

Carolina C. Ilie

Tenure Track Assistant Professor

Department of Physics, State University of New York at Oswego
123 Snygg Hall, SUNY Oswego, 7060 Route 104, Oswego, NY 13126-3599
tel: 315-312-5751, email: carolina.ilie@oswego.edu

Professional Preparation

- 8/2008: *Ph.D. Physics and Astronomy, University of Nebraska-Lincoln,*
Advisor: Prof. Peter A. Dowben, Charles Bessey Professor,
Physics and Astronomy, University of Nebraska-Lincoln,
Nebraska Center for Materials and Nanoscience
“Activated and Nonactivated Water Desorption from Polymer Surfaces”
- 8/2003: *M.Sc. Physics, The Ohio State University,*
Advisor: Prof. William F. Saam, Chairman, AAAS Fellow
“Capillary Condensation and Wetting Phenomena”
- 6/1995: *M.Sc. Physics, Semiconductors, University of Bucharest, Romania*
Advisors: Prof. Minola Leonovici, Dr. Brandusa Iliescu
Thesis: “Optical and Electrical Properties of Quartz Crystals”
- 6/1994: *B.Sc. Engineering Physics, University of Bucharest, Romania,*
Advisor: Prof. Mircea Andreescu
Thesis: “Theory and Applications of Ultrasound Flow Meters”

Professional Experience

- 2008- Tenure Track Assistant Professor, Physics Department, SUNY Oswego
2003-2008 Graduate Teaching Assistant, Physics and Astronomy, UNL
2008 Spring Adjunct Instructor of Physics, Nebraska Wesleyan University
2003-2008 Graduate Research Assistant, Physics and Astronomy, UNL
2005-2008 Laboratory Mentor, Physics and Astronomy, UNL
1999-2003 Graduate Teaching Assistant, Physics, OSU
1999-2003 Graduate Research Assistant, Physics, OSU
1994-1999 Assistant Professor of Physics, “St. Joseph” College, Bucharest, Romania.

Awards and Honors

- Gordon Research Conference, Chair’s grant for PUI (primarily undergraduate institution) 2009
American Center for Physics, New Physics and Astronomy Faculty Workshop Grant 2009
APS, Committee on the Status of Women in Physics – Professional Skills Development Grant 2009
Conference on Instructional Technologies, Faculty Access to Computing Technology Grant 2009
Physical Electronics Conference, Nottingham Prize Finalist 2008
Gordon Research Conference, Young Investigator Competition Award 2007
Sigma Xi Graduate Research Poster Competition Award 2007
Division of Chemical Physics, American Physical Society Dependant Child Care Award 2007
Prepare Future Faculty Fellow, University of Nebraska at Lincoln 2006
Gordon Research Conference, Chair’s Fund for Early Career Scientists 2005
University of Nebraska-Lincoln, Othmer Fellowship for Exceptional Scholars 2003-2006
University of Bucharest, Faculty of Physics, Romanian Government Fellowship 1990-1994

Publications

1. **Carolina C. Ilie**, Petru Lunca-Popa, Jiandi Zhang, Bernard Doudin, Peter A. Dowben, "Mercury and C₂B₁₀ Icosahedra Interaction", *Mater. Res. Soc. Symp. Proc.* **848** (2005) FF6.5.1-FF6.5.6
2. **Carolina C. Ilie**, Snjezana Balaz, Luis G. Rosa, Jiandi Zhang, P. Lunca-Popa, Christopher Bianchetti, Roland Tittsworth, J.I. Brand, B. Doudin, P.A. Dowben, "The Coadsorption and Interaction of Molecular Icosahedra with Mercury", *Applied Physics A* **81** (2005) 1613-1618
3. P.A. Jacobson, **Carolina C. Ilie**, I.N. Yakovkin, Matt Poulsen, D. Sahadeva Reddy, James M. Takacs, and P.A. Dowben, "Water Absorption and Desorption from the Dipole Ordered Polymer Poly(methylvinylidene cyanide)", *J. Phys. Chem. B* **110** (2006) 15389-15392
4. **Carolina C. Ilie**, P. A. Jacobson, Matt Poulsen, Luis G. Rosa, D. Sahadeva-Reddy, James M. Takacs, Stephen Ducharme, and P. A. Dowben, "Angle Resolved Thermal Desorption Studies for Poly(methylvinylidene cyanide) and Poly(vinylidene fluoride trifluoroethylene)", *MRS Symposium Proceedings* (2007) 0947-A03-01
5. **Carolina C. Ilie**, P.A. Jacobson, I.N. Yakovkin, Matt Poulsen, D. Sahadeva Reddy, James M. Takacs, and P.A. Dowben, "Activated Water Desorption from Poly(methylvinylidene cyanide)", *J. Phys. Chem. B* **111** (2007) 7742-7746
6. P. A. Dowben, Luis G. Rosa, **Carolina C. Ilie**, "Water Interactions with Crystalline Polymers with Large Dipoles", *Z.Phys. Chem.* **222** (2008), 755-778 – review article
7. Jie Xiao, **Carolina C. Ilie**, Ning Wu, Keisuke Fukutani, and P.A. Dowben, "Haloform Adsorption on Crystalline Copolymer Films of Vinylidene Fluoride with Trifluoroethylene", *Surface Science*, 603 (2009) 513-517
8. **Carolina C. Ilie**, Jie Xiao, and P. A. Dowben, "Molecular Adsorption and Fragmentation of Bromoform on Polyvinylidene Fluoride with Trifluoroethylene", *Mater. Res. Soc. Symp. Proc.* (2009) Vol. 1134-BB01-06
9. Peter A. Dowben, Jie Xiao, **Carolina C. Ilie**, Luis G. Rosa, "Adsorbate/ absorbate interactions with organic ferroelectric polymers", *Journ. of Electron Spectroscopy and Related Phenomena*, review in the honour of Prof. Bill Salaneck, 174 (2009) 10-21
10. Barbara Murray, Charles Henderson, and **Carolina C Ilie**, "Trends in undergraduate science instruction: Taking an interdisciplinary approach towards the solution of 21st century problems", submitted to *Liberal Education*.

Presentations

Invited talks

1. "Do you JITT? Benefits of using Just In Time Teaching", Center for Excellence in Learning and Teaching (CELT) workshop, **SUNY Oswego**, December 7th 2009
2. "How to Succeed in Physics?", plenary talk at the Conference for Undergraduate Women in Physics, **University of Nebraska – Lincoln, Lincoln, NE**, October 30th – November 1st, 2009
3. "Student Grant Workshops: How to Prepare for Student SCAC?" with Kathy Budd, CELT, **SUNY Oswego**, October 14th 2009
4. "Research Projects", Science Colloquium, **SUNY Oswego**, June 2009
5. "Ferroelectric Polymers as New Competitive Memory Devices", Science Today, **SUNY Oswego**, April 2009
6. "Ferroelectric Polymers as New Competitive Memory Devices", College Hour, **SUNY Oswego**, February 2009
7. "AAC&U's "Engaging Science, Advancing Learning" Conference: Themes and Strategies", **SUNY Oswego Faculty Workshop**, Presenters: Craig DeLancey, Bill Goffe, **Carolina Ilie**, and Kristen Carolina C. Ilie / Department of Physics, State University of New York at Oswego, 123 Snygg Hall, 7060 Route 104, Oswego, NY 13126-3599, tel: 315-312-5751, email: carolina.ilie@oswego.edu

Link, January 2009

8. "Water interactions with crystalline polymers with large dipoles", **Condensed Matter Seminar**, Syracuse University, Syracuse, NY, October 2008
9. "Are inert polymers really inert?", Physics Department, **SUNY Oswego, Oswego, NY**, 2008
10. "Are inert polymers really inert?", Physics Department, **SUNY Potsdam, Potsdam, NY**, 2008
11. "Are inert polymers really inert?", Physics and Geology Department, **Berry College, Rome, GA**, 2008
12. "Water interactions with crystalline polymers with large dipoles", Physics Department, **Rollins College, Winter Park, FL**, 2008

National and International

1. **Ilie, C.C.**, Buske, K., Gray, S., Chartrand, J., Laurion, W., and Dowben, P.A., **2009**, "Lattice Behavior of Two Ferroelectric Polymers under Progressive Water Coverage", **Material Research Society**, Boston, MA.
2. **Ilie, C.C.**, Chartrand, J., Gray, S., Buske, K., Xiao, J., Dowben, P.A., **2009**, "The Interaction of Haloforms with Ferroelectric Copolymers of Vinylidene Fluoride with Trifluoroethylene", **Gordon Research Conference: Dynamics at Surfaces**, Andover, NH.
3. **Ilie, C. C.**, Xiao, Jie, Dowben, P.A., **2009**, "Haloform Adsorption on Crystalline Copolymer Films of Vinylidene Fluoride with Trifluoroethylene", **American Physical Society**, March International Meeting, Pittsburgh, PA.
4. **Ilie, C. C.**, Xiao, Jie, Dowben, P.A., **2008**, "Haloform Adsorption on Crystalline Copolymer Films of Vinylidene Fluoride with Trifluoroethylene", **Material Research Society**, Fall International Meeting, Boston, MA.
5. Rosa, Luis G., **Ilie, Carolina C.**, Dowben, P.A., **2008**, "Activated and Nonactivated Water Desorption from Polymer Surfaces", **Faraday Discussion 141 Water from Surface to Bulk**, Royal Society of Chemistry, Edingburgh, Scotland, UK.
6. **Ilie, C. C.**, Dowben, P.A., **2008**, "Activated and Nonactivated Water Desorption from Polymer Surfaces", **Physical Electronics Conference**, Nottingham prize finalist, Riverside, CA.
7. **Ilie, C. C.**, Jacobson, P.A., Yakovkin, I. N., Rosa, Luis G., Xiao, J., Poulsen, M., Sahadeva Reddy, D., Takacs, James M., and Dowben, P.A., **2007**, "Activated Water Desorption from Poly(vinylidene fluoride with trifluoroethylene) and Poly(methylvinylidene cyanide)", **Gordon Research Conference: Dynamics at Surfaces**, Andover, NH.
8. **Ilie, C. C.**, Jacobson, P.A., Rosa, Luis G., Yakovkin, I. N., Poulsen, M., Sahadeva Reddy, D., Takacs, James M., Ducharme, S., and Dowben, P.A., **2007**, "Activated Water Desorption from Poly(methylvinylidene cyanide)", **American Physical Society**, Denver, CO.
9. **Ilie, C. C.**, Jacobson, P.A., Rosa, Luis G., Yakovkin, I. N., Poulsen, M., Sahadeva Reddy, D., Takacs, James M., Ducharme, S., and Dowben, P.A., **2006**, "Water Interactions with the Ferroelectric Polymer PVDF-TrFE and the Dipole Oriented Polymer PMVC", **Material Research Society**, Fall Meeting, Boston, MA.
10. Day, E., Diaz, M., **Ilie, C. C.**, Adenwalla, S., **2006**, "Resistive all boron carbide neutron detectors", **American Physical Society**, March Meeting, Semiconductor Applications, Baltimore, MD.
11. **Ilie, C. C.**, Balaz̄, S., Lunca-Popa P., Brand, J. I., Zhang, J., Doudin, B., and Dowben, P. A., **2005**, "The Interaction of Molecular Icosahedra with Mercury", **Gordon Research Conference, Chemistry of Electronic Materials**, New London, CT.
12. **Ilie, C. C.**, Lunca-Popa P., Balaz̄, S., Zhang, J., Rosa L. G., Doudin, B, Dowben, P. A., **2004**, "Mercury and C₂B₁₀ Icosahedra Interaction", **Material Research Society**, Fall Meeting, Boston, MA.

13. Diaz, M. J., **Ilie, C. C.**, Day, E., Adenwalla, S, **2004**, “Temperature Dependence of Electrical Conduction Properties of Boron Carbide Thin Films”, **Material Research Society**, Fall Meeting, Boston, MA.
14. **Ilie, C. C.**, Balaž, S., Rosa L. G., Doudin, B, Dowben, P. A., **2004**, “The Coadsorption of Mercury and Molecular Icosahedra on Cu(100)”, American Vacuum Society, **The 51st International Symposium and Exhibition**, Anaheim, CA.

Regional

1. **Ilie, C.C.**, Lee, Kevin, **2009**, “Computer Based Collaborative Problem Solving for Introductory Courses in Physics”, **Conference on Institutional Technologies: “Engaging Minds: Innovative Teaching and Learning”**, May meeting organized at SUNY Oswego, Oswego, NY.
2. Laurion, Wes, **Ilie, C. C.**, **2009**, “Water Interaction with Polymers”, **Northeast Regional Undergraduate and Graduate Student Sigma Xi Poster Conference**, April meeting, Oswego, NY
3. Buske, Kenneth, **Ilie, C. C.**, **2009**, “Water Interaction with a Photoresist Polymer”, **Northeast Regional Undergraduate and Graduate Student Sigma Xi Poster Conference**, April meeting, Oswego, NY
4. **Ilie, C. C.**, Jacobson, P.A., Yakovkin, I. N., Rosa, Luis G., Xiao, J., Poulsen, M., Sahadeva Reddy, D., Takacs, James M., and Dowben, P.A., **2007**, “Intrinsic and Extrinsic Activated Water Desorption from Two Dipole Oriented Polymers”, **The 42nd American Chemical Society Midwest Regional Meeting**, Kansas City, MO.
5. **Ilie, C. C.**, Jacobson, P.A., Yakovkin, I. N., Rosa, Luis G., Xiao, J., Poulsen, M., Sahadeva Reddy, D., Takacs, James M., and Dowben, P.A., **2007**, “Activated Water Desorption from Poly(vinylidene fluoride with trifluoroethylene) and Poly(methylvinylidene cyanide)”, **The 54th Midwest Solid State Conference**, Lincoln, NE.
6. **Ilie, C. C.**, Jacobson, P.A., Rosa, Luis G., Poulsen, Matt, Sahadeva Reddy, D., Takacs, James M., Ducharme, S., and Dowben, P.A., **2006**, “Water Interactions with Two Ferroelectric Polymers”, **The 53rd Midwest Solid State Conference**, University of Missouri – Kansas City, Kansas City, MO.
7. **Ilie, C. C.**, Balaž, S., Rosa, Luis G., Zhang, J., Lunca-Popa, P., Bianchetti, C., Tittsworth, R., Brand, J. I., Doudin, B., and Dowben, P. A., **2006**, “Molecular Icosahedra and Semiconductor Boron Carbide Mercury Coadsorption”, **The 53rd Midwest Solid State Conference**, University of Missouri – Kansas City, Kansas City, MO.
8. **Ilie, C. C.**, Lunca-Popa P., Brand, J. I., Balaž, S., Zhang, J., Rosa L. G., Dowben, P. A. and Doudin, B., **2005**, “Mercury and C₂B₁₀ Icosahedra Interaction”, **Nebraska Research Expo**, Omaha, NE.
9. Lunca-Popa, P., **Ilie, C. C.**, Balaž, S., Brand J. I., **2004**, “Electronic structure for polytypes of semiconducting boron carbide”, **The 2004 Midwest Regional American Chemical Society Meeting**, Manhattan, KS.
10. **Ilie, C. C.**, Rosa L. G., Balaž, S., Doudin, B., Dowben, P. A., **2004**, “The Coadsorption of Mercury and Molecular Icosahedra on Cu(100)”, **Annual American Vacuum Society Symposium and Equipment Exposition**, 2004 Rocky Mountain Chapter AVS, Colorado School of Mines, Golden, CO.

Local

1. Chartrand, J., **Ilie, C.C.**, Dowben, P.A., **2009**, “The Interaction of Haloforms with Ferroelectric Copolymers of Vinylidene Fluoride with Trifluoroethylene”, **Sigma Xi Student Conference**,

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- SUNY Oswego, Oswego, NY**
2. Laurion, W., **Ilie, C.C.**, Jiang, J., Tan, L., **2009**, “Comparison of the Experimental and Theoretical Vibrational Spectra of 2,3,9,10-tetrakis (3,5-di-t-butylphenylethynyl)-6,13-bis(trimethylsilylethynyl) pentacene, **Sigma Xi Student Conference, SUNY Oswego, Oswego, NY**
 3. Gray, S., **Ilie, C.C.**, “Searching for Biological Sensors”, **Sigma Xi Student Conference, SUNY Oswego, Oswego, NY**
 4. **Ilie, C.C.** and Hay, K., **2009**, “How to Implement JITT – Just in Time Teaching?”, **Fifth SUNY-Oswego Symposium on Learning and Teaching, A Celebration of Meaningful Learning: Engaging Students, Oswego, NY**
 5. Gray, Shawn, **Ilie, C. C.**, **2009**, “Searching for Biological Sensors”, **Quest**, April meeting, Oswego, NY
 6. Buske, Kenneth, **Ilie, C. C.**, **2009**, “Water Interaction with a Photoresist Polymer”, **Quest**, April meeting, Oswego, NY
 7. Laurion, Wes, **Ilie, C. C.**, **2009**, “Water Interaction with Polymers”, **Quest**, April meeting, Oswego, NY
 8. **Ilie, C. C.**, Jacobson, P.A., Yakovkin, I. N., Rosa, Luis G., Poulsen, M., Sahadeva Reddy, D., Takacs, James M., and Dowben, P.A., **2007**, “Activated Water Desorption from Poly(methylvinylidene cyanide)”, **Nebraska Chapter of Sigma Xi Graduate Student Poster Competition, Lincoln, NE.**
 9. **Ilie, C. C.**, Jacobson, P.A., Rosa, Luis G., Poulsen, Matt, Sahadeva Reddy, D., Takacs, James M., Ducharme, S., and Dowben, P.A., **2006**, “Water Interactions with Two Ferroelectric Polymers”, **Materials Research Science & Engineering Center Site Visit, University of Nebraska-Lincoln, Lincoln, NE.**
 10. **Ilie, C. C.**, Balaž, S., Lunca-Popa P., Brand, J. I., Zhang, J., Doudin, B., and Dowben, P. A., **2006**, “Comparison between Mercury on Molecular Icosahedra and Mercury on Semiconductor Boron Carbide”, **2006 Graduate Student Research and Creative Activity Competition Sponsored by the Office of Research and Graduate Studies and the Nebraska Chapter of Sigma Xi, University of Nebraska-Lincoln, Lincoln, NE.**
 11. **Ilie, C. C.**, Balaž, S., Lunca-Popa P., Brand, J. I., Zhang, J., Doudin, B., and Dowben, P. A., **2005**, “Mercury Coadsorption with Molecular Icosahedra or Semiconductor Boron Carbide”, **NSF and MRSEC Second Review and Symposium, UNL, Lincoln, NE.**
 12. **Ilie, C. C.**, Balaž, S., Lunca-Popa P., Brand, J. I., Zhang, J., Doudin, B., and Dowben, P. A., **2005**, “Are Molecular Icosahedra and Semiconductor Boron Carbide Doped by Mercury?”, **NeInSci (Nebraska Symposium on Interdisciplinary Graduate Science Research), UNL, Lincoln, NE.**
 13. **Ilie, C. C.**, Doudin, B., Lunca-Popa P., Brand, J. I., Balaž, S., Zhang, J., Rosa L. G., Dowben, P. A., **2005**, “Mercury and C₂B₁₀ Icosahedra Interaction”, **Sigma Xi Poster Competition, University of Nebraska-Lincoln, Lincoln, NE.**
 14. Diaz, M. J., **Ilie, C. C.**, Adenwalla, S, **2004**, “Electrical properties of Boron Carbide Thin Films”, **Materials Research Science & Engineering Center, University of Nebraska-Lincoln, Lincoln, NE.**

Submitted Grants

1. November **2009**, NSF – “Materials World Network: Synthesis and characterization of superparamagnetic iron oxide core-shell nanoparticles for targeting biomolecular therapy and multimodal cancer therapy”, co-PI with Adrian Ieta and Kestas Bendinskas
2. August **2009**, NSF – MRI-R2: Acquisition of X-ray Characterization Equipment for Research in Chemistry, Geology, and Physics, co-PI with Casey Raymond and Paul Tomascak, pending

3. July **2009**, NSF – Acquisition of a 400 MHz NMR with Chemistry. PI Dr. Bruch, Dr. LeFevre, users Dr. Kadima, Dr. Bendinskas, Dr. Damkaci, Dr. Ilie
4. August **2009**, NSF-MRI-R2: Acquisition of JEOL JCM-5700 Scanning Electron Microscope, PI: Dr. Gostling, Dr. Boyer, Dr. Sime, Co-PI: Dr. Ilie, Dr. Phippen, Dr. Raymond, Dr. Saraydar, Dr. Seago, Dr. Valentino, august 2009
5. August **2009**, Gordon Research Conference, Chair’s grant for PUI (primarily undergraduate institution), **\$800** (received)
6. June **2009**, American Physical Society, M. Hildred Blewett Scholarship, Studies of Metal Clusters on Polymer Compounds, International Collaboration with Paul Scherrer Institute and the Swiss Light Source, PI, \$45,000
7. May 2009, American Center for Physics, New Physics and Astronomy Faculty Workshop Grant **\$1,500** (received)
8. March **2009**, APS – Women in Physics, Committee on the Status of Women in Physics – Professional Skills Development Grant, **\$850** (received)
9. October **2008**, SCAC – SUNY Oswego, (PI): “Investigation of Water Absorption on Polymers” **\$2,920** (received)
10. July **2008**, American Chemical Society - Undergraduate New Investigator, Petroleum Research Fund (ACS-UNI-PRF), \$50,000 (PI): “Study of dipolar adsorbates on polymer films and applications”
11. May **2008**, NSF – Division of Undergraduate Education - Course Development Grant, \$140,000 (PI): ”Laboratory Training in the Nuclear Sciences at the Undergraduate Level”, with Dr. Sabirianov
12. In preparation: NSF K-12 Discovery Research RFP inter-SUNY campuses grant - directed by Old Westbury and with SUNY Oswego collaborators Barbara Garii, Judith Belt, and Jean Hallagan)

Courses Taught

- **At SUNY Oswego**

- Spring 2010: Physics 101-800 “Introductory Physics”
 Physics 213-800 “General University Physics II”
 Physics 322-L50 “Optics Laboratory”
 Physics 399-073 “Independent Study”
 Physics 436-800 “Advanced Mechanics”
- Fall 2009: Physics 112-800 “General University Physics I”
 Physics 423-L50 “Quantum Physics II lab”
 Physics 439-800 “Advanced Electromagnetic Theory”
 Physics 496-800 “Senior Research Project”
- Summer 2009: Physics 399-073 “Independent Study”
- Spring 2009: Physics 111-800 “College Physics I”
 Physics 213-800 “General University Physics II”
 Physics 436-800 “Advanced Mechanics”
- Fall 2008: Physics 111-800 “College Physics I”
 Physics 111-810 “College Physics I”
 Physics 439 “Advanced Electromagnetic Theory”

- **At Nebraska Wesleyan University**

- Spring 2008: Physics 054 “Energy and Global Environment” - lecture

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Physics 055 “Energy and Global Environment” - laboratory

- **At UNL**

- Spring 2008: Physics 141 “Elementary General Physics I” Laboratory Mentor
Fall 2007: Physics 141 “Elementary General Physics I” Laboratory Mentor
Spring 2007: Physics 141 “Elementary General Physics I” Laboratory Mentor
Physics 361 “Concepts in Modern Physics”, selected lectures
Fall 2006: Physics 141 “Elementary General Physics I” Laboratory Mentor
Physics 213 “General Physics III”, selected lectures
Spring 2006: Physics 361 “Concepts in Modern Physics”, selected lectures
Fall 2005: Physics 212 “General Physics II, Electromagnetism”, Recitation Instructor (Prof. K. Uiterwaal lecturer)
Physics 151 “Elements of physics”, Recitation Instructor (Prof. K. Lee lecturer)
Physics 141 “Elementary General Physics I” Laboratory Mentor
Spring 2005: Physics 151 “Elements of physics”, Recitation Instructor (Prof. S. Ducharme lecturer)
Physics 221 “General Physics Laboratory I”, Laboratory Instructor
Fall 2004: Physics 141 “Elementary General Physics I” Laboratory Instructor
Spring 2004: Physics 141 “Elementary General Physics I” Recitation Instructor (Dr. T. Bykov lecturer)
Fall 2003: Physics 298 “Physics by Inquiry” – (course for K-12 teachers) Laboratory Instructor (Prof. D. Leslie-Pelecky lecturer)

- **At OSU (1999-2003)**

Undergraduate level:

Calculus Based General Physics, parts 1, 2, and 3 – Recitations Instructor and Laboratory Instructor
Algebra Based General Physics, parts 1, 2 and 3 – Recitations Instructor and Laboratory Instructor

Graduate level:

Classical Mechanics – by H. Goldstein (grader) (Prof. T. Humanic instructor)
Introduction to Electrodynamics – by D. J. Griffiths (grader) (Prof. E. Braaten instructor)
Introduction to Solid State Physics – by C. Kittel (grader) (Prof. R. Sooryakumar instructor)

- **At “Arts and Sciences College” (1994-1999)**

Algebra based introductory physics: mechanics, electricity and magnetism, optics, modern physics
Mathematics: Introductory courses: Arithmetics, Algebra, Geometry (in plane and in space),
Trigonometry, Analytical Geometry, Calculus I and II and III.

Synergistic Activities

- Developed a non-traditional strategy of teaching algebra based course – PHY 111, College Physics I. The learning process includes powerpoint lectures, solving problems on the board, peer instruction, quizzes, exams and the possibility to write a paper on various physics topics for extra credit - Fall 2008, Spring 2009.
- Developed Just in Time Teaching (JITT) method combined with peer instruction for teaching PHY 112, University Physics I - a calculus based course. The assessment is done by administering a national and international recognized test – Force Concept Inventory at the beginning and at the end of the class.
- Developed upper level courses – PHY 439 Advanced Electrodynamics and PHY 436 Advanced Mechanics. After a more traditional approach during Fall 08, this Spring and Fall I use lectures, homeworks, weekly quizzes, exams, but I also require my students to do research on new discoveries in the field and to write a 5-7 pages paper and to present it

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during last week of classes. Their performance is peer evaluated. My objectives are to improve their writing skills, the ability to do research and the ability to present their work, together with problem solving skills.

Community Outreach

- 2004 - High School Science – Nanotechnology workshop– 7th grade students
- 2004-2005 - Saturday Science – 6th and 7th grade students 2004 and 2005

Professional Service

Sigma Xi secretary, SUNY Oswego chapter 2009-

Committee of Women in Materials Science and Engineering, Materials Research Society 2009-

North East Regional Sigma Xi Poster Competition, SUNY Oswego, judge, 2009

Conference on Institutional Technologies: “Engaging Minds: Innovative Teaching and Learning”, SUNY Oswego, presenter and facilitator, 2009

Provost's Advisory on Scientific and Quantitative Literacy, member, 2008-2009; co-chair (with Dr. Jean Hallagan), SUNY Oswego 2009-

Scholarly and Creative Activity Committee (SCAC) member 2009- design and present workshop for our students about writing grants (with Dr. Kathy Budd)

Center for Excellence in Learning and Teaching (CELT) active member, 2009-

Faculty Assembly Representative, SUNY Oswego, 2008-

Physics Department Personnel Committee 2009-

Arts and Sciences – SUNY Oswego Representative, AAC&U Engaging Science Workshop, 2008

Search Committee Member, Computer Science and Engineering Department, SUNY Oswego 2008-

Take your students to the Arts, SUNY Oswego, 2009-

Recommendation letters 2008-

Research Advisor – 3 Physics majors and 1 Biology Major, Physics Minor 2009

Referee for the Material Research Society, Surface Science Spectra, Science and Technology Society, Elsevier, ASEE, 2005-

Graduate Student Representative: Search Committee Member, Solid State Physics Faculty Search, UNL, 2005

Columbus Day Open House 2009 – host for PHY 112 University Physics I course.

Professional Development Activities

2009- Materials Research Society, *Women and the Power of Negotiation: Learning to Ask*, November 29, Boston, MA

2009 –SUNY Oswego workshops: *Preparing Effective Materials for Retention, Promotion and Tenure* (Provost Coultrap-McQuin and Deans of each School and College), *Proven Ways to Improve Evaluations*, (Bill Bosch) Fall semester

2009– Syracuse University Workshop on Teaching, October 16-17, Syracuse, NY

2009– Fifth SUNY-Oswego Symposium on Learning and Teaching, a Celebration of Meaningful Learning: Engaging Students, September 25-26, SUNY Oswego, with workshops "Performance-based Learning and Multidimensional Assessment Methods" and "Getting students to work together -- is it really possible?" (Michael Rogers from Ithaca College)

2009– New Physics and Astronomy Faculty Workshop, June 24-28, College Park, MD

2009–APS Workshop, Women in Physics, Committee on the Status of Women in Physics, *Communication and Negotiations Skills*, March 15th, Pittsburgh, PA

2008 –AAC&U Workshop, *Engaging Science, Advancing Learning:*

General Education, Majors, and the New Global Century, November 6-8, Providence, RI

- 2008-2009 –SUNY Oswego workshops: *Jump Start on Teaching*, (John Kane), *Angel* (John Kane), *Preparing Effective Materials for Retention, Promotion* (Provost Coultrap-McQuin and Deans of each School and College), *Academic Integrity* (David Bozak), *Understanding Budgets* (ORSP - Jack Gelfand, Maria Nakamura), *White Papers and Elevator Talks* (Jack Gelfand and Maria Nakamura), *How to Write Objectives and Work Plans* (Jack Gelfand and Maria Nakamura), etc
- 2006 –*Preparing Future Faculty Program*, University of Nebraska – Lincoln
Five weeks summer seminar focused on professional development skills followed by a semester long faculty mentoring experience with Professor Nathanael Fackler at Nebraska Wesleyan University.
- 2003 –UNL - College of Arts and Sciences: *Teaching Assistant Workshop*
One week seminar focused on improving teaching skills and increasing student involvement and interest in the classroom, culminating with personalized feedback and videotape of your own teaching demonstration.

Collaborators & Professional Affiliations

(a) Collaborators:

Camelia Borca, Paul Scherrer Institute, Swiss Light Source, Switzerland
Bernard Doudin, Physics, Université Louis Pasteur, Strasbourg, France
Peter A. Dowben, Physics, University of Nebraska at Lincoln
Katrina Hay, Physics, Pacific Lutheran University, Tacoma, WA
Charles Henderson, Physics, Western Michigan University, Kalamazoo, MI
Peter A. Jacobson, Ph.D. student in Ulrike Diebold group, Tulane University
Barbara Murray, Chemistry, University of Redlands, Redlands, CA
James Takacs, Chemistry, University of Nebraska at Lincoln
Li Tan, Engineering Mechanics, University of Nebraska at Lincoln
Jie Xiao, Physics, postdocs at University of Nebraska at Lincoln

(b) Graduate Advisors:

- Peter A. Dowben, Department of Physics and Astronomy, University of Nebraska- Lincoln
- William F. Saam, Department of Physics, The Ohio State University, Columbus, OH

(c) Research advisees at Oswego:

Undergraduate students: Spring 2010 (Shawn Gray), Fall 2009 (Wes Laurion, Shawn Gray), Summer 2009 (Jacob Chartrand, Kenneth Buske, Shawn Gray), Spring 2009 (Kenneth Buske, Shawn Gray, Wes Laurion).

(d) Society Memberships

American Physical Society, 2006 - present
American Association of Physics Teachers, 2008 - present
Material Research Society (MRS), 2004 – present
Sigma Xi 2009-present
American Vacuum Society, 2004 - 2006
American Society for Engineering Education, 2009- present

References

<p>• Peter A. Dowben</p> <p>Charles Bessey Professor, Physics & Astronomy Nebraska Center for Materials and Nanoscience University of Nebraska-Lincoln Department of Physics and Astronomy 255 Behlen Laboratory of Physics Lincoln, Nebraska 68588-0111 USA</p> <p>Phone: (402) 472-9838 Fax: (402) 472-2879 E-mail: pdowben@unl.edu</p>	<p>• Bernard Doudin</p> <p>Professor of Physics, Université Louis Pasteur Institut de Physique et Chimie des Matériaux de Strasbourg, France IPCMS – Metallic Materials 23, rue du Loess BP 43 F-67034 STRASBOURG CEDEX 2 FRANCE</p> <p>Phone : (33) 3 88 10 71 42 Fax : (33) 3 88 10 72 49 E-mail : Bernard.Doudin@ipcms.u-strasbg.fr</p>
<p>• James M. Takacs</p> <p>Charles Bessey Professor, Chemistry Department Chair University of Nebraska-Lincoln Hamilton Hall 807B Lincoln, NE 68588-0304</p> <p>Phone: (402)-472-6232 E-mail: jtakacs@unlserve.unl.edu</p>	<p>• Anthony Caruso</p> <p>Assistant Professor of Physics University of Missouri - Kansas City Department of Physics – 257 Flarsheim Hall 5110 Rockhill Road Kansas City KS 64110</p> <p>Phone: (816)-235-2505 E-mail: carusoan@umkc.edu</p>
<p>• Shawn Langan</p> <p>Lab Manager, Physics and Astronomy University of Nebraska - Lincoln 302 Ferguson Hall, Lincoln, NE 68588-0111</p> <p>Phone: (402) 472-2199 E-mail: palab@unl.edu</p>	<p>• Jennifer I. Brand</p> <p>Professor, NCMN/ Engineering University of Nebraska-Lincoln 245N Walter Scott Engineering Center</p> <p>Phone:(402)-472-9320 Email: jbrand@unl.edu</p>