membranes: Hearing Aid Applications*, Proceedings of the 25th Annual International Conference of the IEEE Engineering in Medicine and Biology Society IEEE. Cancún, Mexico, 2003.

Juan, E.J., Mansfield, J.P., Wodicka, G.R., *In-line Acoustic System to Position and Monitor Infant-sized Endotracheal Tubes*, Proceedings of the 22nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society IEEE. Part vol.4, 2000, pp.2571-4 vol.4. Piscataway, NJ, USA.

Conference Presentations:

A.M. Kyle, G.R. Wodicka, S.L. Ordonez, E.J. Juan, J.S. Bolton, *"Wave Propagation in Lliquid-Filled Tubes: Measurements and Model Predictions"*, J. of Acoustical Society of America, vol. 199(5) Part 2, May 2006, p. 3410. (Awarded as Best Student Paper in Engineering Acoustics)

Magazine Articles:

Juan, E.J., *Biomedical Engineering: an Overview*, Dimensión, Revista del Colegio de Ingenieros y Agrimensores de Puerto Rico, vol.4, pp. 25-27, 2005.

Patents:

Juan, E.J., Mansfield, J.P., Wodicka, G.R., *Miniature Acoustical Guidance and Monitoring System for Tube or Catheter Placement*, U.S. patent 6,705,319.

Selected Technical Presentations:

Medical Device Accidents: Causes and Case Studies, Medical Device Puerto Rico Exhibition and Conference, San Juan, PR, February 2006.

Electrical Shock and Trauma: Cause, Mechanisms of Injury and Case Studies, Colegio de Ingenieros y Agrimensores de Puerto Rico, Mayagüez Chapter, Mayagüez, PR, November 2005.

Acoustical Guidance of Intravascular Catheters: Theory and Application of an Acoustical Transmission Line

Model, Annual Symposium of Chemical Engineering and Biotechnology, Mayagüez, PR, October 2004.

Biomedical Engineering at UPRM, CIAPR - Industry University Symposium on Electrical Engineering, San Juan, PR, November 2003.

Biomedical Engineering: An Overview, presentation to engineering students of the University of Puerto Rico-Mayagüez, Mayagüez, PR, October 17, 2002.

Novel Acoustic Methods for the Development of Intelligent Catheters, 2002 Forum for Innovation, San Juan, PR, May 23, 2002.

Honors and Awards:

Geddes-Laufman-Greatbach Outstanding Graduate Student Award, Department of Biomedical Engineering, Purdue University, 1999
SLOAN Fellowship, 1997-1998
GEM Fellowship, 1997-1998

Professional Memberships:

Institute of Electrical and Electronics Engineers (IEEE) – Senior Member
IEEE-Engineering in Medicine and Biology Society – Senior Member

Professional Service:

Reviewer, IEEE Transactions on Biomedical Engineering
Academic Program Reviewer, Puerto Rico's Council on Higher Education

Institutional Service:

Courses Taught:

INEL 4505 Introduction to Control Systems
INEL 5205 Instrumentation
INEL 5506 Process Control and Instrumentation Engineering
INEL 4102 Circuits Analysis II

Courses Developed:

INEL 5208 Principles of Biomedical Instrumentation

Students:

Supervised research projects of 15 undergraduate students.
Supervised research projects of 5 graduate students.

Electrical and Computer Engineering Service:

Coordinator, Control Systems Area Committee 2002-2007
Member, Departmental Planning Committee 2002-2007
Member, Graduate Committee 2001-present

Dr. Vidya Manian
Assistant Professor

Office Address:

Electrical and Computer Engineering Department
PO Box 9042
University of Puerto Rico, Mayagüez, PR 00681-9042
Ph. 787-832-2825, FAX 787-832-2485
E-mail: manian@ece.uprm.edu

Research and Teaching Interests:

Image processing, hyperspectral image analysis, modeling visual texture and applying texture based algorithms for image segmentation and classification. Variational algorithms and manifold graph geometry for solving problems in image processing, biomedical image processing, computational algorithm analysis, hardware implementations of algorithms.

Education:

- Ph.D.** Computing, Information Science and Engineering, University of Puerto Rico, Mayagüez, 2004.
- M.S.** Electrical Engineering, University of Puerto Rico, Mayagüez, May 1995.
- B.E.** Electrical and Electronics Engineering, A. C. College of Eng. and Tech., Karaikudi, India, June 1990.

Experience:

**Department of Electrical and Computer Engineering,
University of Puerto Rico Mayagüez Campus,
Assistant Professor
Post doctoral Associate, CenSSIS**

Mayagüez, P.R.
Aug 2006 - present
Jan 2005-July 2006

**Lane Department of Computer Science and Electrical Engineering,
West Virginia University,
Visiting Scholar**

Morgantown, WV.
Jan 2004-Dec 2004

Journal Publications:

V. Manian and L. O Jimenez, "Land cover and benthic habitat classification using texture features from multispectral and hyperspectral images", **Journal of Electronic Imaging**, SPIE, Vol. 16, No. 2, 2007.

V. Manian and M. Velez-Reyes, "Support vector classification of land cover and benthic habitat from hyperspectral images", **Intl. Journal of high speed electronics and systems**, 2007.

V. Manian and A. Ross, "Face detection using statistical and multi-resolution texture features", **Multimedia Cyberspace Journal, Special Issue on Pattern Recognition and Bioinformatics**, Vol. 3, No. 3, pp. 1-9, 2005.

V. Manian and R. Vasquez, "Approaches to color and texture based image classification", **Journal of Optical Engineering**, SPIE, Vol. 41, No. 7, pp. 1480-1490, July 2002.

V. Manian, R. Vasquez, and P. Katiyar, "Texture classification using logical operators", **IEEE Trans. on Image Processing**, Vol. 9, No: 10, pp. 1693-1703, Oct. 2000.

V. Manian and R. Vasquez, "Scaled and rotated texture classification using a class of basis functions", **Journal of Pattern Recognition**, Vol. 31, No. 12, pp. 1937-1948, 1998.

Publications in Conference Proceedings:

V. Manian, L. O. Jimenez and M. Velez-Reyes, "A comparison of statistical and multiresolution texture features for improving hyperspectral image classification." **Proceedings SPIE Intl Conf. Remote Sensing**, SPIE, Belgium, Sept. 2005.

V. Manian and M. Velez-Reyes, "A boosted learning algorithm for texture classification and object detection", **Proceedings SPIE Conf. Defense & Security**, SPIE, Vol. 5817, Orlando, April 2005.

V. Manian and R. Vasquez, "Application of nonlinear texture dynamics for image classification." **Proceedings SPIE Conf. Defense and Security**, SPIE, Orlando, FL, April 2004.

V. Manian and R. Vasquez, "Texture discrimination based on neural dynamics of visual perception." **Proceedings IEEE Joint Intl. conf. Neural Networks**, Proceedings IEEE, Vol. 1, pp. 113-118, Portland, Oregon, July 2003.

V. Manian and R. Vasquez, "Texture based cloud detection in MODIS images, **Proceedings SPIE Remote Sensing conference**, Crete, Greece, Sept. 23-28, 2002.

V. Manian and R. Vasquez, A genetic algorithm for texture description and classification, **Proceedings SPIE Intl. Conf. AeroSense'02**, Orlando, FL, April 2002.

V. Manian, A. Vega and R. Vasquez, Comparison of feature selection algorithms for texture image classification, **Proceedings SPIE International Conference AeroSense'01**, Orlando, FL, April 2001.

V. Manian, Roger Hernandez and R. Vasquez, Classifier performance for SAR image classification, **Proceedings IEEE conference IGARSS'00**, Hawaii, July 2000.

V. Manian, Michael Diaz and R. Vasquez, Wavelet features for color image classification, **Proceedings ASPRS 2000**, Washington D.C., May 2000.

V. Manian, Marcel Castro and R. Vasquez "Texture based algorithm for color image classification, **Proceedings SPIE International Conference AeroSense'2000**, Orlando, April 2000.

V. Manian and R. Vásquez, Image classification using semivariogram method, **Proceedings World Multiconference on Systemics, Cybernetics and Informatics**, Vol. 6, Orlando, FL, August, 1999.

V. Manian and R. Vasquez, "Multiresolution edge detection algorithm applied to SAR images," **Proceedings IEEE Intl. Conference IGARSS'99**, Hamburg, July 1999.

V. Manian and R. Vásquez, On remote sensing image classification and segmentation using a toolbox, **Proceedings 4th Intl. Airborne remote sensing conference ERIM**, Ottawa, Canada, June 1999.

V. Manian, M. Ruiz and R. Vasquez, "The use of a robust toolbox for texture classification and segmentation, **Proceedings of SPIE AeroSense'99**, Orlando, FL, April'1999.

V. Manian and R. Vasquez, "On the use of transform features for SAR image classification, **Proceedings IEEE Intl. Conference IGARSS'98**, Seattle, July 1998.

V. Manian and R. Vasquez, "Texture discrimination in noise using wavelets," **Proceedings SPIE Intl. Conference on AeroSense'98**, Orlando, FL, April 1998.

V. Manian and R. Vásquez, Comparison of traditional and wavelet methods for invariant texture classification, **Proceedings of COPIMERA'97**, Santiago, Chile, Oct'97.

V. Manian and R. Vasquez, "A framework for SAR image classification: comparison of co-occurrence and a Gabor based method," **Proceedings IEEE IGARSS**, Singapore, Aug. 1997.

V. Manian and R. Vásquez, On scaled and rotated texture segmentation using a class of basis functions, **Proceedings SPIE conf. on AeroSense**, Orlando, April 1997.

V. Manian and R. Vásquez, Feature analysis for scaled and rotated texture segmentation, **Proceedings 21st Int. Conf. on Computers and Industrial Engineering**, San Juan, PR, March 1997.

V. Manian and R. Vásquez, A framework for the recognition of scaled, translated and rotated objects using the short time Fourier transform, **Proceedings IEEE conf. SMC**, Beijing, China, Oct.1996.

V. Manian and R. Vásquez, On the implementation of wavelet transforms in multicomputer networks, **Proceedings of ICSPAT'96**, Boston, Oct. 1996.

V. Manian and R. Vasquez, "A framework for object recognition in images using the short time Fourier transform," **Proceedings of SPIE's optical science, instrumentation and engineering**, Denver, August 1996.

V. Manian and R. Vásquez, Efficient algorithms for Gabor transforms in multicomputer networks, **Proceedings SPIE's 1996 AeroSense conference**, Orlando, April 1996.

V. Manian and R. Vásquez, A computational framework for analyzing textured image classification, **Proceedings 1995 IEEE SMC**, Vancouver, Canada, Oct. 1995.

V. Manian and R. Vásquez, Analysis of transputer processor networks for image processing, **Proceedings SPIE's 1995 AeroSense conference**, Orlando, April 1995.

Presentations:

V. Manian and M. Velez-Reyes, "Support vector classification of alnd cover and benthic habitat from hyperspectral images," **International Symposium on Spectral Sensing Research**, Bar Harbor, Maine, May 2006.

V. Manian and A. Ross, "A texture based approach to face detection," *presented at* **Biometric Consortium**, Washington, Sept. 2004.

Research Grants:

Co-PI in **Improving algorithms for target detection in hyperspectral infrared imagery**, (PI Miguel Velez-Reyes) Department of Defense, \$485,057, November 2005 to November 2008.

Co-PI in A **geometric approach for the analysis of hyperspectral imagery**, (PI Miguel Velez-Reyes), National Geospatial Agency, \$140,000, August 2006 to July 2008.

Collaborator in **Center for Subsurface Sensing and Imaging Systems** (CenSSIS), (Co-PI Miguel Velez-Reyes) A consortium between Northeastern University (lead institution), Boston University, Rensselaer Polytechnic, and the University of Puerto Rico Mayaguez Campus, NSF Engineering Research Centers Program, UPRM component \$3.75M, September 2000- August 2010.

PI in **Statistical modeling and classification of skin components using multispectral reflectance confocal microscopic and hypersepctral images**, UPRM MBRS-SCORE seed money grant, \$7000, 2005.

PI in **Hyperspectral texture modeling by multiple pairwise pixel interactions**, UPRM R&D seed money grant, \$5000, 2007.

Graduate Theses Supervised:

Santiago Velasco, **Graph based approaches for image processing and classification**, Ph.D. Thesis in Computing and Information Sciences and Engineering. In Progress.

Andres Alarcon, **A Variational Method for Target Detection in Hyperspectral Images**, M.S. Electrical Engineering Thesis. In Progress.

Sol Marie-Cruz, **Classification of Hyperspectral Images using Spectral Difference Histogram**, M.S. Electrical Engineering Thesis. In Progress.

Current Professional Memberships and Affiliations:

Member, IEEE Society
Member, SPIE Society of Optical Engineering

Academic Service Activities:

Reviewer

Intl. Journal of Remote Sensing.
IEEE Trans. Geoscience and Remote Sensing.
IEEE Trans Systems, Man and Cybernetics.

Personal Information:

U.S. Citizen.
Bilingual in English and Spanish.

References:

Available upon request.

Patricia Ortiz-Bermúdez
University of Wisconsin, Madison Campus
Department of Biomolecular Chemistry
1300 University Avenue
Madison, Wisconsin, 53706
Home: (608) 241-1694, Work: (608) 265-5689
E-mail: portizbermud@wisc.edu

EDUCATION

August 1999 - December 2005 - Ph.D. in Microbiology

University of Wisconsin-Madison
Madison, Wisconsin

August 1994 - June 1999 - Bachelor of Science in Industrial Biotechnology

University of Puerto Rico, Mayagüez Campus
Mayagüez, Puerto Rico
Magna Cum Laude

TEACHING AND RESEARCH EXPERIENCE

January 2006 - present - University of Wisconsin-Madison

Postdoctoral Research Associate in Dr. Christina Hull's laboratory at the Department of Biomolecular Chemistry, studying the signals involved in the stimulation and initiation of sexual development in the human fungal pathogen *Cryptococcus neoformans*

Spring 2006 - present - Adjunct Faculty at Madison Area Technical College, Truax Campus

Instructor of Microbiology (Lecture and Laboratory)

April 2005 - December 2005 - University of Wisconsin-Madison

Research Assistant in Dr. Christina Hull's laboratory at the Department of Biomolecular Chemistry, studying the signals involved in the stimulation and initiation of sexual development in the human fungal pathogen *Cryptococcus neoformans*

Spring 2001 - University of Wisconsin-Madison

Teaching Assistant of Medical Microbiology and Immunology Course MMI 341 (Immunology Lecture)

Fall 2000 - University of Wisconsin-Madison

Teaching Assistant of Bacteriology Course BACT 324 (Food Bacteriology Laboratory)

Fall 1999 - December 2005 - University of Wisconsin-Madison

Research Assistant in Dr. Kenneth E. Hammel laboratory at the Department of

Bacteriology, studying organochlorine production by Chloroperoxidase-producing ascomycetes

Fall 1998–Spring 1999 - University of Puerto Rico, Mayagüez Campus

Undergraduate research student in the laboratory of Evolutionary Molecular Genetics with Dr. J.C. Martínez-Cruzado, performing restriction fragment length polymorphism (RFLP) analysis on mitochondrial DNA to determine the maternal contribution of Native Americans to the human gene pool of Puerto Ricans

Summer 1998 - California Institute of Technology, Pasadena, California

Summer research undergraduate fellow in a developmental genetics laboratory with Dr. Kevin Roberg and Dr. Elliot Meyerowitz, using DNA sequencing, and yeast two-hybrid system to dissect the CLAVATA binding protein in *Arabidopsis thaliana*

Summer 1997 - University of Puerto Rico, Mayagüez Campus

Summer research student in the laboratory of Evolution Molecular Genetics with Dr. J.C. Martínez-Cruzado, using nested deletions to determine the rate of evolution in the chorion genes of *Drosophila differens*

Summer 1996 - Mayo Graduate School, Rochester, Minnesota

Summer research student at the Clinical Pharmacology Unit with Dr. D. Mays and Dr. J.J. Lipsky, performing inhibition assays of recombinant human mitochondrial aldehyde dehydrogenase by two intermediate metabolites of the drug Disulfiram

Summer 1993 - Ponce School of Medicine, Ponce, Puerto Rico

High school student research apprentice in the Biochemistry Department at the Tissue Culture laboratory with Dr. Manoharan and Dr. Mercado, studying chromosomal damage in human leukocytes by chemical substances present in common household products

SPECIAL TRAINING AND COURSES

Special training, certifications, and skills

- Biolistic transformation (modification of fungal genetic material)
- Fungal molecular genetics
- DNA amplification, cloning, sequencing and restriction analysis (molecular biology)
- Utilization of scientific software to analyze proteins and nucleic acids
- Protein over-expression, purification, and characterization
- Enzyme kinetics
- HPLC, FPLC, GPC, GC/MS (Chromatographic techniques)

- Radiochemical analysis of model compounds
- Bacterial fermentations
- Tissue culture, transfection, and maintenance
- Grant-writing (ASM Summer Institute 2003: Development of Careers in Microbiology)
- Presentation preparation (ASM Summer Institute 2003: Development of Careers in Microbiology)
- Animal User Orientation Certification (UW-RARC, March 2006)
- Occupational Health and Safety Class-Biological and Chemical safety (UW, February 2006)
- Worker Protection Standard Training for green house operation (UW, May 2003)
- Radiation Safety for Radiation Workers Training (UW, September 1999)
- Fluent Languages: English and Spanish

Special Courses

Undergraduate:

- Physical Chemistry for Chemical Engineers
- Thermodynamics I and II
- Unit Operations III
- Mass and Energy Balances
- Algorithms and Computer Programming in C
- Biochemical Engineering
- Eukaryotic Molecular Genetics
- Industrial Microbiology

Graduate:

- Prokaryotic and Eukaryotic Molecular Genetics
- Advanced Bacterial Genetics
- Advanced Bioorganic Chemistry
- Regulation of Gene Expression
- Bacterial Physiology and Diversity
- Mechanisms of Enzyme Action
- Coenzymes and Cofactors
- Fungal Ecology and Biotechnology

AWARDS

Advanced Opportunity Fellowship (AOF). Graduate School, University of Wisconsin, Madison, WI, Fall 1999

Summer Undergraduate Research Fellowship Award (SURF). California Institute of Technology, Pasadena, CA, Summer 1998

Sloan Research Undergraduate Fellow. University of Puerto Rico, Mayagüez Campus, Mayagüez, PR, Fall 1997-Spring 1999

Alliance for Minority Participation Summer Research Award. University of Puerto Rico, Mayagüez Campus, Mayagüez, PR, Summer 1997

NIH-Minority High School Student Research Apprentice Program Award. Ponce School of Medicine, Ponce, PR, Summer 1993

PROFESSIONAL AFFILIATIONS

American Society for Microbiology

PUBLICATIONS

Patricia Ortiz-Bermúdez, Joanne L. Ekena, and Christina M. Hull. 2007. **Formulation of a defined medium for *Cryptococcus neoformans* based on the composition of V8™ juice.** (Manuscript under preparation)

Semarjit Shary, John Scott-Craig, Patricia Ortiz-Bermúdez, Kolby C. Hirth, Jonathan D. Walton, and Kenneth E. Hammel. 2007. **Chlorination of corn leaves by the corn pathogen *Cochliobolus carbonum*.** (Manuscript under preparation)

Patricia Ortiz Bermúdez, Kolby C. Hirth, Ewald Srebotnik, and Kenneth E. Hammel. 2007. **Chlorination of lignin by ubiquitous fungi has a likely role in global organochlorine production.** Proc. Natl. Acad. Sci. USA. **104**(10):3895-3900.

Patricia Ortiz-Bermúdez, Ewald Srebotnik, and Kenneth E. Hammel. 2003. **Chlorination and Cleavage of Lignin Structures by Fungal Chloroperoxidases.** Applied and Environmental Microbiology, **69**(8):5015-5018.

J.C. Martínez-Cruzado, G. Toro-Labrador, V. Ho-Fung, M.A. Estévez-Montero, A. Lobaina-Manzanet, D.A. Padovani-Claudio, H. Sánchez-Cruz, P. Ortiz-Bermúdez, and A. Sánchez-Crespo. 2001. **Mitochondrial DNA Analysis Reveals Substantial Native American Ancestry in Puerto Rico.** Human Biology, **73**(4): 491-511.

Mays, D.C., Ortiz-Bermúdez, P., Lam, J.P., Tong, Ik, Fauq, A.H., and Lipsky J.J. 1998. **Inhibition of Recombinant Human Mitochondrial Aldehyde Dehydrogenase by Two Intermediate Metabolites of Disulfiram**. *Biochemical Pharmacology*, **55**: 1099-1103.

RESEARCH PRESENTATIONS

November 2006- “Transcriptional control of development in a model human pathogen”, Research and Graduate Studies Seminar Series, Ponce School of Medicine, Ponce, PR

November 2006- “Pathogenic fungi and their interactions with the environment”, Biology Seminar Series, Biology Department, University of Puerto Rico-Mayagüez, Mayagüez, PR

December 2005- “Role of chloroperoxidase-producing fungi in organochlorine production”, **MDTP Final Ph.D. Seminar**, University of Wisconsin Biotechnology Center, Madison, WI

November 2005- “Role of chloroperoxidase-producing fungi in organochlorine production”, **IMBT Seminar Series**, USDA Forest Products Laboratory, Madison, WI

February 2004- Central Metabolism Lecture, Medical Coding Program, Herzing College, Madison, WI

August 2003- “Characterization of the role of chloroperoxidase in plant pathogenic fungi”, **Kenneth B. Raper Symposium**, University of Wisconsin, Madison, WI

March 2003 – “Chlorination and Cleavage of Lignin Structures by Fungal Chloroperoxidases”, **Fungal Biology Super Group Meetings**, University of Wisconsin, Madison, WI

February 2003 – “Chlorination and Cleavage of Lignin Structures by Fungal Chloroperoxidases”, **MDTP Seminar Series**, University of Wisconsin, Madison, WI

April 2002 – “Chloroperoxidase as a potential catalyst of lignin biotransformation”, **MDTP Seminar Series**, University of Wisconsin, Madison, WI

August 2001 – “Chloroperoxidase as a potential catalyst of lignin biotransformation”, **Kenneth B. Raper Symposium**, University of Wisconsin, Madison, WI

November 1998- “Dissection of CLAVATA Binding Protein”, **National Minority Research Symposium**, New York, NY

March 1998 – “Study of the rate of evolution in the chorion genes of *Drosophila differens*”, **AMP Junior Technical Meeting**, Bayamón, PR

October 1997 – “Inhibition of Recombinant Human Mitochondrial Aldehyde Dehydrogenase by Two Intermediate Metabolites of Disulfiram”, **National Minority Research Symposium**, New Orleans, LO

December 1993 – “Correlación entre la homofobia y la sidafobia entre jóvenes de 15 a 17 años”, ***IX Encuentro de Jóvenes Investigadores***, Salamanca, Spain.

INGRID PADILLA

Department of Civil Engineering and Surveying • University of Puerto Rico
Mayagüez, Puerto Rico 00926 • (787) 265-3815
E-mail: padillai@uprm.edu

PROFESSIONAL PREPARATION:

The University of Arizona; Ph.D. Hydrology; 1998

University of Michigan; M.S. Water Resources Science; 1988

University of Maryland; B.S. Natural Resources Science and Management; 1986

APPOINTMENTS:

Associate Professor, July, 2004-present (Assistant 2001-July,2004): Department of Civil Engineering, University of Puerto Rico, Mayagüez, PR. *Area*: Environmental Engineering.

Ground Water Hydrologist, June, 1999-January, 2001: Gregory L. Morris & Associates, San Juan, PR.

Postdoctoral Research Associate, January-May, 1999: Department of Hydrology and Water Resources, The University of Arizona, Tucson, AZ.

Research Assistant, 1992-1998: Department of Hydrology and Water Resources, The University of Arizona, Tucson, AZ.

Hydrologist, 1988-1993: U.S. Geological Survey, Water Resources Division, Caribbean District, San Juan, PR.

Research Assistant, 1987-1988: Department of Environmental Engineering and Water Resources Science, University of Michigan, Ann Arbor, MI.

SYNERGISTIC ACTIVITIES:

Director of Environmental Engineering Laboratory, 2002-2005, Department of Civil Engineering and Surveying. University of Puerto Rico, Mayagüez.

Graduate Studies and Research Committee, 2004-2005, Department of Civil Engineering and Surveying. University of Puerto Rico, Mayagüez.

Steering Committee for Civil Infrastructure Research Center, 2004-2005, Department of Civil Engineering and Surveying. University of Puerto Rico, Mayagüez.

Workshop Coordinator, 2003. “ Basic Geosciences Concepts and Subsurface Sensing and Imaging Tools”, CenSSIS Research and Industrial Collaboration Conference at Northeastern University on November 19th.

Field Course Developer, 2003. Developed a new course in “ Hydrologic and Hydraulic Field Course” for multidisciplinary students. University of Puerto Rico, Mayagüez.

Regional Liaison, Planning Committee Member, and Conference Co-Chair, 1999-2005: Ford Foundation Fellowship Office. Activities to promote and increase the presence of underrepresented minorities on the nation's college and university faculties.

Memberships: American Geophysical Union (1996-present); American Institute of Hydrology (1999-present); National Ground-Water Association (1988-present); American Chemical Society (2002-present); Soil Science Society of America (since 2004).

HONORS AND AWARDS

Outstanding Professor in Civil Engineering, 2003-2004: College of Engineering, University of Puerto Rico, Mayagüez.

Ford Foundation Dissertation Fellowship, 1996-1997: The National Academies.

PUBLICATIONS AND PRESENTATIONS:

Acevedo, Damaris, Ingrid Padilla, Perla M. Torres, Alexander Torres, and Angel A. Anaya, Paper No. Vapor Sampling of ERCs for Environmental Assessment in Atmospheric and Soil Settings , Proc. of SPIE on Detection and Remediation Technologies for Mines and Minelike Targets XII, edited by Russell S. Harmon, , J. Thomas Broach, John H. Holloway, Jr., Vol. 6553 65531P1-10, 2007.

Anaya, Angel A. Ingrid Padilla, and Sangchul Hwang, Influence of Environmental Conditions in Fate and Transport of

ERCs in a 3D SoilBed Model: Spatial and Temporal Assessment in a Sandy Soil, Proc. of SPIE on Detection and Remediation Technologies for Mines and Minelike Targets XII, edited by Russell S. Harmon, J. Thomas Broach, John H. Holloway, Jr., Vol. 6553 65531O1- 8, 2007.

PUBLICATIONS (Continued):

Rodríguez, Sylvia, Ingrid Padilla, and Sangchul Hwang, Development of a multi-scale packing methodology for evaluating fate and transport processes of explosive-related chemicals in clayey soils Proc. of SPIE on Detection and Remediation Technologies for Mines and Minelike Targets XII, edited by Russell S. Harmon, J. Thomas Broach, John H. Holloway, Jr., Vol. 6553 65531M-1-10, 2007.

Serrano-Guzmán, Maria F., Ingrid Padilla, and Rafael Rodriguez, Bimodal detection of underground contamination in two dimensional systems, Proc. of SPIE on Optics and Photonics in Global Homeland Security III, edited by Theodore T. Saito, Daniel Lehrfeld, Michael J. DeWeert, Vol. 6540 65401O-1-13, 2007.

Torres, Alexander, Ingrid Padilla and Sangchul Hwang, Physical modeling of 2,4-dnt gaseous diffusion through unsaturated soil Proc. of SPIE on Detection and Remediation Technologies for Mines and Minelike Targets XII, edited by Russell S. Harmon, J. Thomas Broach, John H. Holloway, Jr., Vol. 6553 65531Q-1-12, 2007.

Padilla, Amira, Ingrid Padilla, and Ivonne Santiago, Multiphase Extraction Sampling of Explosives in Unsaturated Soils, Paper Number: 6217-139, Proc. of SPIE on Detection and Remediation Technologies for Mines and Minelike Targets XI, SPIE Defense and Security Symposium, April 17-21 2006 in Orlando, FL, Vol. 6217, 62173C 1-11, 2006.

Molina, Gloria M., Ingrid Padilla, Miguel Pando, and Diego Perez, Field Lysimeters for the Study of Fate and Transport of Explosive Chemical in Soils Under Variable Environmental Conditions, Paper Number: 6217-137, Proc. of SPIE on Detection and Remediation Technologies for Mines and Minelike Targets XI, SPIE Defense and Security Symposium, April 17-21 2006 in Orlando, FL, Vol. 6217, 62173A 1-12, 2006.

Padilla, Ingrid, Women And Minorities In Geological Science And Engineering: The Missing Links, Invited Speaker, Geological Society of America Annual Conference, Salt Lake City, Utah, October 16-19, 2005.

THESIS AND DESIRTATION TITTLES (Representative)

Transport and Detection of DNAPL in Soils Under Transient Conditions using Cross Borehole Radar. A Ph.D. Dissertation by Maria Fernanda Serrano, Ph.D. Candidate. To be completed in 2008.

Field Transport of Explosive Related Chemicals in Soils Under Variable Environmental Conditions. A M.S. Thesis by Edwin Colón. To be completed in 2008.

Three-Dimensional Transport and Detection of Explosive-Related Compounds in Soils Under Variable Environmental Condition. A M.S. Thesis by Angel Anaya To be completed in 2008.

Fate and Transport of TNT and DNT in a 3D Clay SoilBed-Atmospheric System. A M.S. Thesis by Rafael Rivera. To be completed in 2008.

Effects of flow reversal on two-dimensional transport of explosive chemicals near soil-atmospheric interfaces subjected to advection processes, A M.S. Thesis by Juan Pablo Gutierrez To be completed in 2007.

Physical Modeling Of Explosive Chemicals Diffusion In Soils Under Variable Environmental Conditions, A M.S. Thesis by Alexander Torres. To be completed in 2007.

Sensing and Detection of Odors from Sediments in Combined Sewer Outflows at McCook Reservoir, IL. A M.S. Thesis by Marisel Lopez. Completed 2005.

Evaluation of Advance Oxidation Processes for Treatment of Rural Water Systems. A M.S. Thesis by Cecilia Hernandez. Completed in 2007.

COLLABORATORS

Collaborators: Carey Rappaport, Rafael-Rodriguez-Solis, Sammy Hernandez, Sangchul Hwang, Ivonne Santiago, Jiri Simmunek.

Advisor: Dr. Martha Conklin and Dr. Jim Yeh (University of Arizona); Dr. Water Webber (University of Michigan)..

CURRENT AND PENDING SUPPORT:

1. Physica Modeling of Explosive Chemicals in Soils; DoD: ARO, 2/1/04-12/31/07

2. CenSSIS Researcher; NSF,8/15/03-9/31/07

3. IGERT Proposal on Intelligent Diagnostics of Aging Civil and Environmental Systems, 9/1/07-8/31/12

4. Detection, Fate, Transport, And Remediation Of Chlorinated Solvents In Low-Permeability Porous Media Department of Energy-Savannah River Site, 7/1/07-6/30/10.

Cristina Pomales-García, Ph.D.

Assistant Professor

Industrial Engineering Department, University of Puerto Rico
PO Box 9043, Mayagüez, PR 00681

Office: (787) 265-3819, e-mail: cpomales@uprm.edu

Education

- Ph. D. Major: Industrial and Operations Engineering. Minor: Human Factors and Ergonomics, 2006. University of Michigan, Ann Arbor, MI.
- Master of Science. Industrial and Operations Engineering. Minor: Human Factors and Ergonomics, 2003. University of Michigan, Ann Arbor, MI.
- Bachelor of Arts. Psychology, 2001. University of Puerto Rico, Mayagüez, PR.

Academic Experience

- July 2006 - Assistant Professor. Industrial Engineering Department, UPR, Mayagüez, PR. Teach undergraduate and graduate courses in Work systems design/Ergonomics, Industrial Safety, and Human Factors.
- 2003-2005 Graduate Student Instructor, Industrial and Operations Engineering Department, University of Michigan, Ann Arbor, MI., 2003-2005.

Relevant Courses as a Graduate Student

- Ergonomics
- Human Factors
- Human Performance
- Occupational Biomechanics and Biomechanics Physical Lab
- Occupational Safety Engineering
- Occupational Safety Management I and II
- Work Measurement and Prediction
- Work Related Musculoskeletal Disorders

Areas of Expertise

- Occupational Safety and Health: Training in federal standards for the general industry
- Usability and human-computer interaction: study the design of teaching/learning systems at a distance
- Human factors and ergonomics: Design and analysis of work systems where humans play an important role
- Experimental Design

Selected Awards and Recognitions

- The Mildred B. and Charles A. Wedemeyer Award for distinguished scholarship and publication, 2007
- Society of Women Engineers Teaching Award, University of Michigan, 2005
- College of Engineering Distinguished Leadership Award, University of Michigan, 2005
- Fourth Annual Scholar POWER Banquet: PhD Student Achievement, 2005
- National Science Foundation Rackham Engineering Award, 2001-2002

Jaime E. Ramírez-Vick, Professor

Engineering Sciences and Materials Department
University of Puerto Rico
P.O. Box 9044, Mayagüez, PR 00681-9044
Phone (787) 832-4040 x3048
Fax (787) 265-3816
e-mail jvick@ece.uprm.edu

Home:
P. O. Box 1551
Boquerón, PR 00622-1551
Cell (787) 464-3333
Fax (787) 851-6638
e-mail jvick@prtc.net

CITIZENSHIP: USA

EDUCATION/TRAINING

Postdoctorate, Cancer Genetics, Cancer Center, University of California, San Francisco, CA
Postdoctorate, Cancer Genetics, Life Sciences Division, Lawrence Berkeley Natl Lab, Berkeley, CA
Ph.D., Chemical Engineering, 1997, Arizona State University, Tempe, AZ
M.S., Chemical Engineering, 1989, University of Puerto Rico, Mayagüez, PR
B.S., Chemical Engineering, 1985, University of Puerto Rico, Mayagüez, PR

PROFESSIONAL EXPERIENCE

07/07-Pres Professor, Engineering Sciences & Materials Department, University of Puerto Rico, Mayagüez, PR
05/01- Pres President, Daedalus BioTechnologies, Berkeley, CA and Mayagüez, PR
01/02-06/07 Associate Professor, General Engineering Department, University of Puerto Rico, Mayagüez, PR
04/00-04/01 Chief Technology Officer, Genetic Profiling Systems, Berkeley, CA
01/99-03/00 Director of Technology, Iris Biotechnologies, Inc., Santa Clara, CA
07/98-12/98 Postdoctoral Fellow, Cancer Center, University of California, San Francisco, CA
11/97-06/98 Lawrence Postdoctoral Fellow, Lawrence Berkeley National Laboratory, Berkeley, CA
08/94-10/97 Research Associate, Chemical, Bio, and Materials Engineering, Arizona State University, Tempe, AZ
07/93-07/96 Instructor and Course Developer, Continuing Education Courses for Industry, Mayagüez, PR
07/90-06/02 Research Assistant, Chemical Engineering Department, University of Michigan, Ann Arbor, MI
07/89-06/90 Instructor, Chemical Engineering Department, University of Puerto Rico, Mayagüez,
07/92-07/94 PR
01/86-06/89 Research Assistant, Department of Physiology, Medical Sciences Campus, University of Puerto Rico, Rio Piedras, PR
08/88-05/89 Laboratory Instructor of Classical Mechanics, Physics Department, University of Puerto Rico, Mayagüez, PR

01/86-05/89 Laboratory Instructor of General Chemistry, Department of Chemistry,
University of Puerto Rico, Mayagüez, PR

PROFESSIONAL INTERESTS

Molecular Diagnostics
Systems Biology Analysis of Partially Characterized Systems
Microarray Technology Development
Electrochemical Detection of Biomolecules
Biosensors
Effect of Electromagnetic Fields on Biological Systems

- Breast Cancer
- Bone Development

Cancer Biomarker

SELECTED HONORS

Tenured, University of Puerto Rico, 2007.
Keynote Speaker, 3rd Scientific Research Congress, IAU - Bayamón, 2004
Keynote Speaker, Computing Research Conference, UPR - Mayagüez, 2004
American Histochemical Society Travel Award, 1998.
Lawrence Postdoctoral Fellowship, 1998.
Phi Kappa Phi Honor Society, 1996.
ASU Graduate Academic Scholarship, 1994.
ASU Graduate Tuition Scholarship, 1994.
GEM Ph.D. Fellowship, 1990.
Dean's Honors List, 1987.

TEACHING

Courses Developed:

BIOL6994 Protein and DNA Sequence Analysis
BIOL6997 Protein and DNA Sequence Analysis Laboratory
ESM 5995 Introduction to Micro and Nanobiotechnology: BioMEMS
ESM 5997 Interdisciplinary Approaches to Project Management
EE 5995 Bioinformatics
CHE 8025 Molecular and Cellular Biology for Engineers
CISE 8998 Structural Bioinformatics

Courses Taught:

ESM 3016 Algorithms and Computer Programming
ESM 4001 Engineering Materials
ESM 4015 Fluid Mechanics

ChE 4008 Mathematical Analysis of Chemical Engineering Problems
ChE 4010 Momentum Transfer Operations
ChE 4017 Chemical Engineering Kinetics and Catalysis
ChE 4027 Chemical Engineering Seminar
ChE 4034 Chemical Engineering Laboratory I
ChE 5025 Analysis and Control of Processes
ChE 5030 Chemical Engineering Laboratory II

BIOL 6990 Research
BIOL 6991 Special Studies in Biology I

CompE 6995 Independent Studies
CompE 6999 MS Thesis

CISE 9995 Doctoral Dissertation

ACADEMIC PROGRAMS

1. Ph.D. Program in Biotechnology, University of Puerto Rico at Mayagüez – Steering Committee, 2002-Present
2. Ph.D. Program in Bioengineering, University of Puerto Rico at Mayagüez – Director Steering Committee, 2003-2005
3. Industrial Biotechnology Program, University of Puerto Rico at Mayagüez – Steering Committee, 2002-Present
4. Institute for Medical Device Technologies based on an Innovation Studio Concept, Multidisciplinary and Multicampus Research Institute, University of Puerto Rico at Mayagüez – Director Steering Committee, 2005-Present

ACADEMIC SERVICE

1. Institutional Biosafety Committee, University of Puerto Rico at Mayagüez – Chairman, 2003-Present.
2. Academic Affairs Committee, School of Engineering, University of Puerto Rico at Mayagüez – Chairman, 2003-2005.
3. Computing Committee, Engineering Sciences and Materials Department, University of Puerto Rico at Mayagüez – Chairman, 2004-Present

PUBLICATIONS

Textbook:

García, A.A., M. R. Bonen, J. Ramírez-Vick, M. Sadaka, and A. Vuppu, "**Bioseparation Process Science**," Blackwell Science (1999).

Peer-Reviewed Journals:

1. Ramírez-Vick, J., and F. F. Vargas. Albumin modulation of paracellular permeability of pig vena caval endothelium shows specificity for pig albumin. *Am. J. Physiology (Heart Circ. Physiol.)* 33: H1382-H1387 (1993).
2. Ramírez-Vick, J. E., and A. A. García, "Recent developments in the use of group-specific ligands for affinity bioseparations," *Sep. Purif. Meth.*, **25(2)**:85-129 (1997).
3. Ramírez-Vick, J. E., A. A. García, and J. J. Lee, "Recovery of an oligonucleotide using silver ions immobilized onto paramagnetic particles," *Prep. Biochem. Biotechnol.* **28(3)**:243-60 (1998).
4. Ramírez-Vick, J. E., A. A. García, and J. Lee, "Immobilization of silver ions onto paramagnetic particles for binding and release of a biotin-labeled oligonucleotide," *Reactive and Functional Polymers*, **43**:53-62 (2000).
5. Acevedo-Morantes, C. Y., H. B. Nicholas, Jr., J. E. Ramírez-Vick, "Bioinformatics Analysis of the CcmE protein in *Rhodobacter sphaeroides* 2.4.1," *Protein Science* (submitted 2006).
6. Wen, S., and J. E. Ramirez-Vick, "Inferring Genetic Regulation Using Bayesian Network Model and Stochastic Simulation," *Bioinformatics* (In preparation).
7. Wen, S., and J. E. Ramirez-Vick, "Learning Structures of Bayesian Boolean Network Model from Gene Expression," *BMC Bioinformatics* (In preparation).

Patents:

1. Ramírez-Vick, J. E., "Reversible immobilization of ligands onto metal surfaces, their preparation and use in biochemical applications," WO 00/70345 A1 (2000).
2. Ramírez-Vick, J. E., "Reversible immobilization of ligands onto metal surfaces, their preparation and use in biochemical applications," AU 050172A5 (2000).
3. Ramírez-Vick, J. E., "Method for increasing the hybridization rate of nucleic acids," WO 00/73506 A1 (2000).
4. Ramírez-Vick, J. E., "Hybridization of target DNA with immobilized nucleic acid analogs," WO 01/01144 A2 (2001).
5. Ramírez-Vick, J. E., "Reversible immobilization of ligands onto metal surfaces, their preparation and use in biochemical applications," EPO 00932451.8-2404-US0013348 (2002).
6. Ramírez-Vick, J. E., "Method for increasing the hybridization rate of nucleic acids," EPO 00937982.7-1222 (2002).

7. Ramírez-Vick, J. E., "Hybridization of target DNA with immobilized nucleic acid analogs," EPO 00948560.8-2404-US0018881 (2002).
8. Ramírez-Vick, J. E., "Method for increasing the hybridization rate of nucleic acids," EP 1 206 572 B1 (2002).
9. Ramírez-Vick, J. E., "Hybridization of target DNA with immobilized nucleic acid analogs," EP 1 234 82 (2002).

PUBLICATIONS (CONT.)

Patents:

10. Ramírez-Vick, J. E., "Reversible immobilization of ligands onto metal surfaces, their preparation and use in biochemical applications," CA 2 409 442 (2002).
11. Ramírez-Vick, J. E., "Method for increasing the hybridization rate of nucleic acids," CA 2 409 523 (2002).
12. Ramírez-Vick, J. E., and S. Chin, "Magnetic field-enhanced hybridization of target molecules to immobilized probes," US 6,852,493 B2 (2005).
13. Ramírez-Vick, J. E., "Reversible binding of molecules to metal substrates through affinity interactions," US 7,108,971 B2 (2006).

Conference Proceedings:

1. Rodriguez-Martinez, M, W Rivera, J Seguel, B Velez-Rivera, D Rodriguez, PI Rivera-Vega, and JE Ramirez-Vick. CISE Terascale Facility for GRID Applications at UPRM. 5th Annual Austin CAS Conference, February 19-20 (2004).
2. Cordova-Bermeo, ME, and JE Ramirez-Vick. Expert System for Biochemical Pathway Inference. Proceedings CRC 2004, April 2 (2004).
3. Castillo, L, M Arocha, A Esteves, J Ramirez-Vick, G Lee-Glauser, M Glauser, T Apple, Z Warhaft, R Vasquez, and D Freund. New Trends in Engineering Education: The AGEP: CNY-PR. IEEE Proceedings ITHET, July 7-9, 2005 (2005).
4. Caceres, PG, J Ramirez-Vick, and JD Carmona, "A Combinatorial Approach to the Synthesis of Carbon Nanotubes," 4th International Workshop on Combinatorial Materials Science and Technology, San Juan, PR, December 2-5, 2006.

PRESENTATIONS

1. "MicroElectroMechanical Systems for Genetic Diagnostics," Forum for Innovation, INDUNIV, San Juan, PR, May 21-24, 2002.
2. "New Technologies for Detection and Surveillance," Forum for Innovation, INDUNIV, San Juan, PR, April 2-5, 2003.
3. "Microarrays: Device Fabrication, Biological Applications, and Data Analysis," Bioengineering Colloquium, Mayaguez, PR, May 1, 2003.
4. "Effect of melatonin and magnetic fields on MCF-7 breast cancer cells," PRCC/MDACC: Partners for Excellence in Cancer Research, San Juan, PR, March 4-5, 2004.

5. "Gene copy number changes in breast cancer," PRCC/MDACC: Partners for Excellence in Cancer Research, San Juan, PR, March 4-5, 2004.
6. "Academic High-Tech Entrepreneurship," Computing Research Conference 2004, Mayaguez, PR, April 2, 2004.
7. "Bioinformatics: Innovations and Applications," 3rd Scientific Research Congress, Bayamon, PR, November 17, 2004.
8. "Formation of Self-Assembled Monolayers (SAMs) on Gold (Au) and Platinum (Pt) Electrodes," American Institute of Chemical Engineers – 2004 Annual Meeting, November 8, 2004.

PRESENTATIONS (CONT.)

9. "Puerto Rico Innovation Studio for Medical Device Technologies," Forum: A Partnership for Success in the New Knowledge Economy in Puerto Rico, Mayagüez, PR, April 21, 2005.
10. "Puerto Rico Innovation Studio for Medical Device Technologies," Medical Device Puerto Rico, San Juan, February 17, 2006
11. "A Combinatorial Approach to the Synthesis of Carbon Nanotubes," 4th International Workshop on Combinatorial Materials Science and Technology, San Juan, PR, December 2-5, 2006.

WORKSHOPS

1. "DNA Microarray Technology Workshop," University of Puerto Rico, Medical Sciences Campus, Rio Piedras, PR, June 13-14, 2001.
2. "Workshop on Biological Databases," University of Puerto Rico – Mayagüez, PR, September 13-27, 2002.
3. "DNA Microarray Technology Workshop," Latin American and Caribbean Biotechnology Congress, Mayagüez, PR, November 7-8, 2002.
4. "Workshop: Puerto Rico Innovation Studio for Medical Device Technologies," LifeScan, Cabo Rojo, PR, May 13, 2005.
5. "Workshop: Puerto Rico Innovation Studio for Medical Device Technologies." Puerto Rico Manufacturers Association, San Juan, PR, May 17, 2005.
6. "Bioinformatics Workshop," College of Agriculture, University of Puerto Rico – Mayagüez, PR, April 6-19, 2007.

INVITED TALKS

1. "DNA Microarray Technology Workshop," University of Puerto Rico, Medical Sciences Campus, Rio Piedras, PR, June 13-14, 2001.
2. "MicroElectroMechanical Systems for Genetic Diagnostics," Forum for Innovation, INDUNIV, San Juan, PR, May 21-24, 2002.
3. "Workshop on Biological Databases," University of Puerto Rico – Mayagüez, PR, September 13-27, 2002.

4. "DNA Microarray Technology Workshop," Latin American and Caribbean Biotechnology Congress, Mayagüez, PR, November 7-8, 2002.
5. "New Technologies for Detection and Surveillance," Forum for Innovation, INDUNIV, San Juan, PR, April 2-5, 2003.
6. "High Technology Entrepreneurship," Keynote lecture, Computing Research Conference, University of Puerto Rico – Mayagüez, PR, April 2, 2004.
7. "Bioinformatics: Innovations and Applications," Keynote lecture, 3rd Congress on Scientific Research, Interamerican University – Bayamón, PR, November 17, 2004.

FUNDING

- | | |
|---------------|---|
| 01/03 – 12/03 | "Self-Assembly of Oligonucleotides for Electronic Hybridization," Seed Funds University of Puerto Rico – Mayagüez (\$ 29,500) |
| 08/04 – 07/06 | "Acquisition of a Multipurpose Microwave Plasma CVD Reactor for Nanostructure Fabrication," NSF – Major Research Instrumentation (\$ 317,900). |
| 05/03 – 04/04 | "IBM Shared University Research Proposal: CISE Terascale Facility for GRID Applications at UPRM," IBM – Shared University Research (\$ 100,000). |
| 08/03 – 07/05 | "Bioengineering Research & Education (BReEd) Experiences at UPRM," NSF – Departmental Level Reform (\$ 99,653). |
| 09/05 – 08/09 | "Assisting Bioinformatics Efforts at Minority Schools," NIH – MARC (\$ 390,644). |
| 01/07 – 01/09 | "Validation of breast cancer biomarkers using microarray-based diagnostics," Submitted to NIH but running on institutional funds. |
| 05/07 – 05/09 | "Effect of Melatonin and Magnetic Fields on MCF-7 Breast Cancer Cells," Submitted to NIH but running on institutional funds. |

PROFESSIONAL ACTIVITIES

Statewide Committees

1. Puerto Rico Techno-Economic Corridor - Biotechnology Cluster Think Tank
Member, 2001-Present
2. Puerto Rico Techno-Economic Corridor – Medical Devices Cluster Think Tank
Member, 2005-Present

Consulting

- | | |
|------------------|--|
| 01/02 - -Present | Daedalus Biotechnologies, "Development of microarray-based clinical genetic diagnostic platforms." |
| 05/03 – 05/04 | Hewlett-Packard, Puerto Rico, "Development of a high-throughput DNA microarray printing platform." |
| 08/03 – 06/05 | Eli Lilly and Company, Puerto Rico, Process Personnel Training, |

- “Humalog process.”
- 01/03 – 06/04 Amgen, Puerto Rico, Process Personnel Training
- 01/03 – Present Industrial Biotechnology Learning Center, Process Personnel Training
- 04/05 – 06/06 Foam Application Technologies, Inc., “Novel automotive applications for carbon foam.”
- 07/06 – Present ThermalCentric International Corporation, “Development of a carbon foam catheter.”
- 11/06 – Present Cordis Corporation, Johnson & Johnson, “Development of an online near IR QA system for Coronary Stent manufacturing.”

THESIS SUPERVISED

Doctoral Students:

Advisor:

1. Shiyun Wen, Probabilistic Boolean Network Model in Genetic Regulation, PhD Computer and Information Science and Engineering, (Exp.) Dec 2007.
2. Eliana Valenzuela, Bioinformatics Management System to Integrate and Federate Databases, PhD Computer and Information Science and Engineering, (Exp.) May 2008.

Committee Member:

3. Edusmildo Orozco, The reverse engineering problem in finite field models for genetic networks, PhD Computer and Information Science and Engineering, May 2005.
4. Brenda J. Ramos Santana, Distal Heme-Ligand Interactions in Hemoglobin I Site-Directed Mutants from *Lucina pectinata*: NMR Structural Elucidation Studies of Hb1CN and Hb1H2S moieties, PhD Chemistry, (Exp.) May 2008.
5. Yeira Padilla Luciano, Development of Filtration/Biotreatment Scheme to Recycle CMP Wastewater, PhD Chemical Engineering, (Exp.) May 2008.

Masters Students:

Advisor:

1. Elizabeth Cordoba, Expert System for Biochemical Pathway Inference, MS Computer Engineering July 2005.
2. Claudia Acevedo Morantes, Elucidation of the Cytochrome Maturation Pathway in *Rhodobacter sphaeroides*, MS Biology May 2007.

NAZARIO D. RAMIREZ-BELTRAN

Industrial Engineering Department, University of Puerto Rico, Mayaguez, PR 00680
Phone: (787) 265-3819, Fax: (787) 265-3820, e_mail: nazario@ece.uprm.edu

PROFESIONAL INTEREST

- Prediction of Drug Stability
- Estimation of activity coefficients
- Experimental Design
- Operations Research
- Time Series and Regression Analysis
- Application of Neural Networks.

EDUCATION

- Ph.D., Industrial Engineering, Texas A&M University 1988
- M.S., Industrial Engineering, Texas A&M University 1983
- B.S., Industrial Engineering, Instituto Tecnológico de Celaya, Celaya, Gto., México 1976
- Quality Control Training Course at Union of Japanese Scientists and Engineers, Tokyo, Japan, October 1979 to May 1980.

MAJOR OUTCOMES

<i>Outcome</i>	<i>Total</i>
Book chapters	1
Papers published (referee journals)	15
Papers under review (referee journals)	4
Papers published on conference proceedings	48
Current funded research projects	3
Years having of continuous external funding	15
Projects with external funds as a PI	10
Projects with external funds as a CO-PI	12

EXPERIENCE:

7/97-present. Professor at Department of Industrial Engineering at the University of Puerto Rico. Duty: Teaching graduate and undergraduate courses and conducting funding research. He has conducted research in the following areas: three dimensional estimation of atmospheric variables, rainfall prediction, hurricane tracking prediction, hurricane intensity prediction, water used prediction, neural networks and nonlinear optimization, degradation of pharmaceutical products, monitoring chemical processes, probability distribution for the ratio of two means, inverse prediction for drug products, calibration curves, and integer programming,. He has been supported by the following agencies and companies to conduct research: *National Aeronautics and Space Administration (NASA)*, *National Oceanic and Atmospheric Administration (NOAA)*, *National Science Foundation (NSF)*, *U.S. Department of Energy (DOE)*, *U.S. Department of the Interior*, *Industry University Research Center (INDUNIV)*, *Abbott Diagnostics, Inc.*, *Abbott Chemical Inc.*, and *MOVA Pharmaceutical, Co.* Dr. Ramirez has published several articles in the following journals: *IIE Transactions*, *Chemical Engineering Communications*, *Engineering Valuation and*

Cost Analysis, International Journal of Systems Science, Mathematics Today, Journal of the operational research Society, Computers and Industrial Engineering, and Transportation Research Record.

Academic Duty: Dr. Ramirez has 19 years of academic experiences and he has been taught the following courses. **Graduate courses:** (1) ININ-6025 Linear and Discrete Optimization, (2) ININ-6010 Multiple Regression Analysis, (3) ININ-6036 An Introduction to Time Series Analysis, (4) ININ-6005 Experimental Statistics, (5) ININ-5555 An Introduction to Nonlinear Optimization and Neural Networks, (6) ININ-6008 Networks Flows and Graphs in Management Sciences, and (7) ININ-5559 Engineering Statistics. **Undergraduate courses:** (1) ININ-4027 Design and analysis of engineering experiments, (2) ININ-4020 Statistics for engineers, (3) ININ-4010 Probability theory for engineers, (4) ININ-4078 Statistical Quality Control, (5) ININ-4021 Deterministic models in operations research and (6) ININ-4022 Probabilistic Models In Operation Research.

7/91-6/97. Associate Professor at the Department of Industrial Engineering at the University of Puerto Rico. Duty: Teaching graduate and undergraduate courses and conducting funding research.

8/88-6/91 Assistant Professor at the Department of Industrial Engineering at the University of Puerto Rico. Duty: Teaching graduate and undergraduate courses and conducting funding research.

1/88-7/88 Research Assistant at Texas Transportation Institute, College Station, Texas. Duty: develop and implement a statistical sampling procedure to determine the commodity flow in Texas highways.

9/86-12/87 Graduate Research Assistant at Texas A&M University, College Station, Texas. Duty: research on stochastic processes applicable to urban water demand analysis and forecasting. An approach was proposed to aid urban water engineers in forecasting and planning to meet daily water demand. The underlying project was funded by the National Science Foundation.

6/85-8/86 Research Assistant at the Texas Transportation Institute. Duty: propose a methodology for evaluating highway maintenance projects. I was involved in the development of a methodology to assign highway maintenance project to either in-house engineers or private consultant firms. I also was involved in developing and implementing a computerized procedure for estimating pavement rehabilitation and maintenance expenditures.

9/83-5/85 Teaching Assistant of the Department of Mathematics at Texas A&M University. Duty: teach an introductory course of Calculus, design evaluation tests, and grading papers.

9/76-1/79 Assistant professor and Industrial Project Division Head at the Department of Industrial Engineering of the Instituto Tecnológico de León, Gto., Mexico. Duty: design a shoe manufacturing process and select the appropriate facilities for a factory with a daily production of 1000 pairs of shoes. Courses taught at undergraduate level: linear programming, probability and statistics, statistical quality control, and linear algebra.

REVIEWER OF THE FOLLOWING JOURNALS

- Water Resources Research
- Soil and Water Conservation
- Computer & Chemical Engineering
- Geophysical Research Letters

FUNDED RESEARCH PROJECTS (Related to Bioengineering)

1. **"Optimization and Neural Networks to Reduce Lot-End Costs."** Funded by *Abbott Diagnostics Inc., and Industrial Affiliate Program*, January 1, December 31, 1998. *PI: Nazario D. Ramirez-Beltran.* (\$ 21,000)
2. **"Stability Prediction for Drug Products,"** Funded by *Industry University Research Center(INDUNIV) and MOVA Pharmaceutical Corporation*, August 1997 to July 2000. Grant No. G-97-01, *PI: Nazario D. Ramirez-Beltran.* (\$ 175,000)
3. **"An On-Line System for Multivariate Process Diagnostics and Monitoring."** Funded by *Industry University Research Center (INDUNIV)*, June 1996 to May 1997. Grant No. G-96-03, Co-PI: Nazario D. Ramirez-Beltran. (\$ 20,000)
4. **"Neural Networks for On-Line Process Monitoring,"** Funded by *Industry University Research Center (INDUNIV) and Abbott Chemical Inc.*, June 1994 to May 1996. Grant No. G-94-04, *PI: Nazario D. Ramirez-Beltran.* (\$ 50,000)
5. **"Probability Distribution for the Ratio of two Means."** Funded by *Abbott Diagnostics Inc.*, October 1992 to September 1993. Grant No. G-92-03, *PI: Nazario D. Ramirez-Beltran.* (\$ 24,000)
6. **"Inverse Prediction Intervals for Calibration Curves."** Funded by *Abbott Diagnostics Inc.*, June to December 1991. Grant No. G-91-02, *PI: Nazario D. Ramirez-Beltran.* (\$ 24,000)

OTHER FUNDED RESEARCH PROJECTS

1. **"Collaborative Adaptive Sensing of the Atmosphere: Student Testbed Research Activities."** Funded by the *National Science Foundation (NSF)* with a grant No. 0313747, January 2007 to December 2008. The PI of this project is Dr. Sandra Cruz-Pol, and Nazario D. Ramirez is a Co-PI (\$ 50,000 per year). The total project budget is \$ 3,710,427.
2. **"Statistical Techniques to Improve the Hydro-Estimator Rainfall Algorithm During Heavy Storms over Puerto Rico."** Funded by *NOAA/NWS* grant NA06NWS4680011. Period September 1, 2006- August 31, 2008. *PI Nazario D. Ramirez.* (\$ 50,000 per year). Total project budget \$ 100,000.
3. **"Validation and Enhancing satellite precipitation Algorithm."** Funded by *NOAA-CREST* grant NA06OAR4810162. Period August 2007- July 2011. CO-PI Nazario D. Ramirez. (\$ 30,000 per year). Total budget project \$ 300,000 per year.
4. **"The Climate Impact of the Changing Low Lands on the Caribbean National Forest in the East of Puerto Rico."** Funded by *NASA-IDEAS* grant No. NCC5-595. Period February 2006- January 2007. CO-PI Nazario D. Ramirez. Total budget project \$ 30,000.
5. **"Soil Moisture Estimation and Validation a Hydro-Estimator."** Funded by *NOAA-CREST* grant NA17AE1625. Period August 2003- July 2006. CO-PI Nazario D. Ramirez. (\$ 90,000 per year). Total budget project \$ 300,000 per year.
6. **"Climate Change Detection and Hurricane Tracking and Intensity."** Funded by *NASA-EPSCoR* grant NCC5-595. Period August 2001- July 2006. CO-PI Nazario D. Ramirez. (\$ 70,000 per year). Total budget project \$ 500,000 per year.
7. **"Seasonal to Century Scale Climate Effects on the Water Resources of the U.S. Virgin Islands."** Funded by the *U.S. Geological Survey.* August 2002 to July 2003. CO-PI: Nazario D. Ramirez. (\$60,000).
8. **"Monitoring the Water Quality Parameters of Mayaguez Bay."** Funded by *Environmental Protection Agency (EPA).* August 2001 to July 2004. Grant CIMP-001. *PI: Nazario D. Ramirez* (\$ 120,000).

9. **“Radiosonde and Satellite Imagery Correlation.”** Funded by *National Aeronautics and Space Administration (NASA)*. March 2000 to February 2001. *PI: Nazario D Ramirez* (\$ 30,000).
10. **“Caribbean Atmospheric Dynamics.”** Funded by *National Aeronautics and Space Administration (NASA)*. This project is a part of the *Tropical Atmospheric Research Center, August 1999, to July 2001. Co-PI. (\$ 100,000)*
11. **"Development of Weight Probability Distributions and Truck Factors for Puerto Rico."** Funded by *University Transportation Research Center, New York*, October 1, 1996 to September 30, 1997, Co-PI Nazario D. Ramirez-Beltran. (\$ 20,000)
12. **"Performance and Survivor Curves for Flexible Pavements in Puerto Rico,"** Funded by *National Science Foundation (NSF)*, August 1995 to July 1997, Co-PI: Nazario D. Ramirez-Beltran. (\$ 30,000)
13. **"Tracking and Forecasting of Synoptic Scale Weather Events and Hurricanes",** Funded by *National Science Foundation (NSF)*, October 1993 to October 1995. Grant No. HDR-9353549, Co-PI: Nazario D. Ramirez-Beltran. (\$ 30,000)
14. **"Time Series Models and Neural Networks to Control and Forecast the Surface Water Pollution in Puerto Rico,"** Funded by *U.S. Department of the Interior*, June 1994 to May 1995. Grant No. G-2043-05, *PI: Nazario D. Ramirez-Beltran.* (\$ 20,000)
15. **"Prediction of Water Use in Puerto Rico (Phase I: Mayaguez)."** Funded by *the U.S. Department of the Interior*, June 1992 to May 1993. Grant No. 14-08-0001-G-2043, *PI: Nazario D. Ramirez-Beltran.* (\$ 25,000)
16. **"Hurricane Tracking Prediction."** Funded by the *National Science Foundation (NSF)*, June 1991 to August 1993. Grant No. REI-8802961, Co-PI: Nazario D. Ramirez-Beltran. (\$ 30,000)

BOOK CHAPTER (Related to Bioengineering)

- [1] Ramirez-Beltran, N. D., Rodriguez, H., and Estevez, L. A. *Pharmaceutical Manufacturing Handbook*, Chapter: **Drug Stability**. Edited by Shayne C. Gad. In press and will be published on 2008 by John Wiley & Sons.

PAPER UNDER REVIEW (Related to Bioengineering)

- [1] Ramirez-Beltran, N.D. Rodriguez, H., Estevez, L. A. and Duarte, H. **A Neural Network Approach to Predict Activity Coefficients**. Submitted on January, 2007 to *Computers & Chemical Engineering Journal*.

OTHER PAPERS UNDER REVIEW

- [1] Ramírez-Beltran, N.D, Vasquez, R. Harmsen, E. Cruzado, H., and Castro, J. **Transfer function models and neural networks to estimate soil moisture**. Submitted on October, 2006 to *Journal of the American Water Resources Association*.
- [2] Ramírez-Beltran N.D, Calderon, C. Vasquez, R. Harmsen, E. and Castro, J.M. **Remote sensing and statistical techniques to estimate soil moisture over tropical areas**. Submitted on September, 2007 to *Journal of Applied Remote Sensing*.
- [3] Ramirez-Beltran, N.D., Castro, J.M., Gonzalez, J., Erickson, D. J., Jury, M., and Allison, J.,

Long-term prediction of named storms in the North Atlantic Basin. Submitted on June 2007 to *International Journal of Climatology*.

PUBLICATIONS IN JOURNALS OR IN PROCEEDINGS (Related to Bioengineering)
Journal papers are given in blue color.

1. Ramirez-Beltran, N.D. Rodriguez, H., and Estevez, L. A. **Use of Neural Networks to Estimate Activity Coefficients.** *Congreso de Computacion Aplicada CAIP' 2007*.
2. Ramirez-Beltran, N.D. Rodriguez, H., and Estevez, L. A. A Neural Network Approach to Estimate Activity Coefficients in Binary Systems. Asociacion Argentina de Ingenieros Industriales. *IACChE-International Confederation of Chemical Engineering*, 2006
3. Ramirez-Beltran, N.D. and F. Chong. **Multivariate Process Control Using Neural Network.** *Proceedings of the Fourth Asia-Pacific Conference on Industrial Engineering and Management Systems*, Taipei, Taiwan, Dec. 18-20, 2002.
4. Ramirez-Beltran, N.D. and Montes, J.A., **Neural Networks to Model Dynamic Systems with Time Delays.** *IIE Transactions*, Vol. 34, 313-327, 2002.
5. Srihar, L.N., Ramirez-Beltran, N.D. and Rodriguez, H., **Thermodynamic Stability of Solid Pharmaceutical Formulations.** *Chemical Engineering Communications*, Vol. 185 59-66, 2001.
6. Ramirez-Beltran, N.D., and Colucci, B., **Aplicación de la Distribución Weibull para Estimarla Vida Remanente de Pavimentos Flexibles.** *Revista Internacional de Desastres Naturales, Accidentes e Infraestructura Civil*, Vol. 1, 41-50, 2001.
7. Ramirez-Beltran, N.D., and Rodriguez, H., **A Neural Network Approach to Estimate the Chemical Activity Coefficients.** *Proceedings of Group Technology and Cellular Manufacturing*, 349-354, 2000.
8. Ramirez-Beltran, N.D., **Neural Networks and Accelerated Tests to Predict Shelf Life of Drug Products.** *Proceedings of Group Technology and Cellular Manufacturing*, 355-360, 2000.
9. Ramirez-Beltran, N.D. and H. Jackson, **Application of Neural Networks to Chemical Process Control**, *Computer & Industrial Engineering*, Vol. 37., No. 1-2, 387-390, 1999.
10. Ramirez-Beltran, N.D. and L. Olivares, **Statistical Analysis of Drug Stability.** *Computer & Industrial Engineering*, Vol. 37, No. 1-2, 351-354, 1999.
11. Ramirez-Beltran, N.D., **Neural Networks to Minimize Lot-End Costs.** *Proceedings of the 3th International Conference on Engineering Design and Automation*, Vancouver, Canada, 352-358, 1999.
12. Ramirez-Beltran, N.D., L. Sridhar, and H. Rodriguez, **A Nonlinear Model to Estimate Chemical Interaction Coefficients.** *Proceedings Computing Research Conference CRC'98*, 54-57, 1998.

OTHER PUBLICATIONS IN JOURNALS OR IN PROCEEDINGS. (Journal papers are given in blue color)

1. Ramirez-Beltran, N.D., Cruz-Pol, S., Ortiz, X., Castro, J.M., Kuliwoski, R. An algorithm to improve the NEXRAD rain rate estimates. *IEEE International Geosciences and Remote Sensing Symposium*, Barcelona, Spain, 23-27, July, 2007.
2. Ramirez-Beltran, W.K.M. Lau, A. Winter, J.M. Castro, and N.R. Escalante. **Empirical Probability Models to Predict Precipitation Levels over Puerto Rico Stations.** *Monthly Weather Review*. Vol. 135, No. 3, pp 877-890, 2007.
3. Ramirez-Beltran, N.D. Julca, O., and Gonzalez, J. Detection of Global and Caribbean climate changes. *19th Conference on Climate Variability and Change, at the 87th American Meteorological Society Annual Meeting*, San Antonio TX, January 14-19, 2007.
4. Ramirez-Beltran, N.D., Calderon, C. and Vazques R. An empirical model to estimate soil moisture over vegetated areas. *21th Conference on Hydrology, at the 87th American Meteorological Society Annual Meeting*. San Antonio TX, January 14-19, 2007.
5. Ramirez-Beltran, N.D., Calderon, C. Vasquez, R. **Vertical Soil Moisture Profile Based on In-Situ and Satellite Observations.** *The NOAA/EPP Fourth Education and Science Forum*, Tallahassee, FL, October 30-November 1, 2006.
6. Ramirez-Beltran, N.D. Castro, J.M. Gonzalez, J. and Angeles, M. **Prediction of trends of tropical Storms in the North Atlantic.** *27th Conference on Hurricanes and Tropical Meteorology*, Monterrey, CA, April, 24-28, 2006.
7. Ramirez-Beltran, N.D. and Julca, O. **Detection of a Local Climate Change,** *The 18th Conference on Climate Variability and Change, at the 86th American Meteorological Society Annual Meeting*, Atlanta Georgia January 28 to February 3, 2006.
8. Ramirez-Beltran, N.D., R. Vasquez, H. Cruzado and E. Harmsen. **A Short- and Long-Term Memory Model to Estimate Soil Moisture.** *The 31th International Symposium on Remote Sensing of Environment – 2005 “Global Monitoring for Sustainability and Security.”* Saint Petersburg Russia. June 20-24, 2005,
9. Ramirez-Beltran, N.D., Gilbes, F., and Castro, J.M. **Empirical Models to Estimate Seawater Parameters in Mayagüez Bay.** *The 31th International Symposium on Remote Sensing of Environment – 2005 “Global Monitoring for Sustainability and Security.”* , Saint Petersburg Russia. June 20-24, 2005.
10. Ramirez-Beltran, N.D., R. Vasquez, H. Cruzado, and E. Harmsen. **A Transfer Function Model to Estimate Soil Moisture.** *Proceedings of Research & Education Advancements in Oceanic & Atmospheric Sciences*. New York, October 21-23, 2004, pp 175-180.
11. Ramirez-Beltran, N.D., F. Gilbes, and J.M. Castro. **A stochastic-dynamic model to predict fecal coliforms at the mouth of the Añasco River.** *Coastal Environment V Incorporating Oil Spill Studies*, WIT Press, Great Britain, pp 83-93, 2004. (Note: peer review paper published in a book).
12. Ramirez-Beltran, N.D., and A. Veneros. **Upper Air Information and Neural Networks to Estimate Hurricane Intensity.** Preprints of the American Meteorological Society: *The 26th Conference on Hurricanes and Tropical Meteorology*. Miami FL, May 2-7, 2004
13. Ramirez-Beltran, N.D., and J.M. Castro, **Deep Layer of Upper Air and Multivariate Time Series Models to Predict Hurricane Tracks.** Preprints of the AMS: *The 26th Conference on Hurricanes and Tropical Meteorology* Miami FL , May 2-7, 2004.
14. Ramirez-Beltran, N.D. W.K.M. Lau, A. Winter, A. Veneros. **An Algorithm for Variable**

- Selection with an Application to Meteorological Teleconnections.** Preprints of the AMS: *The 17 Conference on Probability and Statistics in the Atmospheric Sciences. 84th Annual AMS Meeting*: Seattle WA January 10 -15, 2004.
15. Ramirez-Beltran, N.D., F. Chong, A. Winter, A. Veneros, and N. R. Escalante. **Neural Networks Estimate Atmospheric Variables in the Caribbean.** *The Third Conference on Artificial Intelligence Applications to the Environmental Science: 83th Annual AMS Meeting.* Long Beach California, February 9-13, 2003.
 16. Ramirez-Beltran, W.K.M. Lau, A. Winter, J.M. Castro, and N.R. Escalante. **Empirical Probability Models to Predict Puerto Rico Monthly Rainfall Process.** *17th Conference on Hydrology, 83th Annual AMS Meeting.* Long Beach California, February 9-13, 2003
 17. Ramirez-Beltran, N.D., **Application of Mixed Integer Programming to Cellular Manufacturing.** *Engineering Valuation and Cost Analysis, Vol 2., 373-386, 2000.*
 18. Ramirez-Beltran, N.D., B. Colucci, and J. Vega, **Prediction of Traffic Load Using Weigh-in-Motion Data.** *Proceedings of 10th Congress of Pan American of Engineering Traffic and Transport,* Santander Spain, September 21-24, 1998.
 19. Ramirez-Beltran, N.D., **An Algorithm for Pure Integer Programming.** *Proceedings of 29th Annual Meeting of the Decision Science Institute,* pp 1065-1067, Las Vegas, Nevada,
 20. Ramirez-Beltran, N.D., **Neural Networks to Detect Trends and Correlations in Time Series.** *Proceedings of 2nd International Conference on Engineering Design and Automation,* in press, Maui, Hawaii, August 9-12, 1998.
 21. Ramirez-Beltran, N.D., and N. Quiñones, **A Nonlinear Formulation for the Balancing Problem.** *Proceeding Computing Research Conference CRC'98,* 41-43, 1998.
 22. Ramirez-Beltran, N.D., R. O. Colon, **Experimental Design to Optimize a Manufacturing Process.** *Proceeding Computing Research Conference CRC'98,* 48-50, 1998
 23. Ramirez-Beltran, N.D., and L. Olivares. **Drug Shelf-life Estimation Using Clustering Techniques.** *Proceeding Computing Research Conference CRC'98,* 70-73, 1998
 24. Ramirez-Beltran, N.D., and T. Sastri. **Transient Detection with an Application to a Chemical Process.** *Computers & Industrial Engineering,* Vol. 32, No. 4, pp 891-908, 1997.
 25. Colucci, B., N.D. Ramirez-Beltran, and F. Rodriguez. **A Methodology for Developing Generic Performance Curves for Flexible Pavements in Puerto Rico Using Clustering Techniques.** *Transportation Research Record,* No. 1592, pp 116-124, 1997.
 26. Colucci, B., Ramirez-Beltran, N.D., and F. Dosal. **Performance and Survivor Curves to Estimate Remaining Life for Flexible Pavements.** *Dimension,* Year II, Vol. 3, pp 116-124, 1997.
 27. Colucci, B., Ramirez-Beltran, N.D., and J. Velar. **Analysis and Evaluation of Physical Characteristics of Hot Asphalt Mixtures Using Crumb Rubber as a Modifier.** *Proceedings VIII Congreso Chileno de Ingenieria y Transporte,* 1997.
 28. Ramirez-Beltran, N.D. **Transfer Function Models to Control a Chemical Process.** *Proceedings of the 21th International Conference on Computers & Industrial Engineering,* pp 417-420, San Juan, Puerto Rico, March 9-12, 1997.
 29. Ramirez-Beltran, N.D. and J. Montes. **Neural Networks for On-Line Parameter Change Detection in Time Series Models.** *Proceedings of the 21th International Conference on Computers & Industrial Engineering,* pp 337-340, San Juan, Puerto Rico, March 9-12, 1997.
 30. Ramirez-Beltran, N.D. and K. Ruggiero. **Application of a Heuristic Procedure to Solve Mixed Integer Programming Problems.** *Proceedings of the 21th International Conference on Computers & Industrial Engineering,* 43-46, San Juan, Puerto Rico, March 9-12, 1997.

31. Ramirez-Beltran, N.D. **A Vector Autoregressive Model to Predict Hurricane Tracks.** *International Journal of Systems Science*, Vol. 27, No. 1, pp 1-10, 1996.
32. Ramirez-Beltran, N.D., and R. Patxot., **Neural networks with a Geometric Kernel to Control a Chemical Process.** *Proceedings of the 20th International Conference on Computers & Industrial Engineering*, pp 661-664, Pusan, Korea, October 6-9, 1996.
33. Ramirez-Beltran, N.D. **The Ratio Control Chart.** *Proceedings of the 1996 Annual Meeting of the Decision Sciences Institute*, Orlando, Florida, November 24-26, 1996.
34. Colucci, B., N.D. Ramirez-Beltran, and A. Medina. **Estimation of Truck Factors for Flexible Pavements in Puerto Rico.** *Proceedings of the 9th Pan American Congress of Traffic and Transportation Engineering*, La Havana, Cuba, December 2-6, 1996.
35. Ramirez-Beltran, N.D., B. Colucci, and K. Aguilar. **Simulation Techniques to Divide the Gross Vehicle Weight into Axle Loads.** *Computing Research Conference CRC'96*, pp 1-2, Mayaguez, Puerto Rico, April 18, 1996.
36. Ramirez-Beltran, N.D., and M. Vargas, **An On-Line Transfer Function to Control a Chemical Process.** *Computing Research Conference CRC'96*, pp 84-85, Mayaguez, Puerto Rico, April 18, 1996.
37. Ramirez-Beltran, N.D., **Integer Programming to Minimize Labor Costs.** *Journal of the Operational Research Society*, Vol. 46, No. 2, pp 139-146, 1995.
38. Ramirez-Beltran, N.D. **Autoregressive and Adaptive Estimation with an Application to Hurricane Track Prediction.** *International Journal of Systems Science*, Vol. 26, No. 10, pp 1791-1812, 1995.
39. Ramirez-Beltran, N.D., **Pattern Recognition for Parameter Change Detection in ARIMA Models.** *Proceedings of Neural, Parallel and Scientific Computations*, Vol. 1, pp 391-394, 1995.
40. Ramirez-Beltran, N.D. **A Statistical Model to Predict Hurricane Tracks.** *The 21th Conference on Hurricanes and Tropical Meteorology*, pp 488-490, Miami, Florida, April 24-28, 1995.
41. Ramirez-Beltran, N.D. **A Step Parameter Change in an ARIMA(1,1) Model.** *Third International Conference on Stochastic Structural Dynamics*, pp 7.100-7.106, San Juan, Puerto Rico, January 15-18, 1995.
42. Ramirez-Beltran, N.D., and Lopez, Miguel A., **Identification of Autoregressive Moving Average Models Using Neural Networks.** pp 37-38, *Computing Research Conference CRC'95*, April 28, 1995.
43. Ramirez-Beltran, N.D. **Integer Programming with Stochastic Coefficients.** *Mathematics Today*, Vol XII-A, pp 35-50, 1994.
44. Ramirez-Beltran, N.D. **Optimal Neural Network Architecture.** *Proceedings of the 1994 Symposium on Intelligent Systems and Power*, pp 106-113, Mayaguez, Puerto Rico, February 21-23, 1994.
45. Ramirez-Beltran, N.D. and Llaugel, F. **The Ratio Control Chart and Pattern Recognition.** *48th Annual Quality Congress Proceedings*, pp 583-590, Las Vegas, Nevada, May 24-26, 1994.
46. Colucci, B., J.L. Perez, and Ramirez-Beltran, N.D. **Un Nuevo Enfoque para el Análisis de Datos de Medición de Rugosidad para un Sistema de Gerencia de Pavimentos.** *The 8th the Pan American Congress of Traffic and Transportation Engineering*, México City, julio 1994.
47. Ramirez-Beltran, N.D. **The Control Limits for the Ratio Control Chart.** *1994 Annual Meeting of the Decision Science Institute*, pp 2115-2117, Honolulu Hawaii, November 20-22, 1994.
48. Ramirez-Beltran, N.D., **A Monthly Prediction Model for Industrial Water Use.** 1993

Conference on Advances in Water Resources Research in Puerto Rico and USA Virgin Islands, pp 27-28, San Juan Puerto Rico, October 1, 1993.

49. Ramirez-Beltran, N.D., M. Jimenez and J.T. Allison. **Optimization of Electrical Energy Distribution for a Deficient System.** *Journal of the Operational Research Society*, Vol. 44, No. 8, pp 761-772, 1993.
50. Ramirez-Beltran, N.D. **Optimal Estimation for Piecewise Regression Models.** *ASQC TRANSACTIONS*, pp 458-464, May, 1992.

PROFESSIONAL CONSULTING WORK

1. **“Neural Networks to Minimize Scrap.”** Consulting work conducted at Abbott Diagnostics Inc., October to December 1997. A computer program was designed to minimize the scrap in a pharmaceutical production line.
2. **“Application of Neural Networks to Chemical Process Control.”** Consulting work was conducted at Abbott Chemical Inc. A computer program was developed to control the pH of erythromycin acetate salt in a continuous extraction process, October 1994 to September 1996.
3. **“A Computer Program to Perform the Ratio Test.”** A computer program was developed to test the parameters involve in the ratio of two normally dependent statistics. This consulting work was developed at the Abbott Diagnostics Inc., January to December 1993.

AWARDS

1. Distinguished Professor of the Industrial Engineering Department University of Puerto Rico 2005
2. A NASA Summer Faculty Fellowship at the Goddard Space Flight Center, (summer 2001).
3. EPSCoR Scholarly Productivity Award 1999.
4. EPSCoR Scholarly Productivity Award 1997.
5. EPSCoR Scholarly Productivity Award 1996.
6. Academy Excellent Productivity award 1995.
7. Distinguished Professor of the Industrial Engineering Department University of Puerto Rico 1995
8. Scholarship from CONACYT (a Mexican Agency) to take a training course in Japan
9. Scholarship from CONACYT (a Mexican Agency) to study Master Degree at Texas A&M

CURRENT MASTER STUDENTS UNDER SUPERVISION

1. Joan Manuel Castro. Downscaling Techniques for the General Circulation Model. Expected graduation date December 2007. (Supported with the NOAA project)
2. Shirley Milena Clavijo Mosquera. Dynamic Scheduling of Stems on the Spry Coating Process. Expected graduation date May 2008.

SUPERVISED GRADUATE STUDENTS

1. Oswaldo Julca (2007) Thesis: **Detection of Climate Change over the Global and Caribbean Basin.**
2. Christian Calderon (2007) Thesis: **Redes Neuronales Artificiales y Funciones de Transferencia Aplicados a la Estimacion de Humedad de Suelo y Temperatura del Aire.**
3. Harry Rodriguez (2006) Thesis: **A Neural Network Method to Predict Activity Coefficients for Binary Systems Based on Molecular Functional Group Contribution.**
4. Walter Quispe (2006) Thesis: **Thesis: Bootstrap in Autocorrelated Processes with an Application to Meteorology.**
5. Anthony Veneros. (2004) Thesis: **A Neural Network Approach to Predict Hurricane Intensity in**

the North Atlantic Basin.

6. Luis Olivares, (1999) Thesis: **“Statistical Estimation of Drug Shelf Life.”**
7. Jaime Montes, (1999) Thesis: **“Adaptive Control and Time Delay Detection with Neural Networks and Optimization.”**
8. Karina A. Ruggiero, (1997) thesis: **“Development of a Heuristic Algorithm to Solve Mixed-Integer Programming Problems.”**
9. Rosanna G. Paxot, (1996), thesis: **“A Process Control by Means of Neural Networks with a Geometric Kernel.”**
10. Felipe Llaugel, (1993), thesis: **“Process Control of the Ratio Chart of Two Sample Means Using Pattern Recognition and Neural Networks.”**
11. Mike F. Acuña, (1993), thesis: **“Statistical Models to Predict the Water Use in Mayaguez, Puerto Rico.”**
12. Olga M. Gomez, (1992), thesis: **“Development and Analysis of Calibration Curves.”**

AFFILIATIONS

American Meteorological Society
American Statistical Association
INFORMS

DISSERTATION TITLE

Nonlinear Intervention Modeling with an Application to Time Series Forecasting.

CHAIRMAN OF ADVISORY COMMITTEE

Dr. Tep Sastri

SOCIAL CONTRIBUTION

- Dr. Ramirez-Beltran funded the "Mayaguez Soccer Club" on February 1989. This club was composed by 60 members. He was the Head of the Director Board of this Club during four years.
- Dr. Ramirez-Beltran funded the "Asociación de Balompié del Suroeste de Puerto Rico," on March 1990. This association included the following towns: Mayaguez, Cabo Rojo, Añasco, Aguada, Aguadilla, San German, Hormigueros y Lajas. He was the President of this association during the period from March 1990 to May 1993.

SELECTED TECHNICAL REPORTS

1. Ramirez-Beltran, N.D., **"Optimization and Neural Networks to Reduce Lot-End Costs,"** Final Report, *Abbott Diagnostics Inc.*, Barceloneta Puerto Rico, January, 1999.
2. Ramirez-Beltran, N.D., **"Application of Neural Networks to Chemical Process Control,"** Final Report, *Abbott Chemical Inc.*, Barceloneta Puerto Rico, September, 1996. Grant No. G-94-04.
3. Ramirez-Beltran, N.D., **"Time Series Models and Neural Networks to Control and Forecast the Surface Water Pollution in Puerto Rico,"** final report, *U.S. Department of the Interior*, Washington, DC., May, 1995. Grant No. G-2043-05.
4. Ramirez-Beltran, N.D., **"Neural Networks for On-Line Process Monitoring,"** Annual Report, *INDUNIVE*, June, 1995. Grant No. G-94-04.
5. Ramirez-Beltran, N.D., **"Probability Distribution for the Ratio of Two Means,"** Final Report, *Abbott Diagnostics, Inc.*, Barceloneta, PR, December, 1993. Grant No. G-92-03.

6. Ramirez-Beltran, N.D., "**Prediction of Water Use in Puerto Rico, Phase I: Mayaguez,**" Final Technical Report, Grant No. 14-08-0001-G-2043, *Office of Water Resources Research, U.S. Department of the Interior*, Washington, DC., May, 1993.
7. Ramirez-Beltran, N.D. "**Inverse Prediction Intervals for Calibration Curves.**" Final Report, *Abbott Diagnostic, Inc.*, Barceloneta, PR, January, 1992. Grant No. G-91-02.
8. Sastri, T., and N. D. Ramirez Beltran. "**An On-line Adaptive Peak-Demand Prediction Approach for Efficient Urban-Water Resources Management.**" *Final Report National Science Foundation* Grant ECE-8504772, March 1988.

Carlos Rinaldi, Ph.D.

Associate Professor of Chemical Engineering
University of Puerto Rico at Mayagüez, PO Box 9046, Mayagüez, PR 00681
Office: (787) 832-4040 ext. 3585, Fax: 787-834-3655
Web: <http://academic.uprm.edu/crinaldi/> E-Mail: crinaldi@uprm.edu

Biographical Sketch

Carlos Rinaldi obtained his undergraduate degree in Chemical Engineering from the University of Puerto Rico, Mayagüez, in 1998 with top honors. Later he attended the Massachusetts Institute of Technology where he participated in the David H. Koch School of Chemical Engineering Practice (MSCEP 2001), and completed an MS (2001) and PhD (2002). He was awarded the J. Edward Vivian Award for Exemplary Performance and Commitment to the David H. Koch School of Chemical Engineering Practice. In the summer of 2002 he served as Assistant Station Director for the MIT Practice School in Mitsubishi Chemical Corporation, Mizushima, Japan. In the fall of 2002 he joined the Department of Chemical Engineering at the University of Puerto Rico, Mayagüez, and is currently an Associate Professor. At UPRM, Carlos Rinaldi has been recognized as Distinguished Professor of Chemical Engineering (2003-2004, 2004-2005, 2005-2006), was one of the 2006 Presidential Early Career Award for Scientists and Engineers (PECASE) awardees, and is the leader in a NSF Nanoscale Interdisciplinary Research Team (NIRT) studying the application of magnetic nanoparticles in cancer treatment. Dr. Rinaldi's research interests are in nanostructured materials, particularly systems with dispersed magnetic nanoparticles. Students in his laboratory work on magnetic nanoparticle suspension hydrodynamics and rheology, magnetic nanoparticle based sensors, and magnetic fluid hyperthermia (a novel form of cancer treatment).

Academic Positions

University of Puerto Rico, Mayagüez	Associate Professor, Department of Chemical Engineering, January 2006 – present
	Assistant Professor, Department of Chemical Engineering, July 2002 – December 2005
University of Puerto Rico, Rio Piedras	Adjunct Professor, Department of Physics, Chemical Physics PhD Program August 2007 – present
Massachusetts Institute of Technology	Lecturer and Assistant Station Director, David H. Koch School of Chemical Engineering Practice, Mitsubishi Chemical Corporation Station, Mizushima, Japan, May 2002 – August 2002

Education

Massachusetts Institute of Technology, Cambridge, Massachusetts
Doctor of Philosophy in Chemical Engineering, June 2002.
Thesis title: "Continuum Modeling of Polarizable Systems"
Thesis Advisor: Prof. Howard Brenner
Completed advanced coursework in continuum electromechanics and transport phenomena

Massachusetts Institute of Technology, Cambridge, Massachusetts
Master of Science in Chemical Engineering, June 2001.

Thesis title: "Body versus Surface Forces in Continuum Mechanics: Is the Maxwell Stress Tensor a Physically Objective Cauchy Stress?"

Thesis Advisor: Prof. Howard Brenner

Massachusetts Institute of Technology, Cambridge, Massachusetts

Master of Science in Chemical Engineering Practice, June 2001.

Awarded J. Edward Vivian Award for Exemplary Performance and Commitment to the David H. Koch School of Chemical Engineering Practice.

University of Puerto Rico, Mayagüez, Puerto Rico

B.Sc. Chemical Engineering, May 1998.

Awarded Luis Stefani Rafucci Prize for academic excellence (top student in graduating class 1998).

Additional coursework in Biology, Immunology, Microbiology, Genetics, and Biochemistry

Honors and Awards

- Presidential Early Career Award for Scientists and Engineers, 2006.
- NSF CAREER Award, 2006-2011
- Excellence in Research Award, Department of Chemical Engineering, UPRM, 2006.
- Distinguished Professor of the Chemical Engineering Department, UPRM, 2003-2004, 2004-2005, 2005-2006
- Janice Lumpkin Future Minority Faculty Award recipient 2001, AIChE – MAC
- J. Edward Vivian Award for Exemplary Performance and Commitment to the MIT David H. Koch School of Chemical Engineering Practice class of 1999-2000.
- National Science Foundation Graduate Research Fellow 1998-2001
- Luis Stefani Rafucci Prize 1998 – awarded to top student in graduating class, UPR-RUM
- Monzon Prize 1998 – awarded to top student in chemical engineering graduating class, UPR-RUM
- NASA Capability Enhancement Program Scholar (1995-1998)
- NACME (National Action Committee for Minorities in Engineering) Scholar (1993-1998)
- National Merit Scholar (declined)

Peer Reviewed Publications

† denotes a graduate student directly supervised by Carlos Rinaldi and ‡ denotes an undergraduate student directly supervised by Carlos Rinaldi

1. A. Chaves[†], and C. Rinaldi, "Analysis and measurements of bulk flow of ferrofluid between coaxial cylinders: Effect of spin viscosity." In preparation.
2. J.H. Sanchez[†], and C. Rinaldi, "Rotational Brownian motion of suspensions of non-interacting magnetized ellipsoidal particles in d.c. and a.c. magnetic fields." In preparation.
3. A. Chaves[†], M. Zahn, and C. Rinaldi, "Spin-up flow of ferrofluids: Asymptotic theory and experimental measurements." accepted for publication in *Physics of Fluids*, February 2008.
4. A.P. Herrera[†], M. Rodríguez-Moya[‡], M. Torres-Lugo, and C. Rinaldi, "Magnetite nanoparticles coated with fluorescent-thermo-responsive polymeric shells for biomedical applications." *Journal of Materials Chemistry*, DOI: 10.1039/b718210d, 2008.
5. D. Varshney, R. N. P. Choudhary, C. Rinaldi, and R. S. Katiyar, "Dielectric dispersion and magnetic properties of Ba-modified $\text{Pb}(\text{Fe}_{1/2}\text{Nb}_{1/2})\text{O}_3$," *Applied Physics A*, **89**(3):193-198, 2007.
6. V. Calero DdelC[†] and C. Rinaldi, "Synthesis and characterization of cobalt substituted ferrite nanoparticles," *Journal of Magnetism and Magnetic Materials*, **314**: 60-67, 2007.

7. C. Rinaldi and A. Chaves[†], “Comment on: ‘Tangential Stresses on the Magnetic Fluid Boundary and Rotational Effect,’” *Magnetohydrodynamics*, **43**(1):135-141, 2007.
8. R. N. P. Choudhury, C. Rodríguez, P. Battacharya, C. Rinaldi, and R. S. Katiyar, “Low frequency dielectric dispersion and magnetic properties of La, Gd modified $\text{Pb}(\text{Fe}_{1/2}\text{Ta}_{1/2})\text{O}_3$ multiferroics,” *Journal of Magnetism and Magnetic Materials*, **313**: 253-260, 2007.
9. A. Chaves[†], F. Gutman[‡], and C. Rinaldi, “Torque and Bulk Flow of a Ferrofluid in an Annular Gap Subjected to a Rotating Magnetic Field,” *ASME Journal of Fluids Engineering*, **129**(4):412-422, 2007.
10. A. Chaves[†], C. Rinaldi, S. Elborai, X. He, and M. Zahn, “Bulk flow in ferrofluids in a uniform rotating magnetic field,” *Physical Review Letters*, **96**(19): 194501, 2006.
11. C. Rinaldi, A. Chaves[†], S. Elborai, X. He, and M. Zahn, “Magnetic fluid rheology and flows,” *Current Opinion in Colloid & Interface Science*, **10**: 141-157, 2005.
12. M.S. Tomar, S.P. Singh, O. Perales-Perez, R.P. Guzman, E. Calderon[†], and C. Rinaldi-Ramos, “Synthesis and magnetic properties behavior of nanostructured ferrites for spintronics,” *Microelectronics Journal*, **36**: 475-479, 2005.
13. A.P. Herrera[†], O. Resto, J. G. Briano, and C. Rinaldi, “Synthesis and agglomeration of gold nanoparticles in reverse micelles,” *Nanotechnology* **16**: S618-S625, 2005.
14. C. Rinaldi, F. Gutman[‡], X. He, A.D. Rosenthal, M. Zahn, “Torque measurements on ferrofluid cylinders in rotating magnetic fields,” *Journal of Magnetism and Magnetic Materials*, **289C**: 307-310, 2005.
15. T. Franklin, C. Rinaldi, J.M.W. Bush, and M. Zahn, “Deformation of ferrofluid sheets due to an applied magnetic field transverse to jet flow,” *Journal of Visualization*, **7**(3):175, 2004.
16. C. Lorenz, C. Rinaldi and M. Zahn, “Hele-Shaw ferrohydrodynamics for simultaneous in-plane rotating and vertical DC magnetic fields,” *Journal of Visualization*, **7**(2): 109, 2004.
17. A.D. Rosenthal, C. Rinaldi, and M. Zahn, “Torque measurements in spin-up flow of ferrofluids.” *ASME Journal of Fluids Engineering*, **126**(2): 198-205, 2004.
18. C. Rinaldi and M. Zahn, “Ferrohydrodynamic instabilities in DC magnetic fields,” *Journal of Visualization*, **7**(1): 8, 2004.
19. C. Rinaldi and M. Zahn, “Effects of spin viscosity on ferrofluid flow profiles in alternating and rotating magnetic fields,” *The Physics of Fluids*, **14**(8): 2847-2870, 2002.
20. C. Rinaldi and M. Zahn, “Effects of spin viscosity on ferrofluid duct flow profiles in alternating and rotating magnetic fields” *Journal of Magnetism and Magnetic Materials*, **252**: 172-175, 2002.
21. C. Rinaldi and H. Brenner, “Body versus surface forces in continuum mechanics: Is the Maxwell stress tensor a physically objective Cauchy stress?” *Physical Review E*, **65**(3): 036615, 2002.

Encyclopedia and Book Chapters

[†] denotes a graduate student directly supervised by Carlos Rinaldi and [‡] denotes an undergraduate student directly supervised by Carlos Rinaldi

1. C. Barrera, C. Rinaldi, M. Satcher, and J. P. Hinestroza, “Electrospun Nanofibers with Magnetic Domains for Smart Tagging of Textile Products,” in *Handbook of Nanoscience, Engineering, and Technology, Second Edition*, W. A. Goddard III, D. W. Brenner, S. E. Lyshevski, G. J. Iafrate, Eds., CRC Press, Taylor and Francis Group, Boca Raton, FL, 2007.
2. V. L. Calero-DdelC[†], C. Rinaldi, M. Zahn, “Magnetic fluid and magnetic nanoparticle based sensors,” in *Encyclopedia of Sensors*, C. A. Grimes, E. C. Dickey, and M. V. Pishko, Eds., American Scientific Publishers, Vo. 5, pp. 389-401, 2006.

3. C. Rinaldi, T. Franklin, M. Zahn, and T. Cader, “Applications of Magnetic Fluids Containing Magnetic Nanoparticles.” *Encyclopedia of Nanoscience and Nanotechnology*, J.A. Schwarz, C. Contescu, and K. Putyera, Editors. Marcel Dekker, 2004.

Conference Proceedings

† denotes a graduate student directly supervised by Carlos Rinaldi and ‡ denotes an undergraduate student directly supervised by Carlos Rinaldi

1. C. Rinaldi, C. Barrera[†], and J.P. Hinestroza, “Electrospun Magnetic Nanofibers with Anti-Counterfeiting Applications,” 2006 NSF Design, Service, and Manufacturing Grantees and Research Conference, sponsored by the National Science Foundation, July 24-27, 2006.
2. A. Chaves[†], F. Gutman[‡], and C. Rinaldi, “Magnetorheological Measurements in Suspensions of Magnetic Nanoparticles,” Paper IMECE2005-82897, International Mechanical Engineering Conference and Exposition, sponsored by the American Institute of Mechanical Engineers, November 5-11, 2005.
3. C. Barrera[†], T. Gould, K. Hyde, G. Montero, J.P. Hinestroza, and C. Rinaldi, “Electrospun Magnetic Nanofibers with Anti-Counterfeiting Applications,” Paper IMECE2005-82899, International Mechanical Engineering Conference and Exposition, sponsored by the American Institute of Mechanical Engineers, November 5-11, 2005.
4. A.P. Herrera[†], E. Vicuña, C. Rinaldi, M.E. Castro, L. Sola, R. Irizarry and J.G. Briano, “Growth Kinetics of Gold Nanoparticles in Reverse Micelles,” *Nanotech 2004*, 3, pp. 391 – 394, 2004
5. C. Rinaldi, X. Hei, A. Rosenthal, T. Franklin, C. Lorenz, and M. Zahn, “Rheology and Behavior of Magnetic Fluids in Alternating/Rotating Magnetic Fields.” Paper FEDSM03-45039, *Proceedings of the 4th ASME/JSME Joint Fluids Engineering Conference and 2003 ASME Fluids Engineering Division Summer Meeting*, Honolulu, Hawaii, 2003.
6. C. Rinaldi, A.D. Rosenthal, J.-H. Lee, T. Franklin, and M. Zahn, “Ferrohydrodynamics in time-varying magnetic fields,” Paper IMECE-32275, *Proceedings of the Symposium on Rheology and Fluid Mechanics of Nonlinear Materials*, International Mechanical Engineering Conference and Exposition, sponsored by the American Institute of Mechanical Engineers, November 17-22, 2002.
7. C. Rinaldi, L.A. Estévez, D. Nicholson, M. Maddox and K.E. Gubbins, "Monte Carlo Simulations of Adsorption of Nitrogen/Methane Mixtures in Zeolites", *Proceedings of the Fifth World Congress of Chemical Engineering*, Vol. III, pp. 885-890, 1996.

Invited Seminars

1. “*Magnetic Nanoparticles as a Novel Tool in Cancer Treatment.*” Department of Chemistry, University of Puerto Rico Rio Piedras, PR. October 29, 2007.
2. “*Magnetic Nanoparticles as a Novel Tool in Cancer Treatment.*” Biology Department, University of Puerto Rico, Mayagüez, PR. October 16, 2007.
3. “*How to Write Successful Proposals.*” AGEP-PR Program at the University of Puerto Rico, Mayagüez. Mayagüez, PR. July 10, 2007.
4. “*Introduction to Nanotechnology.*” BETTeR-IC Summer Camp for High School Students, Biology Department, University of Puerto Rico, Mayagüez, PR. July 9, 2007.
5. “*Response of Suspensions of Magnetic Nanoparticles to Time-Varying Magnetic Fields.*” University of Puerto Rico, Mayagüez Department of Mechanical Engineering, Mayagüez, PR. March 30, 2007.
6. “*Response of Suspensions of Magnetic Nanoparticles to Time-Varying Magnetic Fields.*” Purdue University School of Chemical Engineering, West Lafayette, IN. March 6, 2007.

7. *"Preparing a Competitive Research Proposal."* AGEPR-PR Program at the University of Puerto Rico, Mayagüez. Mayagüez, PR. December 5, 2006.
8. *"Body Couple Induced Flows and Torques in Ferrofluids."* National Institutes of Standards and Technology, Center for Neutron Research, Gaithersburg, MD. October 18, 2006.
9. *"Body Couple Induced Flows and Torques in Ferrofluids."* Texas A&M University Department of Chemical Engineering, College Station, TX. October 6, 2006.
10. *"Preparing a Competitive Research Proposal."* AGEPR-PR Program at the University of Puerto Rico, Mayagüez. Mayagüez, PR. May 11, 2006.
11. *"Body Couple Induced Flows and Torques in Ferrofluids."* Benjamin Levich Institute for Physicochemical Hydrodynamics, City College of New York, New York City, NY. April 10, 2006.
12. *"Comments and Pointers on Becoming a Successful Researcher."* 2005 Puerto Rico EPSCoR Annual Conference, Panel on *Pathways to Achieve Competitiveness in Research: Case studies of faculty that have achieved competitiveness early in their careers.* Rio Grande, PR. September 2005.
13. *"Studies of Torque and Flow in Magnetic Nanoparticle Suspensions."* University of South Florida Department of Chemical Engineering, Tampa, FL. September 2005.
14. *"Nanotechnology Research at the University of Puerto Rico, Mayagüez."* PRTEC2005, Mayagüez, PR. April 21, 2005.
15. *"Magnetic Nanoparticles as a Novel Tool for Cancer Treatment."* First Puerto Rico Transdisciplinary Research Meeting, San Juan, PR. December 10, 2004.
16. *"One Academic's Career Path."* Massachusetts Institute of Technology Summer Research Program, Cambridge, MA. August 13, 2004.
17. *"Principles of Rheology in Plastics Processing."* Forum for Innovation, San Juan, PR. May 12-14, 2004.
18. *"Rheology in Plastics Extrusion."* Society of Plastics Engineers Puerto Rico Chapter Monthly Meeting, Añasco, PR. March 2004.
19. *"An Academic's Career Path: Past, Present, and Future Research and Education of a Puerto Rican 'Wannabe'."* University of Puerto Rico Cayey Campus NIH RISE Program, Cayey, PR. February 2004.
20. *"Rheology and Behavior of Magnetic Fluids in Alternating/Rotating Magnetic Fields."* University of South Carolina Department of Chemical Engineering, Columbia, SC. October 2003.
21. *"Ferrofluid Phenomena in DC and AC Magnetic Fields."* John D. Miles Lecture Series, University of Notre Dame, Notre Dame, IN. April 2002.
22. *"Spin-Magnetization Coupling in Spin-Up Flows of Ferrofluids."* Department of Chemical Engineering, University of Puerto Rico, Mayagüez, PR. March 2002.
23. *"Electro/Ferrohydrodynamic Flows and Instabilities."* Department of Chemical Engineering, University of Puerto Rico, Mayagüez, PR. March 2002.

Presentations at National/International Meetings

1. *"Magnetically and Thermally Active Nanoparticles for Cancer Treatment,"* poster at the 2007 NSF Nanoscale Science and Engineering Grantees Conference, Washington D.C.. December 3-7, 2007.
2. *"Experimental and Theoretical Study of Suspensions of Magnetic Nanoparticles in an Annular Gap Subjected to a Rotating Magnetic Field,"* poster at the 2006 AIChE Annual Meeting Poster Session in Fluid Mechanics, San Francisco, CA. November 13, 2006.

3. *“Response of Suspensions of Magnetic Nanoparticles to Time-Varying Magnetic Fields.”* Plenary at the *Symposium on Electric and Magnetic Phenomena in Micro- and Nano-Scale Systems*, 2006 International Mechanical Engineering Congress and Exposition, Chicago, IL, November 6, 2006.
4. *“Electrospun Magnetic Nanofibers with Anti-Counterfeiting Applications,”* 2006 NSF Design, Service, and Manufacturing Grantees and Research Conference, sponsored by the National Science Foundation, July 24-27, 2006.
5. *“Polymer Nanofibers with Embedded Magnetic and Photocatalytic Nanoparticles,”* TechTextil 2006 Conference. Atlanta, GA. March 28-30, 2006.
6. *“Magnetorheological Measurements in Suspensions of Magnetic Nanoparticles,”* 2005 ASME Annual Meeting. Orlando, FL. November 5-11, 2005.
7. *“Electrospun Magnetic Nanofibers with Anti-Counterfeiting Applications,”* 2005 ASME Annual Meeting. Orlando, FL. November 5-11, 2005.
8. *“Magnetically Driven Surface Flows in Ferrofluids,”* 2005 AIChE Annual Meeting. Cincinnati, Ohio. October 30 – November 4, 2005.
9. *“Magnetorheological Measurements in Suspensions of Magnetic Nanoparticles,”* 2005 AIChE Annual Meeting. Cincinnati, Ohio. October 30 – November 4, 2005.
10. *“Magnetorheological Measurements in Suspensions of Magnetic Nanoparticles,”* 2005 Society of Rheology Meeting. Vancouver, Canada, October 17-20, 2005.
11. *“Electrospun Nanofibers with Self-Assembled Magnetic Domains,”* 2005 Textile Institute Annual World Conference. Raleigh NC, March 20-25, 2005.
12. *“Magnetoviscosity and Torque Measurements on Ferrofluid Cylinders in Rotating Magnetic Fields.”* 2004 AIChE Annual Meeting. Austin, TX. November 2004.
13. *“Magnetoviscosity and Torque Measurements on Ferrofluid Cylinders in Rotating Magnetic Fields.”* 10th International Conference on Magnetic Fluids held in Guarujá, Brazil. August 2004.
14. *“Magnetic Nanoparticles: Fundamentals to Applications.”* 2004 DoE/NSF EPSCoR Conference, Argonne National Laboratories, Argonne, IL. June 2004.
15. *“Rheology and Behavior of ‘Smart’ Complex Fluids: Suspensions of Magnetic Nanoparticles.”* 15th AAAS/PR-EPSCoR Annual Meeting & PRSGCS 2nd Congress on Integrating NASA Research & Education in Puerto Rico, San Juan, PR. November 2003.
16. *“Rotating Magnetic Field Effects in Suspensions of Magnetic Nanoparticles.”* Frontiers of Nanoengineering Conference, Universidade Estadual de Campinas, Campinas, Brazil. October 2003.
17. *“Rheology and Behavior of Magnetic Fluids in Alternating/Rotating Magnetic Fields.”* Forum on Functional Fluids, part of the 4th ASME/JSME Joint Fluids Engineering Conference and 2003 ASME Fluids Engineering Division Summer Meeting, Honolulu, HI USA. July 2003.
18. *“Ferrohydrodynamics in Time-Varying Magnetic Fields.”* 2002 ASME International Mechanical Engineering Congress and Exposition, New Orleans, LA USA. November 2002.
19. *“Thermodynamics of Polarizable Systems in External Fields.”* 2002 Annual AIChE Conference, Indianapolis, IN USA. November 2002.
20. *“Spin-Magnetization Coupling in Spin-Up Flow of Ferrofluids.”* 14th U.S. National Congress of Theoretical and Applied Mechanics, Blacksburg, VA USA. June 2002.
21. *“Effects of Spin Viscosity on Ferrofluid Flow Profiles in Alternating and Rotating Magnetic Fields.”* 2001 Annual AIChE Conference, Reno, NV USA. November 2001.
22. *“Body vs. Surface Forces in Microstructured Continua: Is the Maxwell Stress Physically Objective?”* 2000 Annual AIChE Conference, Los Angeles, CA USA. November 2000.

23. "Mathematical Simulation of Solute Transport in the Hollow Fiber-Type Artificial Pancreas Device." 1997 Annual AIChE Conference, Los Angeles, CA USA. November 1997. Awarded third place in the Food Pharmaceuticals and Bioengineering Division poster competition.
24. "Mass Transport in the Hollow-Fiber Type Artificial Pancreas Device." 5th Annual National Science Foundation Alliance for Minority Participation Research Conference, Las Cruces, NM USA. July 1997.
25. "Monte Carlo Simulations of Adsorption of Nitrogen/Methane Mixtures in Zeolites." 5th World Congress of Chemical Engineering, San Diego, CA USA. July 1996.

Presentations by Students

† denotes a graduate student directly supervised by Carlos Rinaldi and ‡ denotes an undergraduate student directly supervised by Carlos Rinaldi

1. "Synthesis and Characterization of Carboxymethyl Dextran Coated Magnetite Nanoparticles," poster by Veronica Díaz-Rodríguez[‡], Magda Latorre, Madeline Torres-Lugo, and Carlos Rinaldi. Annual Biomedical Research Conference for Minority Students, Austin, TX. November, 2007.
2. "Magnetite (Fe_3O_4) Nanoparticles Functionalized with Crosslinked Dextran and Fluorescent-Thermoresponsive Polymeric Shells for Application in Magnetic Fluid Hyperthermia," poster by Adriana P. Herrera[†], Hector L. Rodríguez, Magda Latorre, Madeline Torres-Lugo, and Carlos Rinaldi. 2007 Puerto Rico EPSCoR Meeting, Rio Grande, Puerto Rico. May 24, 2007.
3. "Characterization of Cobalt-Substituted Ferrite Nanoparticles for Use in Sensors," talk by Victoria L. Calero[†] and Carlos Rinaldi. 2006 AIChE Annual Meeting, San Francisco, CA. November 13, 2006.
4. "Surface Initiated Polymerization on Magnetite Nanoparticles with Novel Fluorescent-Thermo Responsive Polymeric Shells for Biomedical Applications," talk by Adriana Herrera[†], María C. Rodríguez, and Carlos Rinaldi. 2006 AIChE Annual Meeting, San Francisco, CA. November 13, 2006.
5. "Studies of Ferrite Based Magnetic Nanoparticle Transport Mechanisms and Magnetocytolysis Effects on a Model Cell Cultures," poster by Hector L. Rodríguez[†], Adriana Herrera[†], Carlos Rinaldi, and Madeline Torres-Lugo. 2006 AIChE Annual Meeting Materials Science and Engineering Division Poster Session, San Francisco, CA. November 13, 2006.
6. "Surface Modification of Cobalt Substituted Ferrite Nanoparticles," poster by Victoria L. Calero[†] and Carlos Rinaldi. 2006 AIChE Annual Meeting Particle Technology Forum Poster Session, San Francisco, CA. November 13, 2006.
7. "Determination of the Magnetic Anisotropy Constant for Magnetic Nanoparticles Using a Debye Model," poster by Victoria L. Calero[†] and Carlos Rinaldi. 2006 AIChE Annual Meeting Nanoscale Science and Engineering Poster Session, San Francisco, CA. November 13, 2006.
8. "Surface Modification of Magnetite (Fe_3O_4) Nanoparticles for Cancer Treatment," poster by Adriana Herrera[†], Melissa Haber, Hector Rodríguez, Madeline Torres-Lugo, and Carlos Rinaldi. 2006 AIChE Annual Meeting Nanoscale Science and Engineering Poster Session, San Francisco, CA. November 13, 2006.
9. "Magnetic Nanoparticles with Thermoresponsive Polymeric Shells for Biomedical Applications," poster by Maria Rodríguez-Moya[‡], Adriana Herrera[†], Madeline Torres-Lugo, and Carlos Rinaldi. 2006 AIChE Annual Meeting Student Poster Competition, San Francisco, CA. November 13, 2006.
10. "Structure Modification of Magnetite (Fe_3O_4)-Crosslinked Dextran Nanoparticles for Cellular Uptake Optimization," poster by Melissa Haber[‡], Adriana Herrera[†], Hector L. Rodríguez,

- Madeline Torres-Lugo, and Carlos Rinaldi. 2006 AIChE Annual Meeting Student Poster Competition, San Francisco, CA. November 13, 2006.
11. "Synthesis of Magnetic Nanoparticles and Suspension in Polymeric Solutions," poster by Carmen Costales[‡], Carola Barrera[†], and Carlos Rinaldi. 2006 AIChE Annual Meeting Student Poster Competition, San Francisco, CA. November 13, 2006.
 12. "Characterization of Cobalt-Substituted Ferrite Nanoparticles for Use in Sensors," talk by Victoria L. Calero[†] and Carlos Rinaldi. Advances in the Chemical Sciences and Engineering Symposium, Dorado, PR. November 3-4, 2006.
 13. "Surface Modification of Magnetite Nanoparticles with Novel Fluorescent-Thermo Responsive Polymeric Shells for Biomedical Applications," talk by Adriana Herrera[†], María C. Rodríguez, and Carlos Rinaldi. Advances in the Chemical Sciences and Engineering Symposium, Dorado, PR. November 3-4, 2006.
 14. "Experimental and Theoretical Study of Suspensions of Magnetic Nanoparticles in Cylindrical Container and Annular Gap Subjected to a Rotating Magnetic Field," talk by Arlex Chaves[†] and Carlos Rinaldi. Advances in the Chemical Sciences and Engineering Symposium, Dorado, PR. November 3-4, 2006.
 15. "Studies of Ferrite Based Magnetic Nanoparticle Transport Mechanisms and Magnetocytolysis Effects on a Model Cell Cultures," talk by Hector L. Rodríguez[†], Adriana Herrera[†], Carlos Rinaldi, and Madeline Torres-Lugo. Advances in the Chemical Sciences and Engineering Symposium, Dorado, PR. November 3-4, 2006.
 16. "Dispersion of Magnetic Nanoparticles in Liquid Crystals," poster by Darlene I. Santiago-Quiñones[†] and Carlos Rinaldi. Advances in the Chemical Sciences and Engineering Symposium, Dorado, PR. November 3-4, 2006.
 17. "Rotational Brownian Dynamics of Tri-axial Ellipsoidal Magnetic Particles in DC-AC Magnetic Fields," poster by Jorge H. Sanchez[†] and Carlos Rinaldi. Advances in the Chemical Sciences and Engineering Symposium, Dorado, PR. November 3-4, 2006.
 18. "Magnetic Nanoparticles with Thermoresponsive Polymeric Shells for Biomedical Applications," poster by Maria Rodríguez-Moya[‡], Adriana Herrera[†], Madeline Torres-Lugo, and Carlos Rinaldi. Advances in the Chemical Sciences and Engineering Symposium, Dorado, PR. November 3-4, 2006.
 19. "Structure Modification of Magnetite (Fe_3O_4)-Crosslinked Dextran Nanoparticles for Cellular Uptake Optimization," poster by Melissa Haber[‡], Adriana Herrera[†], Hector L. Rodríguez, Madeline Torres-Lugo, and Carlos Rinaldi. Advances in the Chemical Sciences and Engineering Symposium, Dorado, PR. November 3-4, 2006.
 20. "Synthesis of Magnetic Nanoparticles and Suspension in Polymeric Solutions," poster by Carmen Costales[‡], Carola Barrera[†], and Carlos Rinaldi. Advances in the Chemical Sciences and Engineering Symposium, Dorado, PR. November 3-4, 2006.
 21. "Characterization and Surface Modification of Cobalt-Substituted Ferrite Nanoparticles," talk by Victoria Calero-DdelC. 2006 American Chemical Society Fall Meeting, San Francisco, CA. September 10-14, 2006.
 22. "Magnetic Nanoparticles with Thermoresponsive Polymeric Shells for Biological Applications," poster by Adriana Herrera[†], Juan Carlos Cruz[†], and Maria del Carmen Rodríguez[‡]. Second Transdisciplinary Research Conference, Mayagüez, PR. May 5, 2006.
 23. "Functionalization of Magnetite (Fe_3O_4) Nanoparticles for Cancer Treatment," poster by Melissa Haber[‡] and Adriana Herrera[†]. Second Transdisciplinary Research Conference, Mayagüez, PR. May 5, 2006.

24. "Measurements of Torque and Flow of a Suspension of Magnetic Nanoparticles in an Annular Gap Subjected to a Rotating Magnetic Field," poster by Arlex Chaves[†]. Second Transdisciplinary Research Conference, Mayagüez, PR. May 5, 2006.
25. "Surface Modification of Cobalt-Substituted Ferrite Nanoparticles," poster by Victoria Calero[†]. Second Transdisciplinary Research Conference, Mayagüez, PR. May 5, 2006.
26. "Surface Modified Magnetic Nanoparticles with Poly(Ethylene Oxide)," poster by Carola Barrera[†] and Ramon Ramos[‡]. Second Transdisciplinary Research Conference, Mayagüez, PR. May 5, 2006.
27. "Cytotoxicity and Cellular Transport of Magnetite Nanoparticles Utilizing the Caco-2 Cell Model," talk by Hector L. Rodríguez (co-supervised with Prof. Madeline Torres-Lugo). 2005 AIChE Annual Meeting. Cincinnati, Ohio. October 30 – November 4, 2005.
28. "Electrospun Magnetic Nanofibers with Anti-Counterfeiting Applications," talk by Carola Barrera[†]. 2005 AIChE Annual Meeting. Cincinnati, Ohio. October 30 – November 4, 2005.
29. "Synthesis and Functionalization of Magnetite (Fe_3O_4) Nanoparticles for Cancer Treatment," talk by Adriana Herrera[†]. 2005 AIChE Annual Meeting. Cincinnati, Ohio. October 30 – November 4, 2005.
30. "Synthesis and Characterization of Nickel Nanoparticles," poster by Claribel Acevedo[‡]. 2005 AIChE Annual Meeting. Cincinnati, Ohio. October 30 – November 4, 2005. Awarded First Place in the Annual Student Poster Competition, Materials Division.
31. "Measurements of Torque and Flow in Magnetic Nanoparticle Suspensions (Ferrofluids)," poster by Richard Lorenzo[‡]. 2005 AIChE Annual Meeting. Cincinnati, Ohio. October 30 – November 4, 2005. Awarded Second Place in the Annual Student Poster Competition, Materials Division.
32. "Normal Field Instability in Magnetorheological Fluids," poster by Emmanuel Sanchez[‡]. 2005 AIChE Annual Meeting. Cincinnati, Ohio. October 30 – November 4, 2005.
33. "Photocatalytic Degradation of Polyethylene-Oxide Nanofibers Using TiO_2 Nanoparticles," poster by Mildred M. Mercado and Rebecca Lebron. 2005 AIChE Annual Meeting. Cincinnati, Ohio. October 30 – November 4, 2005.
34. "Magnetite (Fe_3O_4) Nanoparticles for Magnetocytolysis," by Adriana P. Herrera[†]. Annual AAAS Caribbean Division Conference, Poster Session. Bayamon, PR. October 2005. Awarded second place in the Robert Lawrus Award Competition.
35. "Electrospinning of Magnetic Nanofibers with Anti-Counterfeiting Applications," by Carola Barrera[†]. 2005 Emerge Workshop, Poster Session. Atlanta, GA. September 2005.
36. "Synthesis of $Mn_xZn_{1-x}Fe_2O_4$ Nanoparticles for Magnetocaloric Applications," by Eric Calderon[†]. 2005 Puerto Rico EPSCoR Conference Poster Session. Rio Grande, PR. September 2005.
37. "Size Controlled Synthesis of $CoFe_2O_4$ Nanoparticles for Data Storage," by Eric Calderon[†]. 2005 Puerto Rico EPSCoR Conference Poster Session. Rio Grande, PR. September 2005.
38. "Characterization of Cobalt Substituted Ferrite Nanoparticles," by Victoria Calero[†]. IX Sigma Xi Student Poster Day, Mayagüez, PR, April 21, 2005.
39. "Electrospinning of Magnetic Nanofibers," by Carola Barrera[†]. IX Sigma Xi Student Poster Day, Mayagüez, PR, April 21, 2005.
40. "Synthesis and Functionalization of Magnetite (Fe_3O_4) Nanoparticles for Magnetocytolysis," by Adriana Herrera[†]. IX Sigma Xi Student Poster Day, Mayagüez, PR, April 21, 2005.
41. "Magnetorheology in Rotating Magnetic Fields," by Arlex Chaves[†]. IX Sigma Xi Student Poster Day, Mayagüez, PR, April 21, 2005.

42. *“Torque Calculations on Ferrofluid Cylinders in Rotating Magnetic Fields,”* by Fernando Gutman[‡]. 1st Transdisciplinary Research Conference. December 10, 2004, San Juan, Puerto Rico.
43. *“Synthesis, Characterization, and Functionalization of CoFe₂O₄ Nanoparticles,”* by Luis Fuentes[‡]. 1st Transdisciplinary Research Conference. December 10, 2004, San Juan, Puerto Rico.
44. *“Synthesis and Surface Modification of Superparamagnetic Cobalt Ferrite Nanoparticles,”* by Victoria Calero[†]. 1st Transdisciplinary Research Conference. December 10, 2004, San Juan, Puerto Rico.
45. *“Measurement of Synthesis and Growth Kinetics of Gold Nanoparticles in Reverse Micelles,”* by Adriana P. Herrera[†]. 1st Transdisciplinary Research Conference. December 10, 2004, San Juan, Puerto Rico.
46. *“Synthesis and Functionalization of Magnetite Nanoparticles for Cancer Treatment,”* by Vimalier Reyes[‡]. 1st Transdisciplinary Research Conference. December 10, 2004, San Juan, Puerto Rico.
47. *“Synthesis of Magnetite Magnetic Fluid,”* by Joelia Vasquez[‡] and Victor Martinez[‡]. 1st Transdisciplinary Research Conference. December 10, 2004, San Juan, Puerto Rico.
48. *“Torque Calculations on Ferrofluid Cylinders in Rotating Magnetic Fields,”* by Fernando Gutman[‡]. 2004 AIChE Annual Meeting Student Poster Competition. Awarded 1st Place in the Particle Technology, Transport and Energy Division.
49. *“Synthesis, Characterization, and Functionalization of CoFe₂O₄ Nanoparticles,”* by Luis Fuentes[‡]. 2004 AIChE Annual Meeting Student Poster Competition.
50. *“Synthesis and Surface Modification of Superparamagnetic Cobalt Ferrite Nanoparticles,”* by Victoria Calero[†]. 2004 AIChE Annual Meeting Nanoscale Science and Engineering Forum Poster Session.
51. *“Measurement of Synthesis and Growth Kinetics of Gold Nanoparticles in Reverse Micelles,”* by Adriana P. Herrera[†]. 2004 AIChE Annual Meeting Nanoscale Science and Engineering Forum Poster Session. Awarded first place.
52. *“Measurement of Synthesis and Growth Kinetics of Gold Nanoparticles in Reverse Micelles”* by Adriana P. Herrera[†]. IXth Sigma Xi Student Poster Day, University of Puerto Rico, Mayagüez, PR. April 2004.
53. *“Synthesis of Cobalt Ferrite Nanoparticles for Biosensor Applications”* by Arturo Marin[‡]. 24th Puerto Rico Interdisciplinary Scientific Meeting and 39th ACS Junior Technical Meeting, University of Puerto Rico, Humacao, PR. March 2004.
54. *“Rheological Study of Ferrofluid Flow in an Applied Uniform Rotating Magnetic Field – Preliminary Results”* by Fernando Gutman[‡]. 24th Puerto Rico Interdisciplinary Scientific Meeting and 39th ACS Junior Technical Meeting, University of Puerto Rico, Humacao, PR. March 2004.
55. *“Measurement and Synthesis and Growth Kinetics of Gold Nanoparticles in Reverse Micelles”* by Almaris Rosado[‡]. 2003 American Institute of Chemical Engineers Annual Meeting Student Poster Competition, San Francisco, CA. November 2003.

Research Advising

Graduate research advisor for the following MS and PhD theses:

Carola Barrera, PhD thesis in Chemical Engineering, in progress.

Victoria L. Calero Diaz del Castillo, MS thesis in Chemical Engineering, *“Synthesis and Characterization of Cobalt-Substituted Ferrite Nanoparticles Using Reverse Micelles,”* September 2005. PhD thesis in progress.

Arlex Chaves, PhD thesis in Chemical Engineering, "*Magnetorheology in Rotating Magnetic Fields*," July 2007.

Edwin de la Cruz, PhD thesis in Chemistry, in progress.

Adriana P. Herrera, MS thesis in Chemical Engineering, "*Synthesis and Agglomeration of Gold Nanoparticles in Reverse Micelles*," June 2005. PhD Thesis in progress.

Jorge H. Sanchez, PhD thesis in Chemical Engineering, in progress.

Darlene Santiago, MS thesis in Chemical Engineering, in progress.

Denisse Soto, PhD thesis in Chemical Engineering, in progress.

Mar Creixell Turon, MS thesis, in progress

Postdoctoral research advisor for:

1. Dr. Magda Latorre Estevez, January 2007 – present

Undergraduate research advisor for 45 undergraduates, 30 of which are women.

Funding Activities

Have prepared and submitted 64 research and education proposals (43 as PI). Of these, 37 have been awarded (30 as PI), including proposal based continuations, for a total of **\$22,014,258** in research and education funding (**\$4,649,354** as PI). The following are selected awarded or pending grants:

1. "*Multifunctional Nanoparticles for Magnetically Actuated siRNA Delivery*," C. Rinaldi coPI. Submitted to the National Institutes of Health, October 2007. Pending review.
2. "*Infrastructure Building Towards an Institute for Functional Nanomaterials (IFN) in Puerto Rico*," C. Rinaldi Senior Personnel and Cluster I Leader. Awarded by the National Science Foundation, June 2007– May 2010. **\$12,900,000**
3. "*Magnetocaloric Effect Using a Magnetic Monodisperse Nanofluid with a Low Curie Temperature for Electronic Cooling Applications*," C. Rinaldi Co-PI. Awarded by the Department of Defense, October 2006 – September 2009. **\$404,127**
4. "*NIRT: Magnetically and Thermally Active Nanoparticles for Cancer Treatment*," C. Rinaldi PI. Awarded by the National Science Foundation, September 2006 – August 2010. **\$1,376,188**
5. "*REU: Research Experiences for Undergraduates and Teachers in Functional and Nanostructured Materials at the University of Puerto Rico, Mayagüez*," C. Rinaldi PI. Awarded by the National Science Foundation, August 2006 – July 2009. **\$249,000**
6. "*Nano-structured Magneto-electric Composites: Design and Development of Multi-functional Devices*," C. Rinaldi Co-PI. Awarded by the Department of Defense EPSCoR Program, July 2006 – June 2009. **\$851,000**
7. "*CAREER: Response of Novel Suspensions of Magnetic Nanoparticles to Time-Varying Magnetic Fields*," C. Rinaldi PI. Awarded by the National Science Foundation, February 2006 – January 2011. **\$401,521**
8. "*Analysis and rheological measurements of suspensions of magnetic nanoparticles in oscillating and rotating magnetic fields*," C. Rinaldi PI. Awarded by the National Science Foundation, September 2005 – August 2007. **\$40,000**
9. "*Synthesis and Dynamic Susceptibility Response of Suspensions of Magnetic Nanoparticles in Liquid Crystals*," C. Rinaldi PI. Awarded by the University of Wisconsin Madison MRSEC as a Seed Project, January 2006 – December 2007. **\$70,000**

10. “NER: Manipulation of the electrospinning of polymer nanofibers using applied magnetic fields,” C. Rinaldi PI. Awarded by the National Science Foundation, August 2005 – July 2007. **\$56,000**
11. “Biosensing Platform Support,” Carlos Rinaldi PI. Awarded by Hewlett Packard Puerto Rico, June – July 2005. **\$5,900**
12. “De-bottlenecking the Electrospinning Process Using Oscillating Magnetic Fields,” C. Rinaldi Co-PI. Awarded by the ITT, June 2005 – May 2006. **\$30,000**
13. “Polymeric fibers with magnetic and photocatalytic nanodomains,” C. Rinaldi PI. Awarded by the PRSGC, March 2005 – February 2006. **\$40,000**
14. “Chemical Engineering refresher course for MSD employees,” C. Rinaldi PI. Awarded by MSD, February – March 2005. **\$12,853.40**
15. “Preliminary studies of magnetite nanoparticle functionalization and transport in Caco-2 cells with application to magnetocytolysis,” C. Rinaldi PI. Awarded by the UPRM MBRS Program, January – December 2005. **\$14,000**
16. “NIRT preliminary research: Studies of magnetite nanoparticle cytotoxicity and transport in Caco-2 cells and magnetic field induced hyperthermia,” C. Rinaldi PI. Awarded by the Puerto Rico NSF EPSCoR, June 2004 – May 2005. **\$20,000**
17. “AC-field rheology in suspensions of magnetically-active particles,” C. Rinaldi PI. Awarded by the American Chemical Society Petroleum Research Fund, September 2004 – August 2006. **\$35,000**
18. “PREM: Synergistic partnership for research and education in functional and nanostructured materials,” C. Rinaldi Senior Personnel. Awarded by the National Science Foundation, April 2004 – March 2009. **\$3,197,777**
19. “Synthesis and rheological characterization of ‘smart’ complex fluids: Suspensions of magnetically-active nanoparticles,” C. Rinaldi PI. Awarded by the National Science Foundation, February 2004 – October 2005. **\$25,500**
20. “Support for Offering Graduate Level Chemical Engineering Courses Through Distance Education Methods Between UPRM and Merck Sharp & Dohme Puerto Rico Operations,” C. Rinaldi PI. Awarded by Merck Sharp and Dohme Puerto Rico Operations, January 2004 – May 2007. **\$130,383**
21. “Synthesis and rheological characterization of ‘smart’ complex fluids: Colloidal dispersions of electrically/magnetically-active nanoparticles,” C. Rinaldi PI. Awarded by Puerto Rico NSF EPSCoR, January 2004 – May 2005. **\$256,007**
22. “MRI: Acquisition of a Magnetic Property Measurement System for nanotechnology and materials science research at the University of Puerto Rico at Mayagüez,” C. Rinaldi PI. Awarded by the National Science Foundation, September 2003 – May 2006. **\$330,127**
23. “Request of two Sloan Scholarships for the Chemical Engineering PhD Program at the UPRM,” C. Rinaldi PI. Awarded by the Sloan Foundation, July 2003 – June 2006. **\$155,000**
24. “Synthesis and characterization of magnetic nanoparticles for biotechnology and MEMS/NEMS applications,” C. Rinaldi PI. Awarded by UPRM Research and Development Center Seed Funds, January – December 2003. **\$9,920**

Service

- Reviewer for: American Chemical Society Petroleum Research Fund, Israel Science Foundation, Journal of the American Ceramics Society, Journal of Applied Mechanics ASME, Journal of Fluids Engineering ASME, Journal of Magnetism and Magnetic Materials, Macromolecular

Materials and Engineering, Materials Chemistry and Physics, Nanotechnology, Physica Status Solidi A, Tribology International, and the US National Science Foundation.

- Session Chair/co-Chair for:
 - *Interfacial Flows*, 2007 AIChE Annual Meeting, Salt Lake City, Utah, November 4, 2007
 - *Applications of Magnetic Nanoparticles in Biotechnology and Biomedicine*, 2007 AIChE Annual Meeting, Salt Lake City, Utah, November 8, 2007.
 - *Manipulation of Nanophases by External Fields*, 2006 AIChE Annual Meeting, San Francisco, CA, November 13, 2006.
 - *Applications of Magnetic Nanoparticles in Biotechnology and Biomedicine*, 2006 AIChE Annual Meeting, San Francisco, CA, November 15, 2006.
 - *Symposium on Electric and Magnetic Phenomena in Micro- and Nano-Scale Systems*, 2006 International Mechanical Engineering Congress and Exposition, Chicago, IL, November 6, 2006.
- Supervised pre-college students Aldo Briano and Leonardo Cuello performing Science Fair projects on the properties of nanoscale gold. These projects won 1st and 3rd place at the district and regional science fairs in 2003, as well as 1st place in the regional science fair in 2004. The work was presented at the 2004 INTEL International Science and Engineering Fair in Portland, Oregon, the 2004 National Junior Science and Humanities Symposium in Maryland, and at the 2004 New England Siemens-Westinghouse Math, Science, and Technology Competition in Cambridge, MA. Aldo Briano continued to work in the laboratory on *in-situ* synthesis of gold nanoparticles in polymeric nanofibers and won 1st place at the 2005 regional science fair and participated in the 2005 INTEL International Science and Engineering Fair in Phoenix, AZ.
- Organized the “Career Development for New Engineering Faculty Workshop,” held February 2, 2007 at UPR-Mayagüez by Prof. Tim Anderson and Dr. Geoffrey Prentice.
- Service as science fair judge in the Southwestern Educational Society science fair in 2003 and the Western Education District Regional Science Fair in 2007.
- Coordinator of the UPRM Chemical Engineering Seminar Series and Merck Sharp and Dohme Lecture Series, May 2006 – present.
- Coordinator of the UPRM Chemical Engineering Graduate Program and President of the Graduate Studies Committee February 2003 to July 2004.
- Engineering faculty judge for UPRM Ethics Bowl competition Spring and Fall 2004.

Professional Membership and Leadership

American Institute of Chemical Engineers (member since 1995)

American Institute of Physics (member since 2001)

Chemical Engineering Graduate Student Council Vice-President, MIT (1999-2000)

Engineer-in-Training (October 27, 2001), registered in Massachusetts and Puerto Rico

Society of Rheology (member since 2001)

Tau Beta Pi (inducted 1996)

Professional/Consulting Experience

Ortho Biologics, Manatí, PR USA

September 2003 – October 2003

Analyzed process flow and pressure drops in chromatography section in laminar flow. Analysis included application of packed-bed flow and residence time distribution models to assess possible process scenarios.

Abbott Puerto Rico Operations, Barceloneta, PR USA

June 2003 – May 2004

Technical consulting for Abbott Environmental Site Services in areas related to fluid flow, transport processes, and material balances.

MEGA Engineering, San Juan, PR USA

December 2000 – May 2004

Preparation and submission of environmental permits to the Puerto Rico Environmental Quality Board (PREQB). Preparation of Emission Source Permits submitted to the PREQB Air Quality program and Spill Prevention Control and Countermeasures Plans (in compliance with CFR-40) submitted to the PREQB Water Quality program.

Mitsubishi Chemical Corporation, Mizushima, Okayama-ken JAPAN June – September 2002

David H. Koch School of Chemical Engineering Practice, MIT, Cambridge, MA USA

Served as *Lecturer and Assistant Station Director* at the MCC station of the MIT Practice School. Supervised four teams, consisting of 2-3 graduate-level engineering students from MIT and Kyoto Institute of Technology, performing research and development work for MCC. Projects focused on film deposition modeling, process refinement and prevention of catalyst deactivation, process modeling of fractionation towers, and technical/economical evaluation of a competitor's processes. Supervisory responsibilities included project identification and development, frequent meetings to discuss project objectives and technical details, weekly formal and informal conferences with MCC clients and student teams, editing of progress and final reports produced by teams, and critical evaluation of each student's performance. Additional responsibilities included planning of informal recreational and cultural activities for groups of 10-15 students from seven different nationalities.

GE Plastics, Mt. Vernon, IN USA

November-December 1999

Used diffuse reflectance profiles to characterize graininess of film texture. Gage repeatability and reproducibility (Gage R&R) studies performed on a new instrument. Used statistical analysis of historical data to select process variables for screening. Performed screening and optimization Design of Experiments (DOE) to determine key process variables. Developed statistical model to predict response within measurement and process variability. This project involved extensive statistical analysis and exposure to the Six Sigma™ philosophy.

Rhône-Poulenc CRIT-Decines, Lyon, FRANCE

September-November 1999

Performed extensive literature review on design of gas-liquid and gas-liquid-solid reactors. Collected correlations to predict axial mixing, pressure drop, gas holdup, and other industrially important aspects of reactor design. Compared a number of reactor types. Applied results to retrofit an existing oxidation reactor train. Critically evaluated the existing kinetic model for the reactions involved.

Rhône-Poulenc CRIT-Decines, Lyon, FRANCE

September-November 1999

Evaluated Aspen Technologies' BATCH PLUS™ version 2.0b. Developed a series of text recipes to demonstrate the capabilities and deficiencies of BATCH PLUS™. Performed calculations to determine if previously identified bugs, inaccuracies, and inefficiencies had been removed from the code. Made detailed recommendations to both Rhône-Poulenc and Aspen Technologies concerning needed improvements in the code. Made recommendations to Rhône-Poulenc on whether BATCH PLUS™ is a worthwhile investment.

GE Plastics, Mt. Vernon, IN USA

August-September 1999

Studied the feasibility and capital investment economics of production of a new polymer using existing facilities in Mt Vernon. Extensive plant personnel interviews were used to gather information on safety, logistics, and operating conditions related to production of the new polymer.

Identified the issues to be addressed for immediate and long-term implementation of production and provided corresponding plans with capital investment estimates.

Biographical Sketch for Pedro I. Rivera-Vega
Department of Electrical and Computer Engineering
University of Puerto Rico, Mayagüez
P.O. Box 9141
Mayagüez, PR 00681
pirvos@ece.uprm.edu

PROFESSIONAL PREPARATION

- Ph.D., Computer Science, University of Florida, 1990
- M.S., Applied Mathematics, University of Puerto Rico, 1980
- B.S., Mathematics, University of Puerto Rico, 1977

PROFESSIONAL APPOINTMENTS

- 08/01-Present Professor, Electrical and Computer Engineering, University of Puerto Rico, Mayaguez, PR
- 08/00-07/01 Professor, Department of Mathematics and Computer Science, UPR, Rio Piedras, PR
- 08/90-07/00 Associate Professor, Department of Mathematics and Computer Science, UPR, Rio Piedras
- 07/88-07/89 Research Assistant, Medical Systems, University of Florida, Gainesville, FL
- 08/83-07/85 Instructor, Department of Physics and Mathematics, UPR, Cayey, PR
- 01/83-07/83 EDP Manager, Department of Natural Resources of PR, San Juan, PR
- 01/81-12/82 Programmer Analyst, University of Puerto Rico, Humacao, PR

PUBLICATIONS

- Gomez-Gutierrez, Juddy A. and Rivera-Vega, Pedro I., "A Framework for Smooth Composition of Choreographies of Web Services", IEEE International Conference on Web Services 2007, July 2007.
- P. I. Rivera-Vega, Y. Qian, and M. Rodriguez-Martinez, "A Peer-to-Peer System to Provide Internet-based Asynchronous Educational Services," *Proceedings of the 6th International Conference on Information Technology Based Higher Education and Training*, Santo Domingo, Dominican Republic, July 7-9, 2005.
- M. Rodriguez-Martinez, P.I. Rivera-Vega, O. Martinez, M. Martinez, and E. Arocho, "Smart Mirrors: Peer-to-Peer Web Services for Publishing Electronic Documents," *Proceedings of the 14th IEEE International Workshop on Research Issues on Data Engineering: Web Services for E-Commerce and E-Government*, March, 2004.
- A. Alvear-Suarez, M. Rodriguez-Martinez, P. I. Rivera-Vega, J. Ferra, and A. Villalain, "Database Middleware System Supporting Remote Sensing Analysis over Distributed Sources," *IASTED 2003*, May 2003.
- P. Salzberg, P.I. Rivera-Vega, and A. Rodríguez, "Network Flow Model for Binary Tomography on Lattices," *International Journal of Intelligent Systems*, Vol. 9 (1998), pp. 147-154.
- Dejter, P.I. Rivera-Vega, and A. Rosa, "On the Decomposition of Complete Graphs into Cycles of the Same Length", *Journal of Combinatorial Mathematics and Combinatorial Computing*, Vol. 16 (1994), pp. 129-152.
- P.I. Rivera-Vega, Ravi Varadarajan, and Shamkant B. Navathe, "Scheduling Data Transfers in Fully Connected Networks," *NETWORKS*, Vol. 22 (1992), pp. 563-588.
- R. Varadarajan and P.I. Rivera-Vega, "An Efficient Algorithm for the File Redistribution Scheduling Problem in Fully Connected Networks," *Congressus Numerantium*, 1992.
- M.R. Emamy-K, P. Guan, and P.I. Rivera-Vega, "On the Characterization of the Maximum Squareless Subgraphs of 5-cube," *Congressus Numerantium*, 1992.
- P.I. Rivera-Vega, R. Varadarajan and S.B. Navathe, "Scheduling Data Redistribution in Distributed Databases," *Proceedings of the 6th IEEE International Conference on Data Engineering*, February 1990, pp.166-173.

SYNERGESTIC ACTIVITIES

- Faculty advisor of the Local Engineering and Sciences ACM Student Chapter in UPR-Mayaguez.
- Reviewer for various technical journals and conferences, including: IEEE Transactions on Computers, Hawaii International Conference on System Sciences, Parallel Processing Letters, CRC : UPR-RUM, and The IASTED International Conference in Information and Knowledge Sharing.
- Member of the IASTED Technical Committee on Information and Knowledge Sharing on 2001 and 2004. Reviewer in different grant programs:
 - FIPI Program : University of Puerto Rico at Río Piedras (1997, 1998)
 - NSF - CISE : review panelist on three occasions during 1997, 1998, 2002, and 2005.
 - NSF – SBIR : review panelist during 2002
- Faculty advisor for several undergraduate students sponsored by the following projects or grants: IAP at UPR-Mayaguez, PR-LSAMP, E-Government Project, and InduSoft Project.
- Evaluator appointed by the Board of Higher Education in Puerto Rico to evaluate a graduate program in e-commerce at the Interamerican University of Puerto Rico, Bayamon, during 2002-2003.

COLLABORATORS AND OTHER AFFILIATIONS

Collaborators: Bienvenido Velez (UPRM) and Manuel Rodriguez-Martinez (UPRM)

Graduate Advisors:

- Ph.D. advisors at the University of Florida: Shamkant B. Navathe (actually at Georgia Tech) and Ravi Varadarajan
- M.S. advisors at the University of Puerto Rico, Rio Piedras: F. Anger and R. Rodriguez.

Professional Organizations: ACM

SUMMARY CURRICULUM VITAE

Rivera Santos, Jorge, Professor

NAME & ACADEMIC RANK:

DEGREES (with fields, institution, and grade):

PhD Civil Engineering (Water Resources), University of Colorado, 1988

MS Civil Engineering (Sanitary Engineering), UPR-RUM, 1982

BS Civil Engineering, UPR-RUM, 1979

Associate Degree in Sciences, UPR-Bayamón, 1975

SERVICE ON FACULTY (including date of original appointment and dates of advancement in rank):

July 2000 to present, Professor, UPR-RUM, Civil Engineering Dept.

June 2000 to July 1992, Associate Professor, UPR-RUM, Civil Eng. Dept.

June 1992 to Jan. 1989, Assistant Professor, UPR-RUM, Civil Eng. Dept.

Dec. 1988 to Aug. 1983, Leave on Absence from the UPR

July 1983 to July 1982, Instructor, UPR-RUM

June 1982 to Aug. 1981, Lecturer, UPR-RUM

OTHER RELATED EXPERIENCE (teaching, industrial, etc.):

Research

July 1998 to present. Principal Investigator, "Development of a Comprehensive Integrated Watershed Management Plan for the Mayagüez Bay – Phases I and II. Funded by EPA, UPR-RUM

Jan. 1999 to present. Co-principal Investigator, "Reducing Pesticide Runoff to the Caribbean-Sea". Project of the United Nations.

Jan. 1995 to Dec. 1998. Principal Investigator, "Modeling Highway Runoff Flow Through Sand Filters used for the Protection of Sink holes". Funded by the PR Highway Authority through the Civil Infrastructure Research Center. UPR-RUM.

June 1995 to Dec. 1998. Principal Investigator, "Development of a Decision Support System for Urban Watershed Management in Puerto Rico". Funded by the National Science Foundation through the Civil Infrastructure Research Center, UPR-RUM

June 1991 to May 1992. Principal Investigator, "Hydrologic and Hydraulic Influences on the Protection Level Required for the Soil Erosion Control at Construction Sites". Project for the Water Resources Research Institute. UPR-RUM

CONSULTING:

None

STATE(S) IN WHICH REGISTERED:

Puerto Rico

PRINCIPAL PUBLICATIONS OF LAST FIVE YEARS:

Rivera-Santos, J. and KM Zayas, "Development of a Decision Support System for a Watershed under Urban Development". 10th EPSCoR Annual Meeting, Río Grande, PR, 1998

Carbo-Maldonado, LD, W. Silva-Araya, and J. Rivera-Santos, "Hydraulic Characterization of Sinkhole Protection Filtres for Highway Drainage", 3er International Symposium of Hydrology and 5th Caribbean Island Water Resources Congress, San Juan, PR, July 1998

Zapata-López, R., J. Rivera-Santos and JI Camacho, "Evaluation of Hydraulic Models to be used in an Urban Watershed Management Decision Support System", 10th EPSCoR Annual Meeting, Río Grande, PR, 1998

Rivera-Santos, J. and F. Vargas-Arroyo, "Effect of Data Variability and Record Length on the Simple Least Squares Criterion for Parameter Estimation of a Conceptual Rainfall-Runoff Model", 9th EPSCoR Annual Meeting, Fajardo, PR, 1997

Zapata-López, R., J. Rivera-Santos, and JI Camacho, "An Urban Watershed Management Decision Support System for PR.: Hydraulic Component", 9th EPSCoR Annual Meeting, Fajardo, PR, 1997

Rivera-Santos, J and KM Zayas, "Analysing Watershed Hydrologic Response Change Using a Prototype Decision-Making Support System, 9th EPSCoR Annual Meeting, Fajardo, PR, 1997

Rivera-Santos, J and G. Canino, "Erosion and Sediment Transport in a proposed Regional Sanitary Landfill, UPADI Annual Conference, San Juan, PR, 1997

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER: University Council on Water Resources (UCOWR), Delegate
International Water Resources Association (IWRA)
National Water Resources Institutes (NWRI)
American Geophysical Union-Water Resources Section (AGU)
American Water Works Association (AWWA)
American Water Resources Association (AWRA)
PR Association of Water Resources (APRA)
College of Engineers and Land Surveyors of PR (CIAPR)

HONORS AND AWARDS: Honor Editor of the "Enciclopedia of Life Support Systems",
1995, Invited by ONU

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST FIVE YEARS: Jan. 1995 to present: Director of the Puerto Rico Water and
Environmental Resources Research Institute
August 2000 to March 2001: Dean of Academic Affairs, UPR-
RUM
July 1999 to February 2000: Acting Dean of Engineering,
College of Engineering, UPR-RUM
August 1998 to June 1999: Assistant Dean for Research,
College of Engineering, UPR-RUM

PROFESSIONAL DEVELOPMENT ACTIVITIES IN THE LAST FIVE YEARS: NPDES Storm Water Seminar, EPA, Mayagüez, PR, March
1996

MANUEL RODRÍGUEZ-MARTÍNEZ

Academic rank: Associate Professor

Degrees with fields, institution, and date:

BS	Mathematics	University of Puerto Rico, Rio Piedras	1994
MS	Computer Science	University of Maryland, College Park	1996
Ph. D.	Computer Science	University of Maryland, College Park	2001

Faculty service at UPRM:

Date of original appointment: July 2001 (Month, Year)

Dates of advancement in rank:

Assistant Professor:	2001 to 2005
Associate Professor	2005 to Present
Total years of service:	6

Areas of professional expertise:

Database Management Systems, Computer Networks

Industrial Experience:

Chief Technology Officer, Phidelix Technologies Corp, 2006-present

Consulting, patents:

Database Consultant for Polaroid Caribbean Corp., Summer of 1999.

Principal publications of last five years: (FY2002-2003- 2006-2007)

1. Kejie Lu, Yi Qian, Domingo Rodriguez, Wilson Rivera, Manuel Rodríguez, “Wireless Sensor Networks for Environmental Monitoring Applications: A Design Framework”, 2007 IEEE Globecom Conference, DC, Dec. 2007.
2. Elliot Vargas-Figueroa and Manuel Rodriguez , “Design and Implementation of the NetTraveler Middleware System based on Web Services”, submitted to IEEE Transactions on Knowledge and Data Engineering, May 2007
3. Fernando Maymi, Manuel Rodriguez, Paul Manz, Yi Qian, “A Distributed Architecture for Pervasive Shared Situational Awareness”, submitted to IEEE Internet Computing Magazine, April 2007.
4. Juan Correa and Manuel Rodriguez, “Design and Implementation of JSwitch: A Web-Based Transaction Coordination Framework “, 4th International Conference on Information Technology: New Generations, Las Vegas, NV, April 2-4, 2007.
5. Agustín A. Irizarry-Rivera , Manuel Rodríguez-Martínez , Bienvenido Vélez , Miguel Vélez-Reyes, Alberto R. Ramirez-Orquin, Efraín O’Neill-Carrillo, and José R. Cedeño, “INTELLIGENT POWER ROUTERS: A DISTRIBUTED COORDINATION APPROACH FOR ELECTRIC ENERGY PROCESSING NETWORKS”, to appear in special issue of International Journal on Critical Infrastructures on January 2008.
6. Elliot Vargas-Figueroa and Manuel Rodriguez , “Design and Implementation of the NetTraveler Middleware System based on Web Services”, in Proc. 2006 IEEE International Conference on Internet and Web Applications and Services, Guadalupe, France, February 23-25, 2006.
7. Edilberto Garcia and Manuel Rodríguez, “WAMDAS: A Web Service-Based Wireless Alarm Monitoring and DataAcquisition System for Pharmaceutical Plants”, in Proc. 2006 IEEE International Conference on Internet and Web Applications and Services, Guadalupe, France, February 23-25, 2006
8. Hillary Caituiro and Manuel Rodriguez , “NetTraveler: A Framework for Autonomic Web Services Collaboration, Orchestration and Choreography in E-Government Information Systems”, in Proc. 2004 IEEE International Conference on Web Services, San Diego, CA, July 6-9, 2004
9. Manuel Rodríguez-Martínez, Omar G. Rodríguez-Martínez, Mariterez Martínez-Montes, Elfred Pagan, and Pedro I. Rivera-Vega, "Smart Mirrors: Peer-to-Peer Web Services for Publishing Electronic Documents", to appear in *Proc. 14th IEEE International Workshop on Research Issues on Data Engineering: Web Services for E-Commerce and E-Government*, Boston, MA, March 28-29, 2004.

10. Manuel Rodríguez-Martínez, Jose F. Ensenat, Elfred Pagan, and Juan G. Arbola, "Registration and Discovery of Services and Applications in the **NetTraveler** Integration System for Mobile Devices", to appear in *Proc. of 3rd IEEE ITCC Conference*, Las Vegas, NV, April 5-7, 2004.
11. Jose F. Enseñat, Manuel Rodríguez-Martínez, "Design of the Registration Server for the **NetTraveler** Middleware System", to appear in *7th International Conference on Internet and Multimedia Systems and Applications (IMSA 2003)*, Honolulu, Hawaii, USA.
12. Manuel Rodríguez-Martínez, Nick Roussopoulos, "Wide-Area Query Execution in MOCHA", *2002 IASTED Conference on Information and Knowledge Sharing (IKS 2002)*.

Grants or externally funded project active during the last five years: (FY2002-2003- 2006-2007)

1. *PI for CAREER: NetTraveler – A Database Middleware System for Ubiquitous Data Access on Wide Area Networks, NSF CAREER Program, \$500K, 2005-2010.*
2. *Co-PI for IPRS- Intelligent Power Router, NSF EPNES Program, \$600K, 2002-2005.*
3. *Co-PI for UPRM eGovernment Project, NSF Digital Government Program, \$750K, 2003-2006.*
4. *Co-PI for WALSAIP Project, NSF MII Program, \$1.5M, 2004-2009.*
5. *Co-PI for Indusoft Project, Puerto Rico Industrial Development Company, \$1M, 2004-2007.*
6. *Co-PI for HP Digital Publishing Project, HP, \$400K, 2004-2006*
7. *PI for IBM SUR Grant, IBM, \$100K, 2005-2006*
8. *Co-PI for Dynamic Image Retrieval Project, NASA TCESS, \$50K,, 2003-2005.*

Scientific and professional societies of which a member:

1. *Association for Computer Machinery (ACM)*
2. *Special Interest Group on the Management of Data (SIGMOD)*

Honors and awards:

1. *2006 Distinguished Professor, Department of Electrical and Computer Engineering, University of Puerto Rico, Mayaguez.*
2. *2005 NSF CAREER AWARD for project "CARREER: NetTraveler – A Database Middleware System for Ubiquitous Data Access on Widea-Area Networks".*

Institutional and professional service in the last five years: (FY2002-2003- 2006-2007)

1. *Member of the ICOM Computing Systems Committee*
2. *Member of the INEL/ICOM Graduate Committee*
3. *Member of the CISE Ph.D. Graduate Committee*
4. *Member of the Campus Senate Computing Ad Hoc Committee*
5. *Coordinator for the CISE Ph.D. Program*
6. *Member of NSF Panel on Cyber Infrastructure*
7. *Member of NSF Panel on IT SBIR Proposals*
8. *Member of NSF Panel on Minority Infrastructure and Instrumentation Proposals*
9. *Member of the Ad Hoc Committee for the Puerto Rico Higher Education Board regarding the IT B.S. degree of the National College of Business and Technology.*

Professional development activities in the last five years: (FY2002-2003- 2006-2007)

1. *Global Entrepreneurship: Strategy and Execution, Grupo Guayacan, Ritz Carlton Hotel, Casino and Spa, Carolina, PR, October 31st, 2007.*

2. *Puerto Rico Venture Forum and Enterprize Competition, Ritz Carlton Hotel, Casino and Spa, Carolina, PR, November 13, 2006.*

Offered courses in the past two years (2005-2007)

ICOM 4048 Practical Exp in Com. Engineering, ICOM 5016 Database System, ICOM 6999 Master Thesis, ICOM 6005 Data Base System Design, ICOM 4998 Undergraduate Research

Community service activities: (FY2002-2003, 2006-2007)

Palo Seco Sports Club, Board of Directors for the Caboqueron Condominium

Lorenzo Saliceti-Piazza
University of Puerto Rico, Mayagüez Campus
Department of Chemical Engineering
Industrial Biotechnology Program
PO Box 9010
Mayagüez, Puerto Rico 00680-9010
(787) 832-4040 ext. 3349, saliceti@uprm.edu

Academic rank:

Professor.

Degrees:

PhD ChE, Purdue University, 1996.
MSChE, University of Puerto Rico, Mayagüez, 1983.
BSChE, University of Puerto Rico, Mayagüez, 1980.

Service on faculty:

15 years
Jun 2002 – present, Associate Coordinator, Industrial Biotechnology Program, UPR, Mayagüez.
Jul 2004 – present, Professor, Chemical Engineering Department, UPR, Mayagüez.
Jan 2002 – May 2002, Associate Director, Department of Chemical Engineering, UPR, Mayagüez.
Jul 1999 – 2004, Associate Professor, Department of Chemical Engineering, UPR, Mayagüez.
Jan 1999 – Aug 2000, Interim Associate Director, Department of Chemical Engineering, UPR, Mayagüez.
Sep 1996 – Jun 1999 Assistant Professor, Department of Chemical Engineering, UPR, Mayagüez.
Jan 1996 – Aug 1996 Instructor, Department of Chemical Engineering, UPR, Mayagüez.
1989 – 1990 Associate Director, Department of Chemical Engineering, UPR, Mayagüez.
1986 – 1990 Instructor, Department of Chemical Engineering, UPR, Mayagüez.
1982 – 1983 Part-Time Instructor, Department of Chemical Engineering, UPR, Mayagüez.

Other related experience:

1991 – 95 Teaching Assistant, School of Chemical Engineering, Purdue University.
1991 – 95 Graduate Research Assistant, School of Chemical Engineering and Agricultural Engineering Department, Purdue University.
1980 – 81 Process Engineer I, Commonwealth Oil Refining Company, Peñuelas, Puerto Rico, June 1980–October 1981.

Consulting work:

2006 – Lecturer, Upstream Bioprocesses for Biotechnology Manufacturing, Amgen Associates.
2006 – Lecturer, Biotechnology Manufacturing Fundamentals, Taratec.
2005 – Lecturer, Biotechnology Manufacturing Fundamentals, Ochoa.

2005 – Lecturer, Biotechnology Manufacturing Fundamentals, Pall Corporation/INSECO.
2003 – 2005 Lecturer, Engineering for Non-Engineers, Lilly del Caribe.
2003 – Lecturer, Amgen Industrial Biotechnology Learning Center, Amgen.

Saliceti-Piazza, Lorenzo

Page 2

State in which registered:

Registered Professional Engineer, Puerto Rico.

Principal publications in the last five years:

Sáez-Miranda, J. C., L. Saliceti-Piazza, and J. D. McMillan. Measurement and Analysis of Intracellular ATP Levels in Metabolically Engineered *Zymomonas mobilis* Fermenting Glucose and Xylose Mixtures, *Biotechnol. Prog.*, **2006**, 22, 359-368.

Saliceti-Piazza, L. and R. Buxeda. A New Paradigm: Bringing Biology and Chemical Engineering in Each Other's Classrooms. *Innovation 2006: World Innovations in Engineering Education and Research*, **2006**, Ch. 52, 593-600.

Buxeda, R. and L. Saliceti-Piazza. Campamento de Verano en Biotecnología: Motivando a estudiantes de escuelas secundarias en carreras conducentes hacia una economía de conocimiento. *Revista de Educación en Biología* (Argentina), **2006**, 9(1), 46-48.

Cruz-Jiménez, J.C., L. Saliceti-Piazza, and R. Montalvo. Development of Strategies for Heterologous Expression of Glucose Dehydrogenase from the Halophilic Archaeon *Halobacterium* sp. NRC-1. *J. Biotechnol.*, **2005**, 118, Supp. 1, PPE 13, S27.

Buxeda, R. and L. Saliceti-Piazza. Establishing a Biotechnology Educational Framework to Support a Knowledge-Based Economy in Puerto Rico. *J. Biotechnol.*, **2005**, 118, Supp. 1, IB 116, S124.

Buxeda, R. and L. Saliceti-Piazza. Initiatives in Education, Training, and Corporate Sponsored Research to Foster Economic Development Based on Biotechnology. *Pharmaceutical Eng.*, **2005**, 25, 98-100.

Saliceti-Piazza, L., R. Buxeda, and J. López-Garriga. Transformation of the Teaching Methodology in a Laboratory Course of Industrial Biotechnology Curriculum in Response to Student Profile. *Innovations 2004: World Innovations in Engineering Education and Research*, **2004**, Ch. 25, 269-279.

Saliceti-Piazza, L., R. Buxeda, and R. Romañach. The Industrial Biotechnology Learning Centre (IBLC): an Industry-Academia Training Model in Response to Strategic High-Tech Economic Development, *Proceedings, 7th Baltic Region Seminar on Engineering Education*, St. Petersburg, Russia, **2003**, 95-97.

Saliceti-Piazza, L., R. Buxeda, E. Rivera, M. Hormaza, and L. Morell. University – Industry Partnership: An Important Cornerstone for Puerto Rico's Biotechnology Cluster Development, *Ind. & Higher Ed.*, **2003**, 17, 435-439.

Buxeda, R.J., L. Saliceti-Piazza, C. Ríos, D. Ramírez, and R. Romañach, Industrial Biotechnology at Puerto Rico. *Dimensión*, **2003**, 3, 13-19.

Saliceti-Piazza, Lorenzo

Page 3

Scientific and professional societies:

International Society of Pharmaceutical Engineers (ISPE).
American Society of Engineering Education (ASEE).
Puerto Rico College of Engineers and Land Surveyors (CIAPR).

Honors and awards:

2006 Innovator Award, Southern Policies Board.
2004 Biotechnology Institute Academic Fellow, BIO 2004 Conference, San Francisco, California.
2004 Workforce Development Award – Biotechnology Cluster.
1990 – 95 Ph.D. GEM Fellowship in Engineering.
1980 Magna Cum Laude, University of Puerto Rico, Mayagüez.
1977 – 80 On Dean's List, University of Puerto Rico, Mayagüez.

Institutional and professional service in the last five years:

Administration:

Jun 2002 – present, Associate Coordinator, Industrial Biotechnology Program, UPR, Mayagüez.
Jan 2002 – May 2002, Associate Director, Department of Chemical Engineering, UPR, Mayagüez.

Research:

Jan 2003 – present, NIR Technology for Monitoring fermentation Process Conditions and End-Points, funded by INDUNIV, 3 credits / 9 hours per week

Professional development activities in the last five years:

2006 – Biomanufacturing 2006, Northeast Biomanufacturing Center and Collaborative One-Week Hands-On Biomanufacturing Conference, Portsmouth, New Hampshire.
2004 – Tangential Flow Filtration Basic Training Course, Pall Corporation, Fajardo, Puerto Rico.
2003 – Animal Cell Culture Methods and Scale-Up Strategies, Penn State University.
2003 – Aseptic Processing Techniques, Pall Corporation, Mayagüez, Puerto Rico.
2003 – Principles of Tangential Flow Filtration, Pall Corporation, Mayagüez, Puerto Rico.
2002 – Biotechnology Manufacturing Internship, Amgen, Inc., Thousand Oaks, California.
2002 - XI Curso-Taller de Bioprocesos con Microorganismos Recombinantes, Instituto de Biotecnología, Universidad Nacional Autónoma de México, Cuernavaca, Morelos, México.

Biographical Sketch for JAIME SEGUEL

Professional Preparation

- B.S. in Electronic Engineering, Catholic University of Valparaiso, Chile, 1972
- M.S. in Applied Mathematics, University of Santiago, Chile, 1982.
- Ph.D. in Mathematics (Theoretical Computer Science), City University of New York, 1987.

Professional Appointments

- 1988 - present: Professor of Computer Science, University of Puerto Rico at Mayagüez.
- 1987 - 1988: Assistant Professor of Computer Science, Notre Dame College of Saint John's University of New York.
- 1981 – 1983: Assistant Professor, Northern University, Arica, Chile

Publications

1. D. Bollman, J. Seguel, J. Feo "A functional Approach to Radix-r FFTs" Journal of Parallel and Distributing Computing Practices, Vol 1, No. 1, pp 51-74, 1998.
2. J. Seguel, D. Bollman, J. Feo "A Framework for the Design and Implementation of FFT Permutation Algorithms" IEEE Transactions in Parallel and Distributed Systems, Vol. 11, No. 7, pp 625-635, 2000.
3. J. Seguel, D. Bollman, E.Orozco "A New Prime Edge-length Crystallographic FFT" Elsevier Lecture Notes in Computer, LNCS 2330, pp. 548-557, 2002.
4. J. Seguel "A Unified Treatment of Compact Symmetric FFT Code Generation" IEEE Transactions on Signal Processing, Vol. 50, No. 11, pp 2789-2797, 2002.
5. J. Seguel, D. Burbano "A Parallel Prime Edge-length Crystallographic FFT", Elsevier Lecture Notes of Computer Science, LNCS 2659, pp 602-611, 2003.
6. J. Seguel "Design and Implementation of a Parallel Prime Edge-length Symmetric FFT" Elsevier Lecture Notes in Computer Science, LNCS 2667, pp 1025-1034, 2003.
7. J. Seguel, D. Burbano "A Scalable Crystallographic FFT" Elsevier Lecture Notes in Computer Science, LNCS 2840, pp. 134-141, 2003.

Synergistic Activities

1. Co-founder of the IBM sponsored LA Grid project, a multi-institution infrastructure for grid technology development and applications

2. Member of the Computer Science and Engineering Advisory Council, a consulting organization appointed by the UPRM Chancellor and formed by members of industry and academia
3. Member of the Computing and Information Technology cluster, an organization established by the government of Puerto Rico to advance the development of knowledge based economy on the Island.
4. Member of Committee for the creation of a Department of Computer Science and Engineering at the UPR-Mayaguez.

Collaborators and Other Affiliations

Collaborators

1. Dr Liana Fong, Dr. Jean-Pierre Prost, IBM Research
2. Hugh Nicholas, Pittsburgh Supercomputing Center

Advisor: Dr. Louis Auslander (deceased)

Thesis Advisor (from 2001 – present)

1. Luis de la Torre, PhD Candidate in CISE, thesis title (tentative) "*Self-Adaptive Steady-state Workflow Scheduler*", expected graduation date: May 2008.
2. Jaime Ballesteros, PhD Candidate in CISE, thesis title (tentative) "*A Throughput Optimal and Self-adaptive Scheduler for Load-divisible Distributed Tasks*", expected graduation date: May 2008.
3. Iván David, MS in Computer Engineering, Thesis title "*Parallel Composite Edge-length Crystallographic FFT*", Graduated in May 2004
4. Daniel Burbano, MS in Computer Engineering, Thesis title "*Parallel Prime Edge-length Crystallographic FFTs*", Graduated in May 2003
5. Daniza Morales, MS in Computer Engineering, Thesis title "*Automatic Code Generation of Sine and Cosine Transforms*", Graduated in May 2002
6. Grenda Debró, MS in Computer Engineering, Thesis title "*Bit-reversal Permutation and Parallel Implementations*". Graduated in May 2001

David Serrano

Department of Mechanical Engineering
University of Puerto Rico; Mayaguez Campus
P.O.Box 9045; Mayaguez, Puerto Rico 00681-9045
Tel: (787) 832-4040 x2560; Fax: (787) 265-3817; **email:** d_serrano@me.uprm.edu
U.S. Citizen

PROFESSIONAL PREPARATION

<u>Institution</u>	<u>Major</u>	<u>Degree & Year</u>
University of Puerto Rico Mayaguez Campus Mayaguez, Puerto Rico	Mechanical Engineering	BSME 1982
M.I.T. Cambridge, MA <i>Design Package</i>	Mechanical Engineering Thesis: "MathPak: An Interactive Preliminary	MSME 1984
M.I.T. Cambridge, MA <i>Design</i>	Mechanical Engineering Dissertation: "Constraint Management in Conceptual	Sc.D. Dec. 1987

APPOINTMENTS

Professor (Jan 1988 – present)	Department of Mechanical Engineering ,UPRM
Acting Director (1998-1999)	Department of Mechanical Engineering, UPRM
Special Assistant to the Chancellor for Research and Academic Affairs (1998)	U.P.R., Mayaguez
Assistant Dean for Engineering Research and Graduate Studies (1992-1995)	U.P.R., Mayaguez

PUBLICATIONS

(selected)

- Veras, E., and Serrano, D., "Domain Independent Framework for the Automatic Generation of Alternatives during the Conceptualization Process of Design", The First World Congress on Intelligent Manufacturing Processes & Systems, Mayaguez, P.R., February 13-17. 1995.
- Perez, A. and Serrano, D, "Constraint Based Analysis Tools for Design" ACM/IEEE Symposium on Solid Modeling and Applications, Montreal, Canada, May 19-21, 1993
- Serrano, D. and Gossard, D., "Tools and Techniques for Conceptual Design" Chapter 3 of book Artificial Intelligence Approaches to Engineering Design, Editors C. Tong and D. Sriram, Academic Press 1992
- Serrano, D., "Constraint Based Concurrent Design". International Journal of Systems Automation: Research & Applications, 1991

- Lizama, M., **Serrano, D.**, Martell, D., Carlo, E., and Bravo, E., US Patent no. 6,533,304, Mechanically Assisted Standing Wheelchair, Mar. 18, 2003
- Lizama, M., **Serrano, D.**, Rivera, J., Soto, J., Jordan, R. and Detres, L., US Patent no. 6,227,981, Ball Ramp Assembly, May. 8, 2001
- Lizama, M., **Serrano, D.**, Aviles, E., Santana, F., and Valentin, V., US Patent no.6,171,198 B1, Merry Go Round for Wheel Chairs, Jan. 9, 2001
- “Damage Detection Using Transient Temperature Response”, Just-Agosto F., Gil J., **Serrano D.**, Shafiq B., Jia Y., Coutin S. (**Submitted to the Special Issue of The Journal of Composites-Part B Engineering August 2003 for Review**)
- “Application of Neural Network to Eign-Parameter Based Damage Detection in Multi-Component Sandwich Ship Hull Structures” Toro C., Shafiq B., **Serrano D.**, Just-Agosto F., ICSS6, Fort Lauderdale Fl., April 2003
- “Neural Network Vision of an Intelligent Intelligent Non-destructive Evaluation Autonomous Vehicle”, Rodriguez, F. and Serrano, D., XV Congreso de Ingeniería, Agrimensura y Areas Relacionadas, COINAR 2003, San Juan, P.R., March 2003.
- Rios, L. and Serrano, D., “Implementing Force Feedback to a Virtual Welding Operation”, X Congreso de Ingeniería, Agrimensura y Areas Relacionadas, COINAR 98, Bayamón, P.R., March 1998.
- Serrano, D., and Pabón, I., “Composite Manufacturing Methods for Race Cars”, Dimension, year 11 Vol. 3, September 1997.

Synergistic Activities

R&D ACTIVITIES

- Director of the Special Projects Laboratory, undergraduate research training in the development of solar powered and hybrid electric vehicles since 1989. The vehicles have competed in national and international events, such as Sunrayce USA (1990, 1993, 1995), World Solar Challenge, Australia (1993), Solar Splash (1994), Hamanako Solar Boat Race, Japan (1995). SAE Faculty Advisor since 1993. Advised students for Formula SAE, MiniBaja, AeroDesign and the WalkingMachine Competitions in the U.S., Mexico and Brazil. Prepared and offered short courses in the design of PV Systems at the C.I.A.P.R., and has presented his work on solar energy in national and international conferences.
- Research and Development of Assistive Technology for the disabled. Three patents awarded.

Proposals

- *Wireless Strain Sensors Embedded Composite for Structure Health Monitoring*, Yi Jia, Manuel Toledo-Quiñones, Frederick Just-Agosto, David Serrano, awarded by PRRCA CITI Program, December 15, 2003
- *Affordable Processing and Dynamic Characterization of Sandwich Composite Materials Used in Stealth Applications*; DoD-ONR \$463,000, PI: Just-Agosto F.A., CoPI: Safiq B., Coutin S., **Serrano D.**, Kieffer S.; Sept. 01-Sept. 04
- *Affordable Processing and dynamic Characterization of Sandwich Composite Materials and Structures*, NSF-EPSCoR \$623,632, (UPRM/AU/NDSU/UAB Consortium) PI/PD: Just-Agosto

F.A.; CoPI: **Serrano D.**, CoPI: Shafiq B., AU PI: Malcolm J. C.; CoPI: Flowers G. T. Marghitu D.B; NDSU PI: Mohammad M., CoPI: Kallmeyer A.R., CoPI:, CoPI: Kellog Kenneth; AUB PI Vaidya U.; Dec. 2000-Dec. 2002

- *PR Million Solar Roof Initiative*, PREAA, DOE, PI: Gonzalez, J, Co-Pi: Serrano, D., April 2001- April 2002.

Professional Exams

- P.E., 1989

ADVISORS

- Sc. D. Dissertation
Dr. David C.Gossard, Mechanical Engineering Department, M.I.T., Cambridge, MA
- Masters Degree
Dr. David C.Gossard, Mechanical Engineering Department, M.I.T., Cambridge, MA

GRADUATE STUDENTS

- | | | |
|-----------------------|--------------------|------------------|
| ° Fernmarie Rodriguez | ° Eduardo Veras | ° Anibal Karban |
| ° Alfredo Perez | ° Hebert Jaramillo | ° Jeffrey Robles |
| ° Pedro Medina | ° Pedro Dones | |

PAUL A. SUNDARAM
<http://me.uprm.edu/psundaram>

Office Residence

Mechanical Engineering Department P.O. Box 5549
P. O. Box 9045 Mayaguez, PR 00681
University of Puerto Rico USA
Mayaguez, PR 00681 Tel. (787) 833-5698
USA email: febuitrago@yahoo.com
Tel. (787) 832-4040 X 3719, 3661
Fax. (787) 265-3817
e-mail:psundaram@me.uprm.edu

FUNCTIONAL SUMMARY

Significant teaching and research experience in the area of Materials Science. Developed and taught various courses in materials related areas. Extensive experimental research experience in the area of biomaterials, mechanical behavior of materials, structure-property correlation, physical/mechanical metallurgy, corrosion and materials processing/manufacturing. About 60 publications and \$ 1.26M in funding as PI. Supervised 14 M.S. students. Professional Engineer. Extensive consulting experience involving microstructural-property characterization, corrosion and failure analysis of materials. Developed Materials, Mechanical Testing and Rapid Solidification Laboratories at the University of Puerto Rico. Excellent leadership and people skills. Chairperson of the Mechanical Engineering Department. Capable of working individually or as integrated team member. Ability to communicate effectively orally and in writing in English and Spanish. Leader in Hispanic achievement in advanced degrees in engineering. Skilled in building hispanic leaders in engineering education and research.

PROFESSIONAL EXPERIENCE

1997-present UNIVERSITY OF PUERTO RICO, Mayaguez, Puerto Rico.
Department of Mechanical Engineering

Professor, tenured since 1995/ Chairperson, since September 2003

- * Courses (a) Engineering Materials - Sophomore level
- (b) Metallurgy for Mechanical Engineers - Junior level
- (c) Design of Machine Elements I – Junior level
- (d) Measurements Laboratory - Junior level
- (e) Manufacturing Processes Laboratory - Junior level
- (f) Corrosion - Senior/Graduate level
- (g) Materials Failure Analysis - Senior/Graduate level
- (h) Composite Materials - Graduate level
- (i) Dislocation Theory - Graduate level
- (j) Advanced Physical Metallurgy - Graduate level
- (k) Mechanical Metallurgy - Graduate level
- (l) Fracture Mechanics – Graduate level
- (m) Introduction to Bioengineering-Senior level
- * Dean's appointee to Faculty Personnel Committee
- * Member, Department Personnel Committee (Coordinator 2000-02)
- * Member, Faculty Personnel Committee (2000-02)
- * Coordinator, Ph.D Proposal Committee
- * Coordinator, Graduate Program in Mechanical Engineering (1993-97)

* Coordinator, Materials Science area including Metallurgy Laboratory, Materials Testing Facility and Rapid Solidification Facility

* Directing M.S. theses in the area of Materials Science

* Serving on various faculty and departmental committees

2007 NAVAL SURFACE WARFARE CENTER, Dahlgren, Virginia
ONR Summer Faculty Research Fellow

* Worked on the effect of a high energy electrical pulse on the dynamic stress-strain behavior of a candidate materials for rails in EML applications.

2006 NAVAL SURFACE WARFARE CENTER, Dahlgren, Virginia
ONR Summer Faculty Research Fellow

* Worked on the effect of a high energy electrical pulse on the dynamic stress-strain behavior of a copper alloy.

2003 US ARMY RESEARCH LABORATORY, Aberdeen, Maryland
ARO Summer Faculty Research Fellow

* Worked on corrosion detection under CARC using microwave NDE in Metals and Ceramic Branch, Weapons and Materials Directorate

2002 US ARMY RESEARCH LABORATORY, Aberdeen, Maryland
ARO Summer Faculty Research Fellow

* Worked on hydrogen effects on Aermet 100 steel in Metals and Ceramic Branch, Weapons and Materials Directorate

1998-1999 FORSCHUNGSZENTRUM JÜLICH, Jülich, Germany
Institute für Werkstoffe und Verfahren der Energietechnik
Visiting Scientist

* Worked on hydrogen effects on gamma titanium aluminides

1992-1997 UNIVERSITY OF PUERTO RICO, Mayaguez, Puerto Rico.
Department of Mechanical Engineering, Associate Professor (tenured: 1995)

* Responsibilities included teaching and research in Materials Science, both at undergraduate and graduate level

* Coordinator, Graduate Program in Mechanical Engineering

* Coordinator, Materials Science area including Metallurgy Laboratory, Materials Testing Facility and Rapid Solidification Facility

* Directed M.S. theses in the area of Materials Science

* Coordinator, Mechanical Eng. Dept.-UPR for Accreditation Board for Engineering and Technology 1993 visit

* Served on various faculty and departmental committees

* Faculty Advisor, 1992-94, Student Chapter of ASME which won 2nd best chapter in Region II for 1993 and 1994

1996 ARGONNE NATIONAL LABORATORY, Argonne, Illinois
Summer Faculty Research Participant

* Worked on an advanced welding project and studied metal movement and distortion in mild steel welds in the Reactor Engineering Division

1989-1992 UNIVERSITY OF PUERTO RICO, Mayaguez, Puerto Rico.

Department of Mechanical Engineering, Assistant Professor

- * Responsibilities included teaching and research in Materials Science
- * Developed Materials Testing Facility and Metallurgy Laboratory
- * Developed courses in the materials sciences area
- * Generated external funding for research in the area of material sciences
- * Coordinator, Mechanical Eng. Dept.-UPR for Accreditation Board for Engineering and Technology 1990 visit

1984-1988 THE OHIO STATE UNIVERSITY, Columbus, Ohio

Graduate Research and Teaching Assistant, Department of

Metallurgical Engineering

- * Conducted research in the area of deformation-induced surface roughness and hydrogen embrittlement in AISI 1090 steels, Thesis advisor: Professor John P. Hirth

- * Taught courses (a) Introductory Thermodynamics

(b) Process Metallurgy Laboratory

EDUCATION

1988 Ph. D (Met. Eng.) The Ohio State University

1987 M. S (Met. Eng.) The Ohio State University

1984 B.Tech (Met. Eng.) Banaras Hindu University

PUBLICATIONS

About 60 publications in refereed journals and conferences.

Publications in the last 5 years

1. *Effect of Hydrogen on the Dynamic Elastic Modulus of Gamma Titanium Aluminide*, M. Ruales, D. Martell, F. Vazquez, F.A. Just and **P.A. Sundaram**, J. Alloys and Compounds, Vol. 339 (1-2), pp. 156-161, 2002.
2. *Effect of Hydrogen on the Elastic Modulus of Gamma Titanium Aluminide*, E.C. Herrera, D. Martell, M.C. Ruales, F.A. Just and **P.A. Sundaram**, Poster, ISSI-3, Jackson Hole, Wyoming, April 27-May2, 2002.
3. *Effect of Various Cycling Ratios on the Mechanical and Physical Properties of Recycled PET*, H. Cornier-Rios, J. Celorie and **P.A. Sundaram**, GPEC 2003, SPE Conference, Detroit, Michigan, February 26-27, 2003.
4. *Room Temperature Diffusion Coefficient of Hydrogen in Aermet 100 Steel under Galvanostatic Charging Conditions*, **P.A. Sundaram** and D.K. Marble, J. Alloys and Compounds, Vol. 360 (1-2), pp. 90-97, 2003.
5. *Microwave NDE Tool Development and Beta Testing*, A.V. Bray, G.R. Schmidt, C.H. Garret and **P.A. Sundaram**, Tri-Service Corrosion Conference, Las Vegas, November 2003.
6. *Biocompatibility Studies of Human Fetal Osteoblast Cells cultured on Gamma Titanium Aluminide*, Omayra Rivera-Denizard, Mayra Acosta, Nanette Difffoot-Carlo, Jessamine Hernandez-Muñiz, Aixa Sánchez, **Paul Sundaram**, ASCB Meeting, San Francisco, CA, December 8-12, 2003.
7. *Process and Properties of Hydride Formed on Gamma Titanium Aluminide during Cathodic Charging*, E.C. Herrera, **P.A. Sundaram** and C. Fountzoulas, J. Alloys and Compounds, 400 (2005), pp. 125-130.

8. *Corrosion Evaluation of Titanium Foams for Biomedical Engineering Applications*, H.A. Estupiñan, C. Vazquez, I. Uribe Perez and **P. Sundaram**, NOTIMAT 2005, Cartagena, Colombia, 12-17 September 2005 (in Spanish).
9. *Mechanical Properties of Titanium Metallic Foams prepared by Compaction and Sintering of Powders for Biomedical Engineering Applications*, H.A. Estupiñan, I. Uribe Perez, A.Z. Diaz, R. Ulloa and **P. Sundaram**, NOTIMAT 2005, Cartagena, Colombia, 12-17 September 2005 (in Spanish).
10. *Tissue Reaction to Gamma TiAl in in vivo rat model*, D. Castañeda-Muñoz, **P.A. Sundaram**, Norman Ramirez, NOTIMAT 2005, Cartagena, Colombia, 12-17 September 2005.
11. *Physiological activities of human fetal osteoblast cells cultured on gamma titanium aluminide determined by immunoassays of collagen type I and osteonectin proteins*, O. Rivera-Denizard, N. Difffoot-Carlo and **P. Sundaram**, NOTIMAT 2005, Cartagena, Colombia, 12-17 September 2005.
12. *Corrosion Evaluation of Gamma Titanium Aluminide as a Potential Biomaterial*, C. Delgado-Alvarado and **P. A. Sundaram**, NOTIMAT 2005, Cartagena, Colombia, 12-17 September 2005.
13. *Biomaterials: History, Development and Prognosis, Keynote Speaker (Invited)*, **PA. Sundaram**, NOTIMAT 2005, Cartagena, Colombia, 12-17 September 2005.
14. *Criterio de aceptación y deterioro de biomateriales usados en cirugía traumática a partir de técnicas electroquímicas*, H.A. Estupiñan, D.Y. Peña, I. Uribe, C. Vázquez, **P.A. Sundaram**, II Congreso Colombiano de Bioingeniería e Ingeniería Biomédica, 27-28 octubre 2005, Bogota, Colombia (1er premio entre 356 artículos sometidos).
15. *Bone tissue reaction to Ti-48Al-2Cr-2Nb (at.%) in a rodent mode: a preliminary SEM study*, D.F. Castañeda-Muñoz, **P.A. Sundaram** and Norman Ramirez, *Journal of Materials Science: Materials in Medicine* (in press).
16. *Hydrogen Permeation in Gamma Titanium Aluminides*, H.A. Estupiñan, I. Uribe Perez and **P. A. Sundaram**, *Corrosion Science* 2006;48:4216-4222.
17. *Corrosion evaluation of Ti-48Al-2Cr-2Nb (at.%) in Ringer's solution*, C. Delgado-Alvarado and P.A. Sundaram, *Acta Biomaterialia* 2006;2/6:701-708.
18. *Effect of recycling on material properties of glass-filled polyethylene terephthalate*, H. Cornier-Rios, **P.A. Sundaram**, J.T. Celorie, *Journal of Polymers and Environment* (in press).
19. *Biocompatibility studies of human fetal osteoblast cells cultured on gamma titanium aluminide*, O. Rivera-Denizard, V. Navas, **P.A. Sundaram** and N. Difffoot-Carlo, *Journal of Materials Science: Materials in Medicine* (in press).
20. *Corrosion phenomena in porous titanium materials for osseous implants*, H. Estupiñan-Duran, I. Uribe-Pérez, C. Vasquez-Quintero and **P.A. Sundaram**, submitted to *Corrosion Science*.
21. *A study of the corrosion behavior of Ti-48Al-2Cr-2Nb (at.%) in 3.5 wt.% NaCl solution and seawater*, C. Delgado-Alvarado and **P.A. Sundaram**, *Corrosion Science*, 2007;49:3732-3741.
22. *Effect of a high energy electrical pulse on the dynamic stress-strain behavior of a copper alloy*, **P.A. Sundaram**, M.G. Snow, D.P. Collins, submitted to *Material Letters*.

23. *Enhancing multicultural engineering project skills through international senior design projects: The Harvey Mudd College-University of Puerto Rico Mayaguez experience*, M. Trucco, A. Bright, O.E. Ruiz, **P.A. Sundaram** and L. Morell, ASEE Global Colloquium, Istanbul, Turkey, accepted.
24. *Characterization of atmospheric corrosion in Al/Ag lap joints*, P. Acevedo-Hurtado, **P. A. Sundaram**, P. Caceres-Valencia, C. Miller and B. Placzankis, NACE Conference, Colorado, accepted.

PROPOSALS APPROVED

1. Application of Holography to Deformation and Surface Roughening, National Science Foundation, Research Initiation Award, PI, \$30,931, 1990-1992, awarded.
2. Construction of a Rapid Solidification Facility, NSF-RIMI, Co-PI, \$94,000, 1991-1994, awarded.
3. Digital Image Processing of Holographic Signals, AT&T Bell Laboratories, Special Projects Grant, \$17,500, 1993, awarded.
4. Training Grant, Graduate Student Researchers Program, NASA, \$ 44,000, 1994-1996, awarded.
5. Effect of Hydrogen on the Elastic Modulus and Hardness of Gamma Titanium Aluminides, NSF, PI, \$250,776, 2000-2003, awarded.
6. Lifetime Prediction of Loading Tube Pads, Navy SSP, PI, \$ 28,000, 2004-05, awarded.
7. Agricultural Utilization of the Fly Ash from the AES-PR Power Plant, AES-Puerto Rico, Co-PI, \$ 35,052, 2004-05, awarded.
8. Nanoscaffolds in Ti alloys to increase osseointegration, NIH-MBRS, PI, \$ 730,483, 2007-10, awarded.
9. Research evaluation on differences between field and accelerated laboratory (chamber) corrosion phenomena for Al/Ag lap joint specimens, DoD, PI, \$ 36,256, 2007, awarded.

THESES SUPERVISED

Master's Theses

1. Deformation Behavior of Al/SiCp Metal-Matrix Composite in Plane Stress/Plane Strain, F. Irizarry Lago (May 1995)
2. Strain Rate Effects on the Fracture Behavior of an Al/SiCp Metal Matrix Composite, J. Coronado Marin (May 1995)
3. Effect of Aging on the Plane Stress/Plane Strain Deformation Behavior of Al-Li Alloys, A. Castro Lopez (May 1996)
4. Hydrogen Effects on the Mechanical Properties of a 2090 Al-Li Alloy, E. Velez (December 1996)
5. Effects of Hydrogen on the Tensile Properties of a Gamma Titanium Aluminate Sheet at Room Temperature, J. Abanto (July 1997)
6. The Influence of Microstructure in Axisymmetric Upsetting of Fcc Polycrystalline Metals, J. Garcia (June 1998)
7. Effect of Cooling Rate on Phase Transformation and Mechanical Properties in a Ti-6Al-4V Alloy, P. Quintero (June 1998)

8. Effect of Hydrogen on the Elastic Modulus of a Gamma Titanium Aluminate Sheet under Galvanostatic Charging Conditions, D. Martell (May 2001)
9. Effect of Hydrogen on the Elastic Modulus of a Gamma Titanium Aluminate Sheet under Potentiostatic Charging Conditions, M. Ruales (May 2001)
10. Biocompatibility of Gamma Titanium Aluminate as Implant Material, D. Castañeda (May 2003)
11. A Comparative Study of the Dynamic Elastic Moduli of Gamma Met and Inconel 718 under the Influence of Hydrogen, E. Herrera (August 2003)
12. Mechanical Behavior of P/M Aluminum Matrix Composites with a Carbon Fiber Weave Reinforcement, D. Villegas (August 2003).

13. Effect of Recycling on Material Properties of PET at Various Recycling Ratios and Recycling Generations, H. Cornier (July 2004).
14. Corrosion studies of gamma titanium aluminide in Ringer's solution, seawater and 3.5 % NaCl solution, C. Delgado (May 2005).
15. Fabrication of PLA/PLG scaffolds for hard tissue engineering using 3D printing, V. Pereles (in progress).

CONSULTING EXPERIENCE

1. Characterization of Steel, AJ Oster Caribe, 2/90.
2. Failure Analysis of Wreckage of a Cessna 172 Airplane, Colegio de Ingenieros, 8/90.
3. Failure Analysis of Copper Tubes Exposed to Warehouse Fire, WILDSCO Construction, 6/91.
4. Material Characterization of Steel, Corporación Azucarera de Puerto Rico, 5/92.
5. Failure Analysis of Clinch Nuts, Synchor Industries, 5/92.
6. Analysis of Gear Material, Corporación Azucarera de Puerto Rico, 6/92.
7. Characterization of Copper Rods for Electrical Applications, ABB Puerto Rico, 9/92.
8. Microstructural Analysis of Brass Samples, Kent Meters, Inc., 7/93.
9. Failure Analysis of a Hair Spray Can, Garrett & Associates, 10/93, **Federal Case**
10. SCC Failure of a Chemical Storage Tank, Smith-Kline Beecham, 3/95.
11. Corrosion in Roller Chains, Rexnord PR, Inc., 6/95.
12. Characterization of Steel Samples for Quality Control, Corporación Azucarera de Puerto Rico, 7/95.
13. Failure Analysis of Stainless Steel Surgical Knives, Stryker PR, 10/97.
14. Impact Testing for Quality Control of Steel for Shipbuilding, Perez & Associates, 4/98.
15. Failure Analysis of a Safe Door Pin, National Cash Register, 8/99.
16. Failure Analysis of a Ball Joint of a Hummer, Rafael Melendez Law Office, 6/00, **DACO**
17. Failure Analysis of an Expansion Joint, Eli Lilly de Caribe, 8/00.
18. Analysis of Polymer Films (Quality Control), Roche Diagnostics, 1/01.
19. Characterization of Pump Bowl Impellers, Compañía de Aguas PR, 5/01.
20. Failure Analysis of Steering Control rod of a Ford Explorer, Forensic Engineering, 10/01, **Federal Case**
21. Corrosion Analysis of Sewing Machine Base, Hanes Menswear, 11/01.
22. Failure Analysis of Rear Suspension of a Jaguar, Forensic Engineering, 11/01, **Federal Case**
23. Failure Analysis of Steering Knuckle of a Toyota Echo, Forensic Engineering, 11/01, **Federal Case**

24. Pitting Corrosion in an Rotary Vacuum Discharger, Eli Lilly de Caribe, 1/02.
25. Failure Analysis of Rear Axle of a Toyota Corolla, Bennie Frankei Cerezo, 3/02, **Federal Case**
26. Corrosion Analysis of Potable Water Pipes, CORCO, 6/02.
27. Corrosion Analysis of an 1872 Steel Bridge, ACT, 3/03.
28. Failure Analysis of the Rear Axle of a Chevrolet Automobile, 12/03, **Federal Case**
29. Restoration of a 1861 Steam Engine in an old sugar mill, La Esperanza, Fideicomiso, 3/04
30. Failure Analysis of Fractured Lodige Plow Tails, Wyeth Pharamaceuticals, 10/04.
31. Failure Analysis of Spin-Out Amusement Ride in Feria 2000, 7/05, **Federal Case**
32. Failure Analysis of Marta Plaza Gas Cylinder, 12/04. **Federal Case**
33. Failure Analysis of AISI 440A Stainless Steel Surgical Tool Burrs, Stryker PR, 11/05.
34. Characterization of cast iron of West Point 1861 beam engine, La Esperanza, Fideicomiso, 4/06.
35. Failure Analysis of the FRP piping system during Pneumatic Testing, Janssen LLC, Gurabo PR, 5/06.
36. Failure Analysis of Rail Steel used in the tracks for the Urban Train, ACI, San Juan, PR, 12/06.
37. Characterization of bronze/brass connectors, AAA, San Juan, PR, 2/07.

AWARDS

- ONR Summer Faculty Research Fellow, NSWC, Dahlgren, Virginia, 2006, 2007.
- ARO Summer Faculty Research Fellow, US Army Laboratory, Aberdeen, Maryland.2002, 2003
- Invited Honorary Member, Golden Key Honour Society, 2007
- Distinguished Professor Award in Mechanical Engineering, 2001-02.
- Tuerca Award for Outstanding Professor, Mechanical Engineering 2001-02.
- Awarded sabbatical leave from the University of Puerto Rico, 1998-99.

- Visiting Scientist, Forschungszentrum Jülich, Jülich, Germany, 1998-99.
- Distinguished Professor Award in Mechanical Engineering, 1995-96
- Summer Faculty Research Participant, Argonne National Laboratory.
- Bonus for academic excellence and productivity, 1996, UPR-RUM
- 1995 Tau Beta Pi University of Puerto Rico Student Chapter Excellence in Education Award for Mechanical Engineering
- Tuerca Award for Outstanding Professor, Mechanical Engineering 1995-96.
- 1994 Tau Beta Pi University of Puerto Rico Student Chapter Excellence in Education Award for Mechanical Engineering

OTHER INFORMATION

- * Member, American Society for Materials, International
- * Member, American Society of Mechanical Engineers
- * Member, ASM-Advisory Technical Affairs Committee
- * Member, NSF/GRFP Panel: Materials Science & Engineering (2002-03, 2003-04), Bioengineering (2004-05)
- * Invited honorary member, Golden Key Honour Society, 2007
- * Member, Phi Kappa Phi Honor Society
- * Member, Colegio de Ingenieros y Agrimensores de Puerto Rico (CIAPR)
- * Professional Engineer with considerable consulting experience (only licensed P.E. in Metallurgical Engineering in Puerto Rico), P.E. License Number: 12355
- * Member, Technical Editorial Board, Revista de Ingenieria y Competencia, Colombia
- * Reviewer, Revista Facultad de Ingenieria, Universidad de Antioquia, Medellin, Colombia
- * Reviewer, Engineering Fracture Mechanics Journal
- * Reviewer, Acta Biomaterialia
- * U.S. citizen
- * Married to Fabiola Buitrago M. S. (Civil Engineering)
- * 2 children Paola Alejandra (11 years)
Julian Patrick (9 years)
- * Foreign Languages: Spanish(fluent), German(fair)
 - * Other interests include music, sports, reading, traveling, inter-cultural experiences

Madeline Torres-Lugo
Department of Chemical Engineering
University of Puerto Rico, Mayaguez Campus
P.O Box 9046 Mayagüez, PR 00681
Home Ph. (787) 851-6054 **Office Ph.** (787) 832-4040 ext 2585 **Fax** (787) 834-3655
e-mail madeline@ece.uprm.edu

Education

- Purdue University: Doctor of Philosophy in Chemical Engineering, August 2001
- Purdue University: Masters of Science in Chemical Engineering, May 1999
- University of Puerto Rico, Mayagüez Campus, Bachelor of Science in Chemical Engineering May 1997.

Experience

- 7/04-present - Associate Professor, University of Puerto Rico, Mayagüez Campus.
- 7/01-7/04 - Assistant Professor, University of Puerto Rico, Mayagüez Campus.
- 5/99-6/01 - Research Assistant, **Physico-chemical Behavior and Cellular Interactions of Novel Oral Calcitonin Delivery Systems**, Advisor: Nicholas A. Peppas, Biomedical and Polymer Laboratory, Purdue University, West Lafayette, IN
- 1/98-5/99 - Research Assistant, **Novel pH-Sensitive Hydrogels with PEG-Tethered Chains for Oral Delivery of Salmon Calcitonin**, Advisor: Nicholas A. Peppas, Biomedical and Polymer Laboratory, Purdue University, West Lafayette, IN

Research Interests

Polymers, biomaterials, biosensors, hydrogel-based drug delivery systems

Research Projects

- Examination of the Physicochemical Interactions of Poly(Ethylene Glycol)-Rich Matrices with the MRP and MDR Efflux Pumps. Funding by NIH-MBRS Program; \$621,918. 5/01/03-4/30/07.
- Confocal Laser Scanning Microscope Facility. Funding by NSF-MRI Program; \$201,221, 8/02-8/04
- Molecular Studies of Proteins Encapsulated in Soft Materials. Funding by NIH-INBRE Program; \$978,532. 9/04-7/08
- Studies of Magnetite Nanoparticle Cytotoxicity and Transport in Caco-2 Cells and Magnetic Field Induced Hyperthermia. PR-EPSCOR; \$20,000. 10/04-10/05
- Magnetically and Thermally Active Nanoparticles for Cancer Treatment. Funding by NSF-NIRT Program; 1,420,715, 7/1/06-7/1/10

Publications

1. Castro-Forrero, A., Jimenez, D., Lopez-Garriga, J., Torres-Lugo, M., Immobilization of HbI from *Lucina Pectinata* in Hydrophilic Polymer Networks for the Development of a Hydrogen Sulfide Biosensor, *in press, Journal of Applied Polymer Science* (2007).
2. Torres-Lugo, M. García, M., Record, R., Peppas, N.A., pH-Sensitive Hydrogels as Gastrointestinal Tract Absorption Enhancers: Transport Mechanisms of Salmon Calcitonin and other Model Molecules using the Caco-2 Cell Model, *Biotech. Prog.*, **18**, 612-616 (2002).

3. Torres-Lugo, M. García, M., Record, R., Peppas, N.A., Physicochemical Behavior and Cytotoxic Effects of P(MAA-g-EG) Nanospheres for the Oral Delivery of Proteins, *J. Controlled Rel.*, 80, 197-205, (2002).
4. M. Garcia, M. Torres-Lugo, M. J. Alonso and N. A. Peppas, "Biointeractions of pH-Sensitive Poly(methacrylic acid-g-ethylene glycol) Hydrogel Microspheres with the Caco-2 Model Cell Line", in "New Trends in Polymers for Oral and Parenteral Administration: From Design to Receptors", G. Barratt, D. Duchêne, F. Fattal and J.Y. Legendre, eds., 386-389, Editions de Santé, Paris, 2001.
5. O. Sipahigil, M. Torres-Lugo and N.A. Peppas, FTIR Spectroscopic Analysis of Protein/Carrier Interactions in Novel Protein Delivery Systems, *STP Pharma*, **12**, 345-350 (2002).
6. Torres-Lugo, M., Peppas N.A., Preparation and Characterization of Poly(Methacrylic Acid-grafted-Poly(Ethylene Glycol)) Nanospheres, *J. Nanopart. Tech.*, 4(1), 73-81, (2002).
7. Peppas N.A., Huang, Y., Torres-Lugo, M., Ward, J.H., Zhang, J., Physicochemical Foundations and Structural Design of Hydrogels in Medicine and Biology, in Yarmush M.L., Diller, K.R., Toner, M., eds., *Annual Review of Biomedical Engineering*, Vol. 2, pp. 9-29, Annual Reviews, Palo Alto, CA, 2000.
8. Torres-Lugo, M., Peppas, N.A., Transmucosal Delivery Systems for Calcitonin: A Review, *Biomaterials*, **21**, 1191-1196, (2000).
9. Peppas, N.A., Keys, K.B., Torres-Lugo, M., Lowman, A.M., Poly(ethylene glycol)-containing Hydrogels in Drug Delivery, *J. Contr. Rel.*, **62**, 81-87, (1999).
10. Torres-Lugo, M., Peppas, N.A., Molecular Design and *In vitro* Studies of Novel pH-Sensitive Hydrogels for the Oral Delivery of Calcitonin, *Macromolecules*, **32**(20), 6646-6651,(1999).
11. Chiou, C., Torres-Lugo, M. Mariñas, B.J., Adams, J.Q., Non-biological Surrogate Indicators for Assessing Ozone Disinfection, *J. AWWA*, 89, 8, 54-66,(1997)

Professional Oral Presentations

- 11/06 - AichE Annual Meeting, San Francisco, CA
- 11/05 - AichE Annual Meeting, Cincinnati, OH
- 11/04 - AiChE Annual Meeting, Austin, TX
- 11/03 - AiChE Annual Meeting, San Francisco, CA.
- 11/02 - AiChE Annual Meeting, Indianapolis, IN.
- 11/01 - AiChE Annual Meeting, Reno, NV.
- 05/00 - Society of Biomaterials, Kona, HI
- 06/99 - Award Recipient, Summer Seminar, Biomedical Engineering Department, Purdue University
- 12/98 - Invited Speaker and Gold Medal Graduate Student Award Recipient, Material Research Society, Boston MA, 1998
- 9/98 -VI Annual Regional Symposium, Lexington KY

Posters and Presentations

Title	Type	Forum	Date
Transport Mechanisms of Calcitonin through Caco-2 Cell Monolayers	Oral	AICHE, Reno NV	11/01
Physicochemical Behavior and Cellular Interactions of Novel Oral Calcitonin Delivery Systems	Oral	AICHE, Indianapolis, IN	11/02
Biomedical and Biochemical Engineering Research in Chemical Engineering	Oral	Biomedical Engineering Colloquium, Mayaguez Resort, PR	5/03
Novel Approach for the Manipulation of Water Uptake,	Oral	AiChE San Francisco	11/03

Morphology and Permeability in pH-Sensitive Hydrogels Nanotechnology Center and its Application to Biomedical Innovation	Oral	Forum for Innovation Condado Plaza, PR	4/04
Synthesis and Characterization of Poly(ethylene glycol)-Rich Hydrogel Networks for Controlled Drug Delivery Applications	Poster	Phi Sigma Xi, Mayaguez PR	4/04
Examination of the Cytotoxic Effects of PEG-Rich Matrices utilizing the Caco-2 Cell Model	Oral	Princeton University Seminar	10/04
“Intelligent” Polymers for Biomedical Applications	Oral	Seminario Biología, UPRM, PR	11/04
Characterization of Immobilization of Myoglobin from Horse Skeletal Muscle (Mb) and Hemoglobin I (Hb I) from <i>Lucina Pectinata</i> in Hydrophilic Polymer Networks for H ₂ S biosensor Application	Poster	Current Trends in Biotechnology and Pharmaceutical Engineering Symposium Mayaguez Resort and Casino, PR	11/04
Examination of the Cytotoxic Effects of PEG-Rich Matrices utilizing the Caco-2 Cell Model	Oral	Current Trends in Biotechnology and Pharmaceutical Engineering Symposium Mayaguez Resort and Casino, PR	11/04
Examination of the Cytotoxic Effects and Transport of Magnetite Nanoparticles utilizing the Caco-2 Cell Model	Poster	First Transdisciplinary Research Conference, Condado Plaza, PR	12/04
Molecular Studies of Proteins Encapsulated in Hydrogels	Poster	AiChE Cincinatti	11/05
Synthesis and functionalization of magnetite (Fe ₃ O ₄) nanoparticles for cancer treatment	Oral	AiChE Cincinatti	11/05
Effects of Template-monomer Complex Formation on the Synthesis of Molecularly Imprinted Polymers in Aqueous Medium	Poster	AiChE Cincinatti	11/05
Cytotoxicity and cellular transport of magnetite nanoparticles utilizing the Caco-2 cell model	Oral	AiChE Cincinnati	11/05
Energy Dissipation and Nanoparticle Transport in Magnetic Fluid Hyperthermia Treatment of a Spherical Cancer Tumor	Poster	AiChE Cincinnati	11/05
Synthesis and Characterization of pH-Sensitive	Poster	AiChE Cincinnati	11/05

Poly(Ethylene Glycol)

Magnetic Nanoparticles with Thermoresponsive Polymeric Shells for Biomedical Applications	Poster	AiChE San Francisco	11/06
Surface Modification of Magnetite (Fe ₃ O ₄) Nanoparticles for Cancer Treatment	Poster	AiChE San Francisco	11/06
Insight the Rational Design of Molecularly Imprinted Polymer for the Development of Biomimetic Receptors	Oral	AiChE San Francisco	11/06
Assessment of the Biological Stability of Hemoglobin I from <i>Lucina Pectinata</i> and Myoglobin from Horse Skeletal Muscle in Ionic Hydrophilic Polymer Networks	Poster	AiChE San Francisco	11/06
Studies of Ferrite Based Magnetic Nanoparticle Transport Mechanisms and Magnetocytolysis Effects on a Model Cell Cultures	Poster	AiChE San Francisco	11/06
Examination of the Effects of Poly(Ethylene Glycol) (Peg) Rich Matrices on the Transport of Multi Drug Resistance (MDR) and Multi Drug Resistance Associated Protein (MRP) Substrates Utilizing the Caco-2 Cell Model	Poster	AiChE San Francisco	11/06
Poly(Ethylene Glycol) Hydrogels as Possible Multidrug Resistance Associated Protein (MRP) Inhibitors	Oral	EMBS Lyon France	8/07
The Effect of Pre-Polymeric Solution and Subsequent Encapsulation in Hydrogel Membranes on the Stability and Biological Activity of Horse Myoglobins	Oral	EMBS Lyon France	8/07

Professional Memberships

1998 - Material Research Society
1992-present - American Institute of Chemical Engineers

Honors and Awards

12/98 Gold Medal Award Winner for best work in the *Material Research Society Meeting* held in Boston, Massachusetts.
1998/99 MS GEM Fellowship in Engineering
1999-2000 Ph.D GEM Fellowship in Engineering
1999 Fearnot Award Winner for best summer seminar from the Biomedical Engineering Department, Purdue University
2000 Magoon Award for Excellence in Teaching, Purdue University, West Lafayette, Indiana

Institutional Service*Courses taught*

INQU 4011 – Chemical Engineering Thermodynamics I

INQU 4012 – Chemical Engineering Thermodynamics II

INQU 4016 – Plastics Technology

INQU 6019 – Advanced Thermodynamics

INQU 8027 – Advanced Engineering Principles in Drug Delivery

Students: Supervision of a total of 28 undergraduate students in 5 years, 3 PhD students, and 3 Master's students (one graduated in June 2005)

Committees: Academic Affairs Committee 2002-2006, Graduate Committee 2003-present, Personnel Committee 2006-present.

Academic Professional Orientation:

- Seminar and laboratory experience for high school students participating in the Pre-engineering program at UPRM (2003-2005);
- Orientation to SLOAN fellowship students 2004
- Orientation to high school students participating in the Biotechnology Program's summer retreat 2005.

Directly involved in the creation of the Bioengineering Program at UPRM

Academic Service

Review Panels: NSF-MRI (BES) 2003-2004, NSF-CTS 2004-2005, NIH-NIDDK 2004

Journal Reviewer: Biomacromolecules, Journal of Controlled Release, European Journal of Pharmaceutics and Biopharmaceutics, Biomaterials, Journal of Applied Polymer Science.

Curriculum Vitae for BIENVENIDO VELEZ-RIVERA

Department of Electrical and Computer Engineering

University of Puerto Rico, Mayagüez

P.O. Box 9050

Mayagüez, PR 00681

bvelez@acm.org

Professional Preparation

- B.S. in Computer Science (Distinction in all Subjects), Cornell University 1986
- M.S. in Computer Science, University of California, Berkeley, 1988.
- Ph.D. in Computer Science, Massachusetts Institute of Technology, 1999.

Professional Appointments

- 2005 - Chief Executive Officer and Founder – Phidelix Technologies Inc.
- 2005 - Associate Professor, Department of Electrical and Computer Engineering, University of Puerto Rico, Mayagüez.
- 1999 - 2005 Assistant Professor, Department of Electrical and Computer Engineering, University of Puerto Rico, Mayagüez.
- 1993 – 1999 Research Assistant, Massachusetts Institute of Technology
- 1989 - 1993 Instructor, Department of Mathematics and Computer Science, University of Puerto Rico, Rio Piedras.
- 1988 – 1989 Independent Consultant
- 1986 – 1988 Research and Teaching Assistant – University of California - Berkeley

Publications

- 2001 Christian Feliciano & Bienvenido Vélez. A Time-Domain Simulation Framework of an IPR-Based Shipboard Integrated Power System. IEEE 2006 Transmission and Distribution Conference. Caracas, Venezuela. August 15-18, 2006.
- 2002 Iván Vélez & Bienvenido Vélez. Lynx: An Open Architecture for Catalyzing the Deployment of Interactive Digital Government Workflow-Based Systems 7th Annual International Conference on Digital Government Research (DG.O 2006). San Diego, California, USA. May 21-24, 2006.
- 2003 Iván Vélez & Bienvenido Vélez. Lynx: An Open Email Extension for Workflow Systems Based on Web Services and its Application to Digital Government International Conference on Internet and Web Applications and Services (ICIW'06). Guadeloupe, French Caribbean. February 23-25, 2006.
- 2004 Lizvette Malavé y Bienvenido Vélez. TERRASCOPE IMAGE CLUSTERING: APPLYING CLUSTERING TECHNIQUES TO IMAGE AGGLOMERATION IN IMAGE RETRIEVAL SYSTEMS.

- International Conferenc on Communications, Internet and Information Technology. Saint Thomas VI. November 2004.
- 2005 Amaury Cabarcas, Lizvette Malavé y Bienvenido Vélez. TIN: An Interactive Image Navigatos Providing Ubiquitous Access to Distributed GeoSpatial Data. IEEE ITCC Conference. Las Vega, Nevada. April 2004.
- 2006 Elastically Replicated Information Services: Sustaining the Availability of Distributed Storage Across Dynamic Topological Changes. 2003 Southern Association of Information Systems Conference. Savannah, Goergia, USA. March 7-8 2003.
- 2007 **Bienvenido Vélez and Jairo E. Valiente. “Inforadar-cl: A Cross-Lingual Information Discovery Tool Exploiting Automatic Document Categorization”. To appear in *Proceedings of IASTED International Conference on Information and Knowledge Sharing (IKS 2002)*. St. Thomas, V.I. November 2002.**
- 2008 **Bienvenido Vélez and Jairo E. Valiente. “Interactive Query Hierarchy Generation Algorithms for Search Result Visualization”. In *Proceedings of Internet and Multimedia Systems and Applications (IMSA 2001)*. Honolulu, August 2001.**
- 2009 **Bienvenido Vélez and Juan A. Torres. “Anticipatory User Interfaces for Search Result Visualization using Query Lookahead”. In *Proceedings of Americas Conference on Information Systems (AMCIS 2001)*. Best Paper Award. Boston, August 2001.**
- 2010 Bienvenido Vélez, Ron Weiss, Mark Sheldon and David K. Gifford. “Fast and Effective Query Refinement”. In *Proceedings of ACM Conference in Research and Development in Information Retrieval (SIGIR 97)*. Philadelphia, August 1997.
- 2011 R. Weiss, B. Vélez, M. Sheldon, C. Namprempre, P. Szilagy and D. K. Gifford. “HyPursuit: A network search engine exploiting content-link similarity”. In *Proceedings of ACM Conference on Hypertext (HyperText 96)*

Professional organizations

ACM, SIGPLAN, SIGMOD, SIGIR, IEEE-CS, IASTED.

Research and Development Projects

Sistema de Información de Colegiados del Colegio de Abogados de Puerto Rico – Sistema para llevar toda la información y los procesos relacionados con el mantenimiento de los expedientes de los colegiados así como la facturación y cobro de cuotas.

Sistema de Información para Cadena de Lavanderías – Desarrollado como un proyecto de consultoría independiente, el sistema implementa el “point of sale” así como el workflow de una cadena de lavanderías.

IPRS – Intelligent Power Routers – Diseño y desarrollo de una nueva red de transmisión para la energía eléctrica basada en los “Intelligent Power Routers” (IPRS). Los IPRS son equipos de computadoras que

pueden controlar las líneas de transmisión de energía. En casos de falla catastrófica en el centro de mando de la red eléctrica, los IPRS toman el control de la red y cooperan entre si para mantener el sistema operacional y servir el mayor numero de abonados posible. Para lograr este fin, los IPRS son capaces de solicitar mayor generación de energía, eliminar zonas de baja prioridad, y/o abrir activar nuevas líneas para llevar la energía a los abonados. Se supervisara a un estudiante de maestría. Se solicitan 3 de descarga según acordado.

TCESS TerraScope – Desarrollo de un sistema heterogéneo de bases de datos tipo “Middleware” para interconectar y federar bases de datos Geo-espaciales y de satélites usando una arquitectura del tipo “Peer-to-Peer” (P2P). Cada base de datos será capaz de compartir sus recursos con otras bases de datos en la federación de manera que pueda disminuir el tiempo de búsqueda, y procesamiento de imágenes del tipo MODIS, AVHRR, y RADARSAT. A su vez, las imágenes estarán correlacionadas con información sobre latitud, longitud y otras características geo-políticas. Se establecerá un sistema de prueba para conectar las bases de datos de UPRM TCESS, UPRM CenSSIS otras bases de datos de E.E. U.U.

InfoRadar-ML – Desarrollo de un sistema de almacenaje y motor de búsqueda de documentos de texto multi-lingues.

Elastically Replicated Information Services – Investigación de los efectos de cambios en la arquitectura de un sistema de almacenaje de información distribuido en la disponibilidad y tolerancia a fallas del sistema.

Herramientas Educativas para Arquitectura de Computadoras - Desarrollo de experiencias de laboratorio para estudiantes. Dichas experiencias harán uso de una implementación de un procesador sencillo en lenguaje VHDL.

E-government - Desarrollo de sistemas de gobierno digital e implementación de los mismos de forma piloto en el municipio de Mayagüez. Investigación de nuevos sistemas de gobierno digital en áreas de búsqueda de información, integración de bases de datos heterogéneas, representación y procesamiento de información semántica en documentos gubernamentales. Componente de ciencias sociales evaluará las barreras a la adopción de tecnología por los gobiernos, utilizando al gobierno de Mayagüez como piloto.

Indusoft - Desarrollo de sistemas basados en el Web para acceso a bases de datos distribuidas de entidades relacionadas a los servicios de Salud, tales como hospitales, planes médicos, laboratorios, y oficinas medicas.

Aplicación de la tecnología “Struts” para construir un sistema “Transactional Swith” que permite a los profesionales de la salud interactuar con los planes médicos para corroborar beneficios de pacientes, enviar facturas por servicios, y resolver problemas sobre facturación siguiendo la nueva ley federal HIPAA. Se supervisara a un estudiante graduado, y dos estudiantes subgraduados. Se escribirá la documentación necesaria para lograr someter una patente. **Se solicitan 3 créditos de descarga de la tarea regular según acordado.**

Paper Equivalent Forms (PEF) – Sistema de formularios electrónicos que garantiza autenticidad de información igual o superior a los formularios de papel. PEF provee un editor de formularios electrónicos y una herramienta para llenar los formularios electrónicos utilizando tecnología de Tablet PC. La información de todos los formularios se almacena en una base de datos y toda la información se certifica electrónicamente lo que evita que la misma sea alterada de forma imperceptible. PEF provee un portal de acceso a la base de datos que permite fácil acceso relacional a la data de los formularios en tiempo real. El sistema está actualmente en fase avanzada de comercialización y próximamente se pondrá a prueba en una de las farmacéuticas más importantes al norte de Puerto Rico.

Lynx – Arquitectura abierta para generar aplicaciones informáticas con un componente complejo de workflow. La arquitectura utiliza formularios electrónico Xforms en conjunto con aplicaciones de email para crear los interfases gráficos. El sistema de workflow está basado en WebServices y en el lenguaje estándar “Business Process Execution Language” (BPEL). La arquitectura permite el desarrollo rápido de aplicaciones informáticas ya que reduce drásticamente el volumen de programación especializada requerida.

Civitas – Centro digital de gobierno municipal con módulos informáticos para mecanizar servicios ofrecidos por múltiples agencias municipales: Obras públicas, Servicios al ciudadano, Vivienda Municipal y Recaudaciones. Dos de los módulos ya están siendo utilizados por el Municipio de Mayagüez.