January 2011

ANN J. SILVERSMITH

Physics Department • Hamilton College • Clinton, NY 13323 • (315) 859-4704

EDUCATION

Ph.D. in physics from the Australian National University, January 1986. Thesis title:
"High Resolution Laser Spectroscopy of Trivalent Europium Centers in Crystals".

M.Sc. in physics from the University of Wisconsin, May 1982.

A.B. from Oberlin College, May 1978. Majored in physics. Graduation with high honors.

EXPERIENCE

PROFESSOR (2002-) Associate Professor (1995-2002), Assistant Professor (1989-95), Chair (2004-08, Fall 2010)
Department of Physics, Hamilton College, Clinton, NY 13323.

Teaching duties include Introductory Physics lectures and laboratories, Quantum Physics, Advanced Laboratory, and Optics. Supervision of student research in solid-state spectroscopy.

Research in the fabrication and spectroscopic characterization of rare earth doped sol-gel glasses.

VISITING FELLOW (Jan.1998-May 1998)
Laser Physics Centre
Research School of Physical Sciences
The Australian National University.
Canberra, A.C.T., 2601, Australia.

Holeburning and optically detected nuclear magnetic resonance of Europium doped fluoride crystals and sol-gels. Laser-induced upconversion in Erbium doped $KLiYF_5$.

VISITING SCIENTIST (Feb. 1986-May 1987)
IBM Almaden Research Center
650 Harry Road
San Jose, CA 95120-6099.

High-resolution holeburning spectroscopy. Research and development of upconversion-pumped lasers.

GRADUATE STUDENT (Sept. 1982-Dec. 1985)
Research School of Physical Sciences
The Australian National University.
Canberra, A.C.T., 2601, Australia.

High-resolution laser spectroscopy, including holeburning, optically detected nuclear magnetic resonance, and selective excitation and emission spectroscopy.

GRADUATE STUDENT (Sept. 1979-May 1982)
Department of Physics, University of Wisconsin
Madison, Wisconsin 53706.

Laser spectroscopy of rare-earth doped crystals with emphasis on energy transfer. Two semesters as a teaching assistant for introductory physics courses.

APPLICATIONS SPECIALIST (Sept. 1978-May 1979)
Gilford Instrument Laboratories
Oberlin, Ohio 44074.

Development of applications for newly marketed Photo-acoustic Spectrometer.

MEMBERSHIP

Phi Beta Kappa, American Physical Society, Sigma Xi.

COLLEGE COMMITTEES AND ACTIVITIES

Committee on Appointments (2010-11, 2005-06,1999-2002, chair 01-02)
Mentoring Program for New Tenure-Track Faculty (2009-11,1999 -2001)
Health Professions Advisory Committee (2006-10,1999-2003)
Interim director of Research Corporation Department Development Award (2008-09).
Phi Beta Kappa Membership Committee (2006-09,1991-94), Secretary-Treasurer (1998-2002), President (1996-98), Vice President (1994-96)
Committee on Admissions and Financial Aid (2008-09)
President's Advisory Council (2005-2007)
Academic Council (2002-2005)
Summer Research Student Selection Committee (1992-2002)
Science Building Committee department representative (1998-2001)
Science Facility Architect Selection Committee (1999-2000)
Outreach programs: visiting school children/outreach (ongoing)"Explorations: Girls & Women in Science" (1994-97), Girls Excelling in Math and Science (1999),
Vice president's Advisory Committee (1998-99)
Committee on Academic Policy (1993 - 96, chair 95-96)
Hamilton College chapter of Sigma Xi President (1994-96) and Vice president (1992-94)

RESEARCH GRANTS

National Science Foundation MRI Program "MRI-R2 Consortium: Acquisition of Equipment for Rare Earth Spectroscopic Studies of Sol-gel Glass Structure" Co-PI, in collaboration with D.M. Boye, Davidson College, and Kurt Hoffman, Whitman College. $185,000 for 2010-2012. Research performed at Hamilton, Davidson, and Whitman Colleges.

Petroleum Research Fund "Fluorescence from Sol-gel Materials doped with Rare Earth Impurity Ions", in collaboration with D.M. Boye, Davidson College, $50,000 for 2005-2008. Research performed at Hamilton and Davidson Colleges.

National Science Foundation MRI Program "Acquisition of Equipment for Thermal and Optical Studies of Sol-gel Materials Containing Rare Earth Ions" Co-PI, in collaboration with D.M. Boye, Davidson College,. $150,000 for 2004-2007. Research performed at Hamilton and Davidson Colleges.

Research Corporation, "Synthesis and Spectroscopy of Rare Earth Doped Sol-gel Glass". In collaboration with K. Brewer (Hamilton College Chemistry Department). $19,000 for 2000-2002. Research performed at Hamilton College.

National Science Foundation Research Opportunity Award, "Spectroscopy Rare-earth doped Sol-Gel Glasses". Summer 1999. Research performed at University of Georgia.

National Science Foundation Research at Undergraduate Institutions (RUI) Grant #DMR - 9101364, "Spectroscopy of Upconversion Laser Materials". $80,000 for 1991-95. Research performed at Hamilton College.

Research Corporation, "Spectroscopy of Upconversion Processes in Rare-Earth Based Solid State Laser Materials"$33,750 for purchase of laser equipment for spectroscopy laboratory at Hamilton College, 1990.

PUBLICATIONS (* denotes student author**)**

38. A.J. Silversmith, A.P. Beyler*, K.E. Arpino*, D.M. Boye, K.R. Hoffman "Mechanisms of fluorescence enhancement in rare earth doped sol-gel glasses containing Al^{3+}" J.Lumin. 131 (2011) 457-460.

37. K.E. Arpino*, A.J. Silversmith, D.M. Boye, K.R. Hoffman "Post Annealing Immersion: a new technique for studying rare earth ions in porous materials" J.Lumin. 131 (2011) 453-456.

36. A.P. Beyler*, D.M. Boye, K.R. Hoffman, A.J. Silversmith "Fluorescence enhancement in rare earth doped sol-gel glasses by N,N-dimethylformamide as a drying control chemical additive " *Physics Procedia* 13, (2011) 4-8.

35. A.J. Silversmith, Nguyen.T.T. Nguyen*, D.L.Campbell*, D.M. Boye, C. Ortiz*, K.R. Hoffman "Fluorescence Yield in Rare Earth Doped Silicate Glasses" J.Lumin. 129 (2009) 1501-1504.

34. K.R. Hoffman, H. Alazar*, D.M. Boye, A.J. Silversmith "Luminescence and x-ray Diffraction Studies of Rare Earth Doped Silica Sol-Gel Glass" ECS Transactions, 25 (9) (2009) 255-262.

33. A.J. Silversmith, N.T.T. Nguyen*, B.W. Sullivan*, D.M. Boye, C. Ortiz*, K.R. Hoffman "Rare-earth ion distribution in sol-gel glasses co-doped with Al^{3+}" J.Lumin. 128 (2008) 931–933.

32. D.M. Boye, C.P. Ortiz*, A.J. Silversmith, N.T.T. Nguyen*, K.R. Hoffman "Rare-Earth Ion Distribution In Sol-Gel Silicate Glasses" J. Lumin. 128 (2008) 888–890.

31. D.M. Boye, A. J. Silversmith, N.T.T. Nguyen*, and K. R. Hoffman. "Effects of rehydration on Tb^{3+} spectroscopy in sol-gel glasses", J. Noncryst. Solids 353, 2350-54 (2007).

30. A. J. Silversmith, D. M. Boye, K. S. Brewer, C. E. Gillespie*, Y. Lu*, and D. L. Campbell* "$^5D_3 \rightarrow {}^7F_J$ emission in terbium-doped sol-gel glasses" J. Lumin. 121, 14 (2006).

29. A.P.Magyar*, A.J. Silversmith, D.M. Boye, and K.S. Brewer "Fluorescence enhancement by chelation of Eu^{3+} and Tb^{3+} ions in sol gels" J. Lumin. 108, 43 (2004).

28. D. M. Boye, T. S. Valdes*, J. H. Nolen*, A. J. Silversmith, K.S. Brewer, R. E. Anderman* and R. S. Meltzer "Transient and persistent spectral hole burning in Eu^{3+} - doped sol-gel produced SiO_2 glass" J. Lumin. 108, 49 (2004).

27. A.J. Silversmith, D.M. Boye, R.E. Anderman* and K.S. Brewer "Fluorescence line-narrowing and decay dynamics in sol-gel glasses containing Eu^{3+}" J. Lumin. 94-95, 275 (2001)

26. D.M. Boye, A.J. Silversmith, J. Nolen*, L. Rumney*, D. Shaye*, B.C. Smith*, and K.S. Brewer, "Red-to-green upconversion in Er-doped SiO_2 and SiO_2/TiO_2 sol-gel silicate glasses" J. Lumin. 94-95, 279 (2001).

25. A. Smith, John P.D. Martin, Matthew J. Sellars, N.B. Manson, A.J. Silversmith, and B. Henderson, "Site selective excitation, upconversion and laser operation in Er^{3+}:$KLiYF_5$, Optics Communications 188, no1-4, 219 (2001).

24. Allen P. Otto*, Karen S. Brewer and Ann J. Silversmith, "Red to Blue Upconversion in Tm-doped sol-gel silicate glasses", J. Noncryst. Solids 265, 176-180 (2000).

23. E. Bielejec*, E. Kisel* and A. Silversmith, "Red to Blue Upconversion in $Y_2SiO_5:Tm^{3+}$", J Lumin. 72-74, 62 (1997)

22. B.C. Collings* and A.J. Silversmith, "Photon Avalanche in $LaF_3:Tm^{3+}$", J Lumin. 62, 271 (1994).

21. L. Zhang, P.D. Townsend, P.J. Chandler and A.J. Silversmith, "Upconversion in ion implanted Er:YAG waveguides", Electronics Letters 30, 1063 (1994).

20. A.J. Silversmith, W. Lenth, K.W. Blazey, and R.M. Macfarlane, "Photon Gated Spectral Holeburning in $SrTiO_3:Cr^{3+}$", J. Lumin. 59, 269 (1994).

19. A.J. Silversmith, "Upconversion Excitation of Green Fluorescence in Er:YAG", J. Lumin. 60/61, 636 (1994).

18. A.D. Novo-Gradac, S.M. Jacobsen, W.M. Dennis, W.M. Yen, and A.J. Silversmith, "Infrared to Violet Upconversion in $YLiF_4$:Nd", J. Lumin. 60/61, 695 (1994).

17. A. J. Silversmith and R.M. Macfarlane, "Spectral-hole-burning study of the hyperfine interaction in axial Eu^{3+} centers in CaF_2, SrF_2, and BaF_2", Phys. Rev. B 45, 5811 (1992).

16. R. M. Macfarlane, A. J. Silversmith, F. Tong, and W. Lenth, "CW Upconversion Laser Action in Neodymium and Erbium Doped Solids", Proceedings of the Conference on Laser Materials and Laser Science, Shanghai, World Scientific, Singapore, 24 (1989).

15. R. M. Macfarlane, F. Tong, A. J. Silversmith, and W. Lenth, "Violet CW Neodymium Upconversion Laser", Appl. Phys. Lett. 52, 1300 (1988).

14. W. Lenth, A.J. Silversmith, and R.M. Macfarlane, "Green Infrared-Pumped Erbium Upconversion Lasers", Advances in Laser Science III, Ed. A.C. Tam, J.L. Gole, W.C. Swalley, American Institute of Physics, NY (1988).

13. W. Lenth, J.-C. Baumert, G. C. Bjorkland, R. M. Macfarlane, W. P. Risk, F. M. Schellenberg, and A. J. Silversmith, "Compact Blue and Green Lasers Based on Nonlinear Optical Processes", SPIE Vol. 898 Miniature Optics and Lasers, 61 (1988).

12. A. J. Silversmith, W. Lenth, and R. M. Macfarlane, "Green Infrared-pumped Erbium Upconversion Laser", Appl. Phys. Lett. 51, 1977 (1987).

11. N. B. Manson and A. J. Silversmith, "Rf Holeburning Within Inhomogenously Broadened Raman Heterodyne NMR Signals", J. Phys. C, 20, 1507 (1987).

10. A. J. Silversmith, A.P. Radlinski and N. B. Manson, "Optical Study of Hyperfine Coupling in the $^7F_0$ and $^5D_0$ States of Two Eu^{3+} Centers in CaF_2 and CdF_2", Phys. Rev. B 34, 7554 (1986).

9. A. J. Silversmith and N. B. Manson, "Determination of the ^{153}Eu - ^{151}Eu Quadrupole Moment Ratio By Excited-State Optically Detected Nuclear Magnetic Resonance", Phys. Rev. B 34, 4854 (1986).

8. A. P. Radlinski and A. J. Silversmith, "Quadrupole Coupling and Crystal-Field Shielding in CaF_2:Eu^{3+}:0^{2-} Under Hydrostatic Pressure", Phys. Rev. B 34, 86 (1986).

7. A. J. Silversmith, A. P. Radlinski and N. B. Manson, "Holeburning and ODNMR Study of a Eu^{3+} Site in CaF_2", J. de Phys. 46, C7-531 (1985).

6. A. J. Silversmith and A. P. Radlinski, "Zeeman Spectroscopy of the G1 Center in CaF_2:Eu^{3+}", J. Phys. C, 18, 4385 (1985).

5. A. J. Silversmith and N. B. Manson, "Holeburning and Optically Detected Nuclear Magnetic Resonance in $CaSO_4$:Eu^{3+}", J. Lumin 31/32, 848 (1984).

4. A. J. Silversmith and N.B. Manson, "Optical Holeburning in $KEu(WO_4)_2$", J. Phys. C 17, L97 (1984).

3. T. J. Glynn, I. Laulicht, Liren Lou, A. J. Silversmith and W. M. Yen, "Trapping of Optical Excitation by Two Types of Acceptor in $La_{0.72}Pr_{0.25}Nd_{0.03}F_3$", Phys. Rev. B29, 4852 (1984).

2. A.J. Silversmith, Liren Lou, And W.M. Yen, "Inhomogeneous Broadening in the $La_{1-x}Pr_xF_3$ System", Phys. Rev. B26, 2656 (1982).

1. W.H. Fuchsman and A.J. Silversmith, "General Method for Overcoming Photoacoustic Saturation in Highly Colored Organic and Inorganic Solids", Anal. Chem.51, 589 (1979).

CONFERENCE PRESENTATIONS (* denotes student author)

40. A.J. Silversmith, S.M. Fobes*, Z.A. Glauber*, D.M. Boye, and K.R. Hoffman "Post-annealing immersion study of sol-gel silicate glasses containing rare earth dopants" (ICL) 2011.

39. A.J. Silversmith, A.P. Beyler*, K.E. Arpino*, D.M. Boye, K.R. Hoffman "Mechanisms of fluorescence enhancement in rare earth sol-gel glass containing Al^{3+}" Oral presentation, Dynamic Processes Conference (DPC) 2010.

38. A.P. Beyler*, A.J. Silversmith, D.M. Boye, K.R. Hoffman "Effects of drying control chemical additives on rare-earth doped sol-gel glasses" Poster presented at Dynamic Processes Conference (DPC) 2010.

37. K.E. Arpino*, A.J. Silversmith, D.M. Boye, K.R. Hoffman "Post Annealing Immersion: a new technique for studying rare earth ions in porous materials" Poster presented at Dynamic Processes Conference (DPC) 2010. Winner of poster award – second place.

36. K.R. Hoffman, T. Harvey*, H. Alazar*, A.J. Silversmith, D.M. Boye, "Nano-crystal formation and luminescence efficiency of RE doped sol-gel glasses" Poster presented at Dynamic Processes Conference (DPC) 2010.

35. K.R. Hoffman, H. Alazar*, D.M. Boye, A.J. Silversmith "Luminescence and x-ray Diffraction Studies of Rare Earth Doped Silica Sol-Gel Glass" Invited talk at ECS, Vienna, Austria October 2009.

34. A.J. Silversmith, Nguyen.T.T. Nguyen*, D.L.Campbell*, D.M. Boye, C. Ortiz*, K.R. Hoffman "Fluorescence Yield in Rare Earth Doped Silicate Glasses" Oral presentation, International Conference on Luminescence (ICL) Lyon, France July 2008.

33. A.J. Silversmith, N.T.T. Nguyen*, B.W. Sullivan*, D.M. Boye, C. Ortiz*, K.R. Hoffman "Rare-earth ion distribution in sol-gel glasses co-doped with Al^{3+}". Poster presented at DPC '07.

32. K.R. Hoffman, J.P. Hutchinson*, K.S. Young*, A.J. Silversmith, D.M. Boye, C.P. Ortiz* "Effects of gadolinium co-doping on terbium emission in sol-gel glasses. Poster presented at DPC '07.

31. D.M. Boye, C.P. Ortiz*, A.J. Silversmith, N.T.T. Nguyen*, K.R. Hoffman "Rare-earth ion distribution in sol-gel silicate glasses". Poster presented at DPC '07.

30. Annual American Physical Society March Meeting (2006) "Enhanced fluorescence in rare earth doped sol-gel glasses containing Al^{3+}" G.L. Armstrong*, A.J. Silversmith, D.M. Boye.

29. National Meeting of the American Chemical Society (March 2004) "Fluorescence of rare earth ions in binary zirconia-silica sol-gel glasses", J.R. Callahan*, K.S. Brewer, and A.J Silversmith.

28. National Meeting of the American Chemical Society (March 2004) "Energy transfer from chelated ligands to rare earth cations in a sol-gel matrix", K.S. Brewer, A.P. Magyar*, A.J Silversmith and D.M. Boye.

27. Annual American Physical Society March Meeting (2004) "Sol-gel synthesis of Y_2O_3 nanoparticles" J.K. Krebs, C. Hobson*, A.J. Silversmith.

26. Annual American Physical Society March Meeting (2004) "Rare-Earth Based Sol-Gel Materials: An Intra- and Inter- Collegiate Collaborative Research Project" A.J. Silversmith. Invited lecture.

25. Dynamic Processes Conference (Christchurch, New Zealand August 2003) "Fluorescence enhancement by chelation of Eu^{3+} and Tb^{3+} ions in sol gels", A.J. Silversmith, A.P.Magyar*, D.M. Boye, and K.S. Brewer.

24. Dynamic Processes Conference (Christchurch, New Zealand August 2003) "Transient and persistent spectral hole burning in Eu^{3+} - doped sol-gel produced SiO_2 glass" D. M. Boye, T. S. Valdes*, J. H. Nolen*, A. J. Silversmith, K.S. Brewer, R. E. Anderman* and R. S. Meltzer.

23. Dynamic Processes Conference (Lyon, France July 2001) "Fluorescence line-narrowing and decay dynamics in sol-gel glasses containing Eu^{3+}", A.J. Silversmith, D.M. Boye, R.E. Anderman* and K.S. Brewer.

22. Dynamic Processes Conference (Lyon, France July 2001) "Red-to-green upconversion in Er-doped SiO_2 and SiO_2/TiO_2 sol-gel silicate glasses", D.M. Boye, A.J. Silversmith, J. Nolen*, L. Rumney*, D. Shaye*, B.C. Smith*, and K.S. Brewer.

21. National Meeting of the American Chemical Society (March 2000), "Fluorescence decay analysis of europium doped sol-gel glasses", B.R. Lancor*, A.J. Silversmith, D.M. Boye and K.S. Brewer.

20. National Meeting of the American Chemical Society (March 1999), "Fluorescence and Upconversion in Rare-Earth doped Sol-Gel Glasses", K.S. Brewer, A.J. Silversmith, M. Hornbach*, A. Otto*, J. Garte*, J. Matthews*, M. Hajduk*.

19. Conference on Lasers and Electro-Optics (August 1998), "Site Selective Excitation and Upconversion in Er^{3+}:$KLiYF_5$", A. Smith, N.B. Manson, A.J. Silversmith, and B. Henderson.

18. International Conference on Luminescence (August 1996), "Red to Blue Upconversion in Y_2SiO_5:Tm^{3+}", E. Bielejec*, E. Kisel* and A.J. Silversmith, invited paper at ICL.

17. Conference on Undergraduate Research (April 1995), "Upconversion in Nd:YLF", J. Hobbeheydar* and A.J. Silversmith.

16. Conference on Lasers and Electro-Optics (1994) Paper #CTuk56, "Avalanche Upconversion In LaF_3:Tm^{3+} and YAG:Tm^{3+}", B.C. Collings*, B. Collett and A.J. Silversmith.

15. American Physical Society, Spring Meeting (1994), "Energy Transfer Upconversion Processes in $YLiF_4$:Nd", A.D. Novo-Gradac, W.M. Dennis, W.M. Yen, and A.J. Silversmith.

14. International Conference on Luminescence (1993), "Upconversion Excitation of Green Fluorescence in Er:YAG", A. Silversmith.

13. International Conference on Luminescence (1993), "Infrared to Violet Upconversion in $YLiF_4$:Nd", A.D. Novo-Gradic, S.M. Jacobsen, W.M. Dennis, W.M. Yen, and A.J. Silversmith.

12. 12th Annual Rochester Symposium for Physics Students (1992), "Spectroscopy of Upconversion Processes in $YAlO_3$:Er^{3+}", R. B. Ketcham* and A. J. Silversmith.

11. Conference on Lasers and Electro-Optics, Anaheim (1988), "Violet CW Neodymium Upconversion Laser", F. Tong, R. M. Macfarlane, A. J. Silversmith, and W. Lenth.

10. International Laser Science Conference, Atlantic Çity (1987), "Green Infrared-pumped Erbium Upconversion Lasers", W. Lenth, A.J. Silversmith, and R. M. Macfarlane, invited paper.

9. Conference on Lasers and Electro-Optics, Baltimore (1987), "Infrared-pumped Erbium Laser at 550 nm", A. J. Silversmith, W. Lenth, and R. M. Macfarlane.

8. International Quantum Electronics Conference, Baltimore (1987), "Photon-gated Spectral Hole Burning in $SrTiO_3$:Cr^{3+}", A. J. Silversmith, W. Lenth, R. M. Macfarlane.

7. Annual Meeting, Optical Society of America, Seattle (1986), "Green Infrared-Pumped Erbium Upconversion Laser", A. J. Silversmith, W. Lenth, and R. M. Macfarlane, post-deadline talk.

6. Dynamic Processes Conference, Lyon, France (1985), "Holeburning and ODNMR Study of a Eu^{3+} Site in CaF_2", A. J. Silversmith, A. P. Radlinski and N. B. Manson, poster.

5. 14th Australian Spectroscopy Conference, Canberra, Australia (1985), "The Influence of Nearby Charge Compensation on Hyperfine Structure in Eu^{3+} Centers in Crystals", A. J. Silversmith, A. P. Radlinski and N. B. Manson.

4. 9th Australian Solid State Meeting, Wagga Wagga, Australia (1985), "ODNMR Study of Eu^{3+} Systems", A . J. Silversmith, A. P. Radlinski and N. B. Manson.

3. International Conference on Luminescence, Madison, Wisconsin (1984), "Holeburning and Optically Detected Nuclear Magnetic Resonance in $CaSO_4$:Eu^{3+}", A. J. Silversmith and N. B. Manson, poster.

2. 7th Australian Solid State Meeting, Wagga Wagga, Australia (1983), "Optical Studies of Europium Double Tungstates", A. J. Silversmith and N. B. Manson, poster.

1. Pitttsburgh Conference on Scientific Instrumentation, Cleveland, Ohio (1979), "Phase Measurements and Theoretical

Considerations in Photoacoustic Spectroscopy", Ann Silversmith.

OTHER PRESENTATIONS

13. “Synthesis and optical studies of rare earth based glasses”, Ithaca College, March 2011.

12. “Synthesis and spectroscopy of sol-gel glasses containing rare earths”, Davidson College and Colgate University, February 2011.

11. “Laser Spectroscopy of rare earth ions in sol gel-derived silicate glasses”, Franklin and Marshall College, October, 2002.

10. “Spectroscopy of Upconversion Laser Materials”, Davidson College, April 14, 2000.

9. "Laser Spectrocopy of Rare Earth based Solid State Materials", Oberlin College, March 1997.

8. "Laser Science at Hamilton", for the WISH (Women in Science at Hamilton) brown bag series, April 1996.

7. "Laser Spectrocopy of Upconversion Materials", Whitman College, March 1996.

6. "Laser Research at Hamilton", for the Hamilton Alumni College, June 1994.7. "Spectroscopy of Upconversion Laser Materials", Cornell University's Women in Physics and Related Fields seminar series, March 1994.

5. "High Resolution Spectroscopy of Rare Earth Doped Solids", Macalester College, November 1992.

4. "Lasers and Spectroscopy", AAUP talk at Hamilton College, March 1992.

3. "Spectral Hole Burning Study of the Hyperfine Interaction in Axial Eu^{3+} Centers in CaF_2, SrF_2, and BaF_2", University of Georgia, July 1991.

2. "Upconversion Excitation - A New Way to Make a Laser Work", Colgate University as part of the PEW Visiting Scholars program, October 1991.

1. "Green and Blue Upconversion Lasers Made With Rare Earth Based Solids", Union College as part of the PEW Visiting Scholars program, October 1991.

RESEARCH WITH UNDERGRADUATES

Erin Bessett-Kirton (Summer 2011, academic year 2011-12) “Tb-Tb cross relaxation as a probe of Rare earth distribution in sol-gel glasses”
Sarah Fobes (Summer 2010, 2011, (Academic year 2010-11, 11-12) “Fluorescence of rare earth ions and post annealing immersion in sol-gel glasses”
Lauren Vilardo (Academic year 10-11) “Post Annealing Immersion as a doping technique for porous materials”
Juan Hurtado (Academic year 10-11, 08-09, Summer 2008) “Fluorescence of Lanthanides in sol-gel glass made with DMF”
Zane Glauber (Summer 2010) “Fluorescence of rare earth ions and post annealing immersion in sol-gel glasses”
Andrew Beyler (Academic year 09-10) “Effects of drying control chemical additives on rare-earth doped sol-gel glasses ”
Kate Arpino (Academic year 09-10) “Post Annealing Immersion: a new technique for studying rare earth ions in porous materials”
Gillian Smith (Academic year 08-09, Summer 2008) “Incorporation of rare-earth doped nanocrystals in glass”.
Nguyen T.T. Nguyen (Academic year 07-08, Summer 2008, 2007, 2006) “Pulsed laser study of Al^{3+} co-doping in rare earth based sol-gel glasses” presented Dynamic Processes Conference ’07 and published in *Journal of Luminescence*. Finalist for Apker Award, given annually by APS for outstanding undergraduate research.
Dan Campbell (Academic year 07-08, Summer 2007, 2005) “Spectroscopic study aging in sol-gel glasses”. Goldwater Scholar, paper based on summer 2005 work published in *Journal of Luminescence*.
Tessa Olson (Academic year 07-08, Summer 2006) “Synthesis and Characterization of Rare-earth doped nanocrystals”
Rose Deng (Academic year 06-07) “Systematic study of rehydration in sol-gel glasses”
Brendan Sullivan (Academic year 06-07) “Effects of co-dopants on rare earth dispersion in sol-gel glasses”. Thesis work published in *Journal of Luminescence*.
Yuqi Mao (Summer 2006) “Effect of annealing temperature on rehydroxylation in sol-gel glasses”

Greg Armstrong (Academic year 05-06) "Al^{3+} co-doping in rare earth based sol-gel glasses". Results presented at March meeting of American Physical Society, March 2006.

Yubo Lu (Summer 2005) "Terbium spectroscopy of sol-gel derived glasses: Hydroxylation and rehydroxylation".

Tessa Olson (Summer 2005) "Displacement of granular media during formation of impact craters".

Jason Kurtzman (Academic year 04-05) "Low energy impact craters in granular media".

Greg Armstrong (Summer 2004) "Spectroscopy of Y_2O_3:Eu^{3+} nanocrystals in a sol-gel matrix".

Brendan Sullivan (Summer 2004) "Energy transfer between Tb^{3+} ion in sol-gel glass hosts".

Tessa Olson (Summer 2004) "Luminescence of b-diketone-chelated Eu^{3+}".

Andrew Magyar (Academic year 02-03) "Addressing clustering of RE's in sol-gel glasses with co-dopants and chelation techniques". Poster presented at Dynamic Processes Conference '03 and paper published in *Journal of Luminescence*.

Michael Valentino (Academic year 02-03) "Upconversion Processes in $LiYF_4$ doped with Er^{3+}, Nd^{3+}, and Pr^{3+}."

Stephanie Higgins and Daniel Allen (Summer 02) "Effects of co-dopants on RE^{3+} Spectroscopy in sol-gel glass"

David Shaye (Academic year 01-02) "Valence States of Europium ions in Sol-Gel Glasses".

Jessie McComb (Summer 01) "Eu^{3+} and Er^{3+} in sol-gel glass"

Rachael Anderman (Academic year 00-01) "Synthesis and Laser spectroscopy of Europium doped Sol-Gel Glasses", Poster presented at Dynamic Processes Conference '01 and paper published in *Journal of Luminescence*.

Bryan Smith, David Shaye and Lynwood Rumney (Summer 2000) "Spectroscopy of RE-doped sol gel glasses and Investigation of RE-doped fibers" Poster presented at Dynamic Processes Conference '01 and paper published in *Journal of Luminescence*.

Brian Lancor (Academic year 99-00) "Laser spectroscopy of Europium and Thulium doped Sol-Gel Glasses", Poster presented at the National Meeting of the American Chemical Society (March 2000).

Rachael Anderman (Summer 99) "High Resolution spectroscopy of Rare Earth doped Sol-Gel Glass", in collaboration with Daniel Boye, Davidson College and Richard Meltzer, University of Georgia.

Allen Otto, (Academic year 98-99) "Upconversion processes in Rare Earth doped sol-gel glass". Paper published by *Journal of Noncrystalline Solids*.

Jon Silber (Academic year 97-98) "NMR study of the gelation process in sol-gel synthesis".

Matt Hornbach (Summer 97) "Synthesis and Spectroscopic Characterization of Rare earth Doped Sol-Gel Glasses", in collaboration with Daniel Boye, Davidson College, Karen Brewer, Jannett Matthews '99 and Jeff Garte '00, Hamilton College Chemistry department.

Debbie Hamilton (Academic year 95-96) "Upconversion in Doubly Doped (Pr and Nd) Materials".

Mary Dias and Ed Bielejec (Summer 1995) "Avalanche Effect in Nd:YLF", "Characterization of a Visible Diode Laser".

Jahon Hobbeheydar (Academic Year 94-95) "Upconversion in Nd:YLF" Presented at "National Conference on Undergraduate Research (April 1995).

Ema Kisel and Ed Bielejec (Summer 1994) "Avalanche Upconversion In YSO:Tm^{3+} "
Invited lecture at the International Conference on Luminescence ('96); published in the *Journal of Luminescence*.

Brandon Collings (Academic year 93-94) "Photon Avalanche In LaF_3:Tm^{3+} ". Results presented at Conference on Lasers and Electro-Optics (CLEO), May 1994 and published in the *Journal of Luminescence* (1994). Winner of national Apker Award for undergraduate research in physics.

Amy Shapiro and Jahon Hobbeheydar (Summer 1993) "Laser Spectroscopy of BaF_2:Eu^{3+}".

Robin Ketcham (Academic year 91-92) "Low Temperature Upconversion Spectroscopy in $YAlO_3$:Er^{3+}"
Presented at the 12th Annual Rochester Symposium for Physics Students.

Michael Uzzo (Summer 1991) "$LiYF_4$:Er^{3+} Green Upconversion Laser Pumped in the Red", Stipend from the PEW Consortium for Undergraduate Research.

Jeffrey Melton (Academic year 90-91) "Spectroscopy of YAG:Er^{3+}".