

NOEL MOTTA CRUZ

EDUCATION

8/87- 6/94 **University of Puerto Rico, Río Piedras**
Ph.D. Analytical Chemistry. Study of electron transfer reactions on carbon paste electrodes applied to the design and optimization of biosensors.

8/81-5/86 **University of Puerto Rico, Río Piedras**
BS Chemistry, Magna Cum Laude

EXPERIENCE

06/94 TO PRESENT

University of Puerto Rico, Río Piedras
Associate Professor. General and Analytical Chemistry.

General Chemistry Laboratory Teaching Assistant Summer Workshop Coordinator. Training of incoming instructors from graduate school. Training includes development of teaching skills and how to develop assessment activities.

Consultant for the Development of Inquiry-Based Experiments in General Chemistry. Project: Puerto Rico Louis Stokes Alliance for Minority Participation.

01/01 to Present

Coordinator of the Analytical Chemistry Laboratory.

01/95 TO 12/98

Coordinator of the General Chemistry Laboratory. Roles included the design and implementation of standards and criteria for the assessment of learning, the writing of experiments that involve the use of computers and handheld graphical calculators coupled to sensors (CBL) for the acquisition and analysis of experimental data.

06/95 TO 06/99

High School Science Curriculum Consultant. Project: Puerto Rico Statewide Systemic Initiative. Design of: cooperative learning activities in the classroom, performance chemistry tests, guidelines for the evaluation of performance tests.

- 08/98 TO 07/02 **Fund for the Improvement of Post-Secondary Education Project**
Director: Enhancement of Problem Solving and Scientific Reasoning Skills Through Computerized General Chemistry Modules.
- 08/99 TO PRESENT **Chemistry Department Academic Counselor for first-through-third-year students**
- 08/93-12/93 **University of Puerto Rico, Río Piedras**

Instructor. Teaching of the following lab courses: General Chemistry, Physical Chemistry, and Analytical Chemistry.
- 06/88-07/93 **University of Puerto Rico, Río Piedras**
Graduate Research Assistant. Application of electrochemical techniques to study chemical reactions at electrode surfaces for the construction of enzymatic biosensors for glucose.
- 6/87- 5/88 **University of Puerto Rico, Río Piedras**
General Chemistry Teaching Assistant
- 1/85-7/86 **University of Puerto Rico, Río Piedras**

Undergraduate Research Assistant. Thesis work on: "**The Role of Exogenous Metal Ions on the Photosensitizing Efficiency of Hematoporphyrin**", as required by *Minority Access for Research Careers* (MARC) and Honors Program (Supervised by Dr. Michael Lesieki)
- Design and implementation of computer software applied to Physical Chemistry experiments. Supported by *Puerto Rico Apple Foundation*, and supervised by Dr. Michael Lesieki y el Dr. Luis Veguilla.

Curricular and Co-Curricular Activities

Course Work

- Teacher: General Chemistry, Analytical Chemistry, Instrumental Analysis
- Coordinator for General and Analytical Chemistry Laboratories
- Academic Counselor for first-to-third year chemistry students

Workshops :

- Teaching Assistant Summer Training Program
- Chemistry Activities Using the Calculator Based Laboratory
- Teaching Fundamental Concepts through Interactive Classroom Activities
- Using Excel for Students, Teacher Assistants and Professors.
- Applications of System Dynamics in Chemistry.

Grants:

- Fund for the Improvement of Post-Secondary Education (FIPSE): “Enhancement of Problem Solving and Scientific Reasoning Skills Through Computerized General Chemistry Modules”

Project Director/Coordinator:

- FIPSE Project Director: *Enhancement of Problem Solving and Scientific Reasoning Skills Through Computerized General Chemistry Modules*
- AMP-Phase III Project Coordinator: *Design and Implementation of Interdisciplinary-Science Computer Modules for College Students*

Committees

- Evaluator of proposals from graduate students to the Special Fund for Research and Teaching Assistants (Dean of Graduate Studies and Research)
- Active participation in the Total Quality Management committee of the College of Natural Sciences. Includes collaboration in the design and statistical evaluation of questionnaires.
- Evaluation of incoming, first year students with special skills.
- Department Personnel Committee
- Department Committee for Academic Affairs

Chemistry Education and Analytical Chemistry Consultant

- Evaluation, Design and Implementation of CBL technology at different levels: High School Chemistry, General and Analytical Chemistry.
- High School Teacher Preparation: High School evaluation of

curricular content (Chemistry), design and assessment of learning tests, workshops. (Puerto Rico State- Wide Initiative-PR-SSI)

- Inquiry-Based Experiments in General Chemistry (Alliance for Minority Participation-AMP)
- Chemists' Board Analytical Chemistry Review for the Chemist License Examination
- Peer Reviewer in the Journal of Chemical Education
- Co-author of a textbook on Research for High School Students, sponsored by the Puerto Rico Education Department.

Presentations and Workshops

1. Noel Motta, Neftalí Rivera, and Ana Guadalupe. **Electrochemical Monitoring of the Enzymatic Oxidation of Glucose: The role of $[\text{Ru}(\text{tpy})(\text{bpy})(\text{H}_2\text{O})](\text{NO}_3)_2$ as an Electron Transfer Mediator.** First Mini-Gordon Conference on Electrochemistry Febrero 9-10 (1990), Lajas, PR.
2. Noel Motta and Ana Guadalupe. **Electrochemistry at Modified Carbon Paste Electrodes: Study of Organic Molecules with Slow Electron Transfer Kinetics.** 15th Senior Technical Meeting, November 15-16 (1991) Ponce, PR (no. 42).
3. Noel Motta and Ana Guadalupe. **Studies of Electrode Reactions on Activated Carbon Paste Surfaces. Applications to Biosensor Design and Optimization.** The Pittsburgh Conference, March 8-12, 1993 Atlanta, GA (Abstract no. 51).
4. **Refocusing the Role of the Laboratory of the General Chemistry Course.** 19th Senior Technical Meeting, November 3-4, 1995, Lajas, PR. (Abstract CHED-1)
5. **Academic Quality Assurance in the General Chemistry Laboratory.** 20th Senior Technical Meeting, November 15-16, 1996, Carolina, PR. (Abstract CHED-8)
6. **Biosensores Electroquímicos: Principios de Operación y Aplicaciones.** Universidad Interamericana-Fajardo. Semana de las Ciencias, Matemáticas y C.E.C.I.A. Abril 1996, Fajardo, PR.
7. **Ácidos y Bases Algo Más que Antónimos Químicos.** Workshop offered at *Enseñanza Conceptual Usando Manipulativos y el CBL* (14-18 de julio de 1999, Aguadilla, PR. Sponsored by the project: *Collaborative for the Excellence in Teacher Preparation.*
8. Noel Motta and Francisco Echegaray . **A Computerized General Chemistry Interactive Module On Chemical Equilibrium ACS** Senior Technical Meeting November 4, 2000 Aguadilla, PR
9. Noel Motta and Francisco Echegaray. **Enhancement of Problem**

- Solving and Math Skills Through Computerized Modules.**
ACS Senior Technical Meeting November 4, 2000 Aguadilla, PR
10. **Enhancement of Problem Solving and Scientific Thinking Skills through Computerized General Chemistry Modules.**
Feria de Iniciativas de Apoyo Académico a los Estudiantes, Centro de Excelencia Académica. 19 de abril 2001, Río Piedras PR.
11. **Registry Exam Seminar on Solution and Buffer Preparations.**
Puerto Rico Society of Microbiologists. October 11, 2002, Carolina PR.
12. **Estrategias para la construcción de experiencias virtuales interactivos propios para la educación a distancia.** Dr. Manuel Reyes, Dr. Gerardo Morell y Dr. Noel Motta,
17 de octubre de 2003 UPR Río Piedras
13. Noel Motta, **Forum on Chemical Applications of System Dynamics** October 31, 2003 Ponce PR

Publications

Noel Motta, Francisco Echegaray. **An Interactive Computer Module for Enhancing Mathematics and Scientific Reasoning Skills in Spanish-Speaking Students.** In preparation for submission to *Journal of Chemical Education*.

Noel Motta, Francisco Echegaray. **Un módulo interactivo computadorizado para el aprendizaje del tema de Equilibrio Químico.** In preparation for submission to *Educación Química*, Mexico.

Noel Motta. **Concept Building Through Active Learning Experiences with the CBL** *The Journal of Mathematics and Sciences: Collaborative Explorations* **2001**,4(2),25-36.

Josefina Arce, Rosa Betancourt y Noel Motta. **Manual de Laboratorio de Química General**, McGraw Hill, 1999.

Noel Motta and Ana Guadalupe. **Activated Carbon Paste Electrodes For Biosensors.** *Anal Chem.* **1994**, 66, 566-571.