

Carlos Marín, Ph. D.

Associate Professor

Ph.D. Rensselaer Polytechnic Institute

Office OF-403

Mayagüez, PR 00680

(787) 832-4040, Ext. 5916

E-Mail: carlos.marin3@upr.edu

Professional Experience

- 2009–present Assistant Professor, Department of General Engineering, University of Puerto Rico, Mayaguez, PR
- 2003–2009 Assistant Professor, Department of Physics, University of Puerto Rico, Rio Piedras, PR

Professional Preparation

- Ph.D. in [Mechanical Engineering, Rensselaer Polytechnic Institute](#)
- Ph.D. in Physics of Materials, [Universidad Autónoma de Madrid](#)

Selected Publications

- C. Marín, G. Morell, S. P. Singh, B. R. Weiner, and H. Yilmaz, "Atomic and electronic properties of practical size single-crystal GaN nanotubes by first principles", *Journal of Nanoscience and Nanotechnology*, 11, 7753 (2011)
- S. Krishnan, C. Marín, R. Vadapoo, and H. Yilmaz, "Electronic structure of antimony selenide (Sb₂Se₃) from GW calculations", *Physica Status Solidi B*, 248, 700 (2011)
- S. Krishnan, C. Marín, R. Vadapoo, and H. Yilmaz, "Self standing nanoribbons of Antimony Selenide and Antimony Sulphide with well-defined size and band gap", *Nanotechnology*, 22, 175705 (2011)
- S. Krishnan, C. Marín, and R. Vadapoo, "Site Specific metallic to semiconductor transition in selenium adsorbed armchair single wall carbon nanotubes", *Journal of Applied Physics*, 110, 104302 (2011)
- W. Farfan, C. Marín, and E. Mosquera, "Synthesis and blue photoluminescence from naturally dispersed Antimony Selenide (Sb₂Se₃) 0-D nanoparticles", *Advanced Science Letters*, 4, 85 (2011)
- S. Krishnan, C. Marín, R. Vadapoo, and H. Yilmaz, "Selenium adsorbed single wall carbon nanotubes as a potential candidate for nanoscale interconnects", *Applied Physics Letters*, 97, 163107 (2010)

Honors and Awards

- Group Achievement Award — Participation in one experiment successfully conducted in the International Space Station, NASA

Grants

- C. Marín. Exploring one alternative approach for isotope enrichment using green and safe low-cost nanotechnologies, United States Department of Energy, Office of Science, Nuclear Physics Program, 2 years, March 2011, Single PI, Approved, \$499,800.

Professional Experience

- 2004-present, Professor, General Engineering Dept., UPR-Mayagüez
- 1999-2004, Associate Professor and Headperson, General Engineering Dept., UPR-Mayagüez
- 2000-2003, Faculty Fellow Senior Researcher, Warner Lambert-Pfizer, Adams R&D Headquarters, Morris Plains, NJ
- 1996-1999, Assistant Professor, General Engineering Dept., UPR-Mayagüez
- Summer-1998, Faculty Fellow Senior Researcher, Warner Lambert-Pfizer, Adams R&D Headquarters, Morris Plains, NJ
- Summer-1998, Faculty Fellow Senior Researcher, Warner Lambert-Pfizer, Adams R&D Headquarters, Morris Plains, NJ
- 1990-1995, Research and Teacher Assistant, Ph.D. Graduate Student, Chemical Engineering Dept., University of California-Davis
- 1989-1990, Instructor, General Engineering Dept., UPR-Mayagüez
- 1986-1989, Research and Teacher Assistant, M.S. Graduate Student Chemical Eng. Dept., UPR-Mayagüez and Dept. of Physiology, UPR-Rio Piedras.
- Summer 1986, Research Engineer, PRASA and UPR-Mayagüez
- 1982-1985, Plant Manager, Paraffins & Oils, Inc.; Querétaro, México
- 1980-1982, Process Engineer, Paraffins & Oils, Inc.; Querétaro, México
- 1979-1980, Laboratory Manager, Paraffins & Oils, Inc.; México, D.F.
- 1977-1978, Quality Control Technician, Paraffins & Oils, Inc.; México, D.F.

Professional Preparation

- 1995, Ph.D. Chemical Engineering. University of California-Davis.
- 1989, M.S. Chemical Engineering. University of Puerto Rico-Mayagüez.
- 1978, B.S. Chemical Engineering. National Polytechnic Institute-México, City

Selected Publications and Presentations

- Arocha MA, Jackman AP, and McCoy BJ. “Adsorption Kinetics of Toluene on Soil Agglomerates: Soil as a Biporous Sorbent,” Environmental Science and Technology, 1996, 30, 1500-1507.

- Arocha MA, McCoy BJ, and Jackman AP. "VOC Immobilization in Soil by Adsorption, Absorption and Encapsulation," *Journal of Hazardous Materials*, 1996, 51, 131-149.
- Arocha MA, Jackman AP, and McCoy BJ. "Numerical Analysis of Sorption and Diffusion in Soil with Micropores, Macropores, and Organic Matter," *Computers in Chemical Engineering*, 1997, 21, 489-499.
- Arocha MA, Jackman AP, and McCoy BJ. "Vapor-Phase Contaminant Transport in Soil with Micropores, Macropores, and Organic Matter: A Diffusion Model for Sorption and Desorption Experiments," *Environmental Science and Technology*, resubmitted.
- Arocha MA, Vargas FF, Ramirez-Vick JE. "Albumin Effect on the Permeability of Cultured Endothelium." *Journal of Applied Physiology*, 2004.
- Arocha MA, "Gum Base Model I: Understanding the Functionality of the Ingredients in the Gum Base by Neural Networks Modeling" Project Report to Warner Lambert-Pfizer Company, 1998
- Arocha MA, "Gum Base Model II: Flavor and Bolus Size Optimization" Project Report to Warner Lambert-Pfizer Company, 1999
- Arocha MA, McCoy and BJ Jackman AP. "Vapor Phase Contaminant Transport in Soil: A Bidiffusion Model for Sorption and Desorption Data" Proceedings of the 14th Caribbean Water Resources Conference Mayagüez, Nov. 2001.
- Arocha MA, Jackman AP and McCoy BJ. "Sorption and Desorption Behavior of Volatile Organic Contaminants in Soil." Proceedings of the 214th American Chemical Society, Sept. 1997.
- Arocha MA. "Sorption, Diffusion, and Immobilization of Volatile Organic Compounds in Soil," Ph.D. Dissertation, University of California-Davis, 1995.
- Arocha MA. "Cultured Endothelial Cell Monolayers as a Model System to Study the Effect of Albumin on the Permeability to Water Across Endothelium," M.S. Thesis, 1989.
- Arocha MA. "Design of a White Mineral Oil and Petroleum Sulfonate Refinery," B.S. Thesis, 1978.

Synergistic Activities

- Member of the Ad Hoc Committee to establish a Master Science program in Materials Science and Engineering
- Member of the Ad Hoc Committee to establish a Ph.D. program in Bioengineering
- Co-PI of the US DoEd funded project: "Materials Science and Engineering Education Improvement for a Hispanic-Serving Institution," MSEIP-US DoEd to create laboratory infrastructure for teaching Materials Science and Engineering
- PI of the NSF funded project: "Bioengineering Research and Education (BReEd) Experiences at UPRM" Project to establish a BS in Bioengineering at UPRM.
- Co-PI of the Water Research Institute funded project: "Sorption Behavior of Crumb Rubber to Remove Inorganic and Organic Contaminants From Aqueous Solutions."

Collaborators and Other Affiliations

- Alan Jackman, Chemical Engineering, Department University of California-Davis

- Ben McCoy, Chemical Engineering, Department University of California-Davis
- Maharaj Tomar, Physics Department, University of Puerto Rico-Mayaguez

Awards and Honors

- 1975, Valor Juvenil Nacional (BS student, national academic award, México, City)
- 1987, Ana G. Méndez Fellowship (MS student, UPR-Mayagüez)
- 1989, The National Dean's List (MS student, UPR-Mayagüez)
- 1991, TOPS (Ph.D. student, academic award at UC-Davis)
- 2000, Distinguish Professor, School of Engineering, UPR-Mayaguez