

CURRICULUM VITAE of Henry M. Yochum, Ph.D.

Office Address

Department of Physics and Engineering
Sweet Briar College
Sweet Briar, VA 24595
<http://hyochum.physics.sbc.edu>

(office) (434) 381.6357
(home) (434) 847.0550
hyochum@sbc.edu

Education

Ph.D. Physics, July 1999, Thesis Advisor, Reynolds Professor Richard T. Williams
Wake Forest University, Winston-Salem, NC
Dissertation: "Picosecond Transient Absorption Spectroscopy of Oxide Crystals"

B.S. with Cum Laude Honors, Physics, Minor, Mathematics, May 1994
College of Charleston, Charleston, SC

Professional Experience

- 7/2007-present Director of Engineering, Associate Professor, Department of Physics and Engineering, Sweet Briar College
- 7/2006-6/2007 On sabbatical academic year 2006-2007 at Virginia Tech University, Department of Physics, Nanostructured Optical Devices Group, Associate Professor of Physics, Sweet Briar College
- 7/2003-7/2006 Chair, Department of Physics and Engineering, Assistant Professor of Physics, Associate Director of Honors Program, Sweet Briar College
- 7/2002-7/2003 Chair Department of Physics and Engineering (2003-2006) and Assistant Professor of Physics, Sweet Briar College
- 1/2001-6/2002 Member of Technical Staff, Lucent Technologies/*OFS* Specialty Photonics, Somerset, NJ, Optical Amplifier and Laser Development Group, under Director Paul Lemaire.
- 9/1999-12/2000 Assistant Professor of Physics, Acting Chair, Department of Physics (Spring 2000-Fall 2000), Sweet Briar College
- 1994-1999 Graduate Research Assistant, Wake Forest University, Department of Physics.
- 1998-1999 National Research Council (NRC) Baltic States Twinning Program Participant, Wake Forest University, Department of Physics, Institute of Solid State Physics, Riga, Latvia, and Institute of Physics, Tartu, Estonia.
- 1998-1999 College Teaching Apprenticeship Program, Wake Forest University, Department of Physics.

Funded External Grants

Research in Condensed Matter Physics

Principle Investigator on Funded Thomas F. Jeffress and Kate Miller Jeffress Memorial Trust Grant, Research Grant Renewal, Optical Spectroscopy of Point Defects in YVO_4 , (\$10,000), September 2005.

Principle Investigator on Awarded Thomas F. Jeffress and Kate Miller Jeffress Memorial Trust Grant, Research Grant Renewal, Optical Spectroscopy of Point Defects in YVO_4 , (\$10,000), December 2004.

Principle Investigator on Awarded Thomas F. Jeffress and Kate Miller Jeffress Memorial Trust Grant, Optical Spectroscopy of Point Defects in YVO_4 , (\$30,000), December 2003 from Thomas F. Jeffress and Kate Miller Jeffress Memorial Trust.

Principle Investigator on Awarded Thomas F. Jeffress and Kate Miller Jeffress Memorial Trust Grant, Point and Interfacial Defects in YVO_4 , (\$30,000), December 2000 (Funds not accepted as I left academia for industry in December of 2000).

Henry M. Yochum, Ph.D.

Science Education Outreach and Research

Co-Project Director on Awarded No Child Left Behind, State Council of Higher Education for Virginia (SCHEV) grant, Inquiry Approaches to Math and Science: Grades 3-8 (\$177,983), June 2007 with co-project director J. Granger.

Co-Project Director on Awarded No Child Left Behind, State Council of Higher Education for Virginia (SCHEV) grant, Inquiry Approaches to Math and Science: Grades 3-8 (\$191,787), June 2006 with co-project director J. Granger.

Co-Project Director on Awarded No Child Left Behind, State Council of Higher Education for Virginia (SCHEV) grant, Inquiry Approaches to Math and Science: Grades 3-8 (\$142,705), May 2005 with co-project director J. Granger.

Co-Project Director on Funded No Child Left Behind, State Council of Higher Education for Virginia (SCHEV), Investigate and Understand: Math and Science by Inquiry, (\$122,324), April 2004, with co-project director J. Granger.

Co-Principal Investigator on Funded NSF-CCLI (#0126968) grant, A Standards-Driven, Inquiry-Based Science Curriculum for Future Elementary School Teachers, (\$50,446), July 2002, with PI Jill Granger and co-PI's David Orvos and Rebecca Ambers.

Project Co-Director on Awarded Eisenhower grant from State Council of Higher Education for Virginia (SCHEV), Achieving Science SOL's with an Inquiry-Based, Hands-On Approach, (\$64,283), January 2000, with J. Granger, R. Davies.

Physics and Engineering Program Development and Student Recruitment

Principal Investigator on Awarded NSF-Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP) Grant, Increasing the Representation of Women in STEM via a New Interdisciplinary Engineering Program at a Liberal Arts Women's College, (\$406,332), with former PI Kurt Schulz and Co-PI Scott Hyman.

Co-Principal Investigator on Funded NSF-Engineering Education (#0343071) grant, Implementation of a New Engineering Studies Program at Sweet Briar College, (\$419,184), July 2003, PI Scott Hyman with co-PI's Mary Kasarda and David Orvos.

Awarded American Physical Society Women in Physics Travel Grant, (\$500), September 2002, for funding physics speakers to visit SBC.

Funded Internal Grants

Awarded SBC Faculty Fellowship for 2005-2005, for year long sabbatical research project: Nanostructured Device Development for Applications in Biosensing and Nonlinear Optics

Awarded SBC Faculty Development Grant, Spring 2005, for attendance and presenting at March 2005 Meeting of American Physical Society, Los Angeles, CA.

Awarded SBC Faculty Development Grant, Spring 2004, for attendance and participation at CUR Annual Councilor's Meeting and Conference, LaCrosse, WI.

Awarded SBC Faculty Development Grant, Spring 2004, for supplies, materials, and stipend for project on optical spectroscopy of YVO_4

Awarded Sweet Briar College Honors Program Summer Research Fellowship, Summer 2003, for research stipend for an undergraduate student.

Awarded SBC Faculty Development Grant, Spring 2003, for attendance at March Meeting of American Physical Society in Austin, TX and participation in New Faculty Workshop

Awarded SBC Faculty Development Grant, Spring 2003, for infrastructure support for laser laboratory

Henry M. Yochum, Ph.D.

Awarded SBC Faculty Development Grant, Spring 2003, for stipend to develop laser spectroscopy capabilities for research on optical materials

Awarded SBC Student Research and Creative Endeavor Grant, Computer Modeling of Erbium Doped Fiber Lasers and Amplifiers, with Katie Kirkwood ('04), Spring 2003.

Awarded SBC Faculty Development Grant and Honors Summer Research Fellowship, Summer 2000, for Student Research Assistants for project Time Resolved Fluorescence Spectroscopy of Scintillator Crystals

Awarded SBC Faculty Development Grant for attendance and presentation at Winter 2000 AAPT meeting.

Honors and Awards

Nominated and Inducted Member of Project Kaleidoscope (PKAL) Faculty for the 21st Century class of 2004

Faculty Advisor on Awarded Student Summer Research Stipend Grant from Virginia Foundation of Independent Colleges (VFIC), Summer 2004 and Summer 2006.

Visiting Researcher, Franklin and Marshall College, Department of Physics, July 2003, Completed preliminary experiments on YVO_4 and $CdWO_4$ spectroscopy projects at Ken Krebs laboratory, funded by Franklin and Marshall College.

Selected Participant in AAPT New Physics and Astronomy Faculty Workshop, College Park, Md., November 2002.

Awarded South Carolina NASA Space Grant for Senior Research Project, Nonlinear optical properties of confined liquids, 1993-1994.

Awarded South Carolina NASA Space Grant Consortium Scholarship, 1993-1994.

Publications (* indicates undergraduate co-author)

1. Millisecond Switching in Solid-State Electrochromic Polymer Devices Fabricated from Ionic Self-Assembled Multilayers, V. Jain, H.M. Yochum, R. Montazami*, J.R. Heflin, *Appl. Phys. Lett.* 92, (2008) 033304:1-3.
2. Solid-state Electrochromic Devices via Ionic Self-Assembled Multilayers of a Polyviologen, V. Jain, H. Yochum, H. Wang, R. Montazami*, M.A.V. Hurtado, A. Mendoza-Galvan, H.W. Gibson, J.R. Heflin, *Macromol. Chem. Phys.* 209, (2008) 150-157.
3. Transient and near-edge absorption in YVO_4 crystals, D. Millers, H.M. Yochum, V. Pankratov, P. Potera, L. Grigorjeva, *Physica Stat.C.* 4 (2007) 1155-1158.
4. Intrinsic luminescence and energy transfer in pure and doped YVO_4 crystals, V. Pankratov L. Grigorjeva D. Millers, H.M. Yochum, *Physica Stat.C.* 4 (2007) 801-804
5. Self trapped electron and transient defect absorption in niobate and tungstate crystals, R.T. Williams, K.B. Ucer, Gang Xiong, H.M. Yochum, L.G. Grigorjeva, D.K. Millers, G. Corradi, *Radiation Effects and Defects in Solids*, 155 (2001) 265-276.
6. Picosecond and nanosecond time-resolved study of luminescence and absorption in $CdWO_4$ and $PbWO_4$, H.M. Yochum, K.B. Ucer, R.T. Williams, D. Millers, L. Grigorjeva, and S. Chernov *Proceedings of Fifth International Conference on Inorganic Scintillators and their Applications, SCINT99*. Edited by V. Mikhailin, (2000) 336-341.
7. Subpicosecond laser spectroscopy of blue-light induced absorption in $KNbO_3$ and $LiNbO_3$, H.M. Yochum, K.B. Ucer, R.T. Williams L. Grigorjeva, D. Millers, and G. Corradi, *Proceedings of NATO Advanced Research Workshop: Defects and Surface-Induced Effects in Advanced Perovskites*. Edited by G. Borstel, A. Krummins, and D. Millers, (2000) 125-138.
8. Short pulse excitation and spectroscopy of $KNbO_3$, $LiNbO_3$, and $KTiOPO_4$, H.M. Yochum, K.B. Ucer, R.T. Williams, P.A. Sheldon, V. Nagirnyi, V. Denks, L. Grigorjeva, D. Millers, and E.A. Kotomin, *Radiation Effects and Defects in Solids*, 150 (1998) 271-276.

Henry M. Yochum, Ph.D.

9. Subpicosecond absorption spectroscopy of band-gap excitation and defect formation in alkali halide crystals, E.D. Thoma, H.M. Yochum, P.A. Sheldon, and R.T. Williams, Nuclear Instruments and Methods in Physics Research B, 141 (1998) 552-554.
10. Ultrafast spectroscopy of hole and exciton self-trapping in halide crystals, E.D. Thoma, H.M. Yochum, P.A. Sheldon, and R.T. Williams, Journal of Luminescence, 76-77, (1998) 43-47.
11. Subpicosecond spectroscopy of hole and exciton self-trapping in alkali-halide crystals, E.D. Thoma, H.M. Yochum, and R.T. Williams, Physical Review B, 13, (1997) 8001-8011.
12. Femtosecond photolysis of KCl with 6 eV photons, E.D. Thoma, H.M. Yochum, M.J. Binkley, M. Leblans, and R.T. Williams, Journal of Luminescence, 72-74, (1997) 847-848.
13. Photolysis of KBr, KCl, and SrF₂ Crystals with 6 eV, 600 fs Pulses, E.D. Thoma, H.M. Yochum, M.J. Binkley, M. Leblans, and R.T. Williams, Materials Science Forum, 239-241 (1997) 565-568.
14. Spectroscopy of self-trapped excitons and defect formation in alkali and alkaline-earth halides with 6 eV, 600 fs pulses, E.D. Thoma, H.M. Yochum, M.J. Binkley, and R.T. Williams, Proceedings of the 2nd International Conference on Excitonic Processes in Condensed Matter, Kurort Gohrisch, Germany, (1996) 219-222.

Service at Sweet Briar College

Chair of Physics and Engineering Department, Spring 2000-Fall 2000, Spring 2003 –Summer 2006
Associate Director of Honors Program (Honors Summer Research), Spring 2004 – Summer 2006
Chair, Search Committee for Faculty Grants Officer, Sweet Briar College, Fall 2003
Member of Instruction Committee, Sweet Briar College, Fall 2003 – Spring 2006
Member of Honors Committee, Sweet Briar College, Fall 2003 – Spring 2006
Member of MARCUS Conference Committee, Fall 2004 – Spring 2006
Member of Premedical Advisory Committee Spring 2000, Fall 2002 – Fall 2004
Member of Engineering Steering Committee, Fall 2002 – present
Member of Engineering Consultant Search Committee, Fall 2002
Member of Director of Engineering Faculty Search Committee, Fall 2003
Member of Engineering Faculty Search Committee, Fall 2005
First year Advisor, academic years 2000-2001, 2002-2003, 2003-2004
Advisor to Physics Club, SPS, Fall 2002 - present
Dual Degree Engineering Program Advisor Fall 2002 – Fall 2004
Member of Ad Hoc Web Advisory Group, Fall 2003 – Spring 2004
Member of College Marketing Task Force, Fall 2004 – 2005

Conference Presentations (* indicates undergraduate presenter)

1. Millisecond Switching Speed and High Contrast of Electrochromic Self-Assembled Films for Fast Displays, V. Jain, R. Montazami, H.M. Yochum, J.R. Heflin, SPIE Optics and Photonics Conference, San Diego, CA, August 2007
2. Nanocoating stationary phase of MEMS–based preconcentrators and gas chromatography columns fabricated by layer-by-layer assembly of gold nanoparticles for high-speed chemical detection analysis, V. Jain, R. Montazami, H.M. Yochum, J.R. Heflin, Syed aftar-ali, Masoud Agah, Bassam Alfeeli, Larry Taylor and Mehdi Ashraf-Khorassani, SPIE Optics and Photonics Conference, San Diego, CA, August 2007
3. Time Resolved Transient Absorption Spectroscopy and Luminescence in Undoped YVO₄, H.M. Yochum, L. Grigorjeva, D. Millers, V. Pankratov, M.C.S. Yochum, K.T. Stevens, 2005 March Meeting of American Physical Society, Los Angeles, California.
4. Time Resolved Photoluminescence in Undoped and Cadmium Doped Cadmium Tungstate, J.A. Kotonias*, H.M. Yochum, 2005 March Meeting of American Physical Society, Los Angeles, California.
5. Engineering@ Sweet Briar: A Global Perspective in an Integrated Liberal Arts Context, K.C. Schulz, S.D. Hyman, H. Yochum, and M. Kasarda, NSF Engineering and Computing Education Grantee Meeting 2005, Washington D.C., February 16-18, 2005

Henry M. Yochum, Ph.D.

6. Engineering@ Sweet Briar: A Global Perspective in an Integrated Liberal Arts Context, K.C. Schulz, S.D. Hyman, H. Yochum, and M. Kasarda, Proceedings of 2005 American Society of Engineering Education Southeast Section Conference, Chattanooga TN, April 3-5, 2005.
7. Excitation Intensity Dependence of Emission in Undoped YVO₄, Barbara Merk*, H.M. Yochum, Mid-Atlantic Conference of Undergraduate Scholarship (MARCUS), Sweet Briar College, October 2004.
8. Essential Concepts for Quality Instruction: Hands-On Investigations, Jill Granger and H.M. Yochum, State Of Virginia 2003-2004 Improving Teacher Quality State Grant Awardees Dissemination Conference, Virginia State University, June 8, 2004.
9. The New Engineering Studies Program at Sweet Briar College, Mary Kasarda, S. Hyman, H.M. Yochum, D. Orvos, L. Laufenberg, S. Peipho, and S. Wassell, Women in Engineering Programs & Advocates Network (WEPAN) 2004 National Conference, Albuquerque, New Mexico, June 2004.
10. Modeling Erbium Doped Fiber Lasers, K. Kirkwood* and H. Yochum, 2004 American Physical Society March Meeting, Montreal, Canada March 2004.
11. Erbium Doped Fiber Laser Modeling, K. Kirkwood* and H. Yochum, Mid-Atlantic Conference of Undergraduate Scholarship (MARCUS), Sweet Briar College, October 2003.
12. Characterization of Technological Optical Materials: A Study of Coloured and Uncoloured YVO₄, C. Stanbury*, J. Kotonias*, and H.M. Yochum, Mid-Atlantic Conference of Undergraduate Scholarship (MARCUS), Sweet Briar College, October 2003.
13. Laser Spectroscopy of Bismuth Doped and Undoped Cadmium Tungstate, J. Kotonias*, C. Stanbury*, and H. M. Yochum, Mid-Atlantic Conference of Undergraduate Scholarship (MARCUS), October 2003.
14. Making Science Professionally Relevant for Future Teachers: Development of a Standards-Driven, Inquiry-Based Science College Curriculum, H.M. Yochum, J. Granger, and M. Bentley, 23rd Annual Lilly Conference on College Teaching, Miami University, Oxford, OH, November, 2003.
15. A Decade of Successful Research with Students at a Liberal Arts College, S.D. Hyman, G.R. Denn, H.M. Yochum, 201st Meeting of American Astronomical Society, Seattle WA, December 2002.
16. Science Education for the Next Generation of Teachers: A Professionally-Relevant Chemistry Course and Science Curriculum for Future Elementary School Teachers, J. Granger, D. Orvos, H.M. Yochum, Southeast Regional Meeting of American Chemical Society (SERMACS), Charleston SC, November 2002.
17. A Luminescence study of CdWO₄ and CdWO₄:Bi, Megan Thomas, Sweet Briar College, Mid-Atlantic Conference of Undergraduate Scholarship (MARCUS), October 2000.
18. Effect of Active Learning Techniques as a Function of Gender, H.M. Yochum and P. Sheldon, Winter Meeting of the American Association of Physics Teachers, Orlando, Florida, January 2000.
19. Picosecond Transient Absorption Spectroscopy of CdWO₄ and PbWO₄, H.M. Yochum, K.B. Ucer., R.T. Williams, Centennial Meeting of the American Physical Society, Atlanta, GA, March 1999.
20. Picosecond Transient Absorption Spectroscopy of KNbO₃ and LiNbO₃, H.M. Yochum, K.B. Ucer, R.T. Williams, Centennial Meeting of the American Physical Society, Atlanta, GA, March 1999.
21. Short pulse excitation and spectroscopy of KNbO₃, LiNbO₃, and KTiOPO₄, H.M. Yochum, K.B. Ucer, R.T. Williams, P.A. Sheldon, V. Nagirnyi, V. Denks, L. Grigorjeva, D. Millers, and E.A. Kotomin, European Conference on Defects in Insulating Materials (EURODIM98), Keele, England, July 1998.
22. Ultrafast absorption spectroscopy of fluorides and oxides, E.D. Thoma, H.M. Yochum, R.T. Williams, Radiation Effects in Insulators-9, Knoxville, TN, September 1997.
23. Time resolved atomic force microscopy of UV irradiated surface erosion, H.M. Yochum, E.D. Thoma, R.T. Williams 13th International Conference on Defects in Insulating Materials (ICDIM96), Winston-Salem, NC, July 1996
24. Nonlinear optics in a pseudo two-dimensional liquid, H.M. Yochum and J.L. Wragg, South Carolina Academy of Science, Aiken, SC, April 1994.

Courses Taught

Phys 103 Physics by Inquiry
Phys 122 Principles of Physics II
Phys 132 Introductory Physics Lab II

Phys 104 Electricity and Magnetism (plus Honors Variant)
Phys 131 Introductory Physics Lab I
Phys 151 Mechanics

Henry M. Yochum, Ph.D.

Phys 171/172 General Physics I/II	Phys 152 Waves and Heat
Phys 201 Mathematical Methods of Physics	Phys 220 Computational Physics
Phys 233 Intermediate Physics Laboratory	Phys 230 Solid State Physics
Phys 240 Optics	Phys 251 Research in Physics – Laser Modeling
Phys 301 Classical Mechanics	Phys 361 Independent Study – Physics Pedagogy
Phys 313 Quantum Mechanics	Phys 337 Special Topics: Quantum Mechanics II
Phys 351 Research in Physics – Spectroscopy	Educ 656 Inquiry Methods in Math and Science (team taught)
Phys 661 Calculus-Based Physics, Content and Pedagogy (Independent Study)	

Instructional Workshops Taught

1. Inquiry Approached to Math and Sciences: Grades 3-8, Sweet Briar College, July 11-15, 2005
2. Investigate and Understand: Math and Science by Inquiry, Sweet Briar College, June 28 – July 2, 2004
3. Investigations for Elementary Grades, Annual VAST (Virginia Association of Science Teachers) Professional Development Institute, Portsmouth, VA November 2003.
4. Light, Color, and Energy Activities for Grades 6 –12, Annual VAST (Virginia Association of Science Teachers) Professional Development Institute, Portsmouth, VA November 2003.
5. The Spark of Electricity! A science enrichment program for 3-5th graders at Paul Munro Elementary School, Lynchburg VA, Spring 2003. (Article appear in Lynchburg paper on this program)
6. A Primer for a Crime Scene Investigation, Eisenhower Academic Year Workshop for K-6 grade teachers, Sweet Briar College, October 2002.
7. Hands-On Newton's Laws and Hands-On Circuits, Eisenhower Summer Workshop for K-6 grade teachers, Sweet Briar College, July 2002.
8. Hands-On Circuits: A Workshop for Elementary/Middle School Teachers," Amelon Elementary School, November 2000.
9. Achieving Science SOLs With a Hands-On Approach, Sweet Briar College, June/July 2000.
10. Critical Thinking in the Sciences, Workshop at the Teaching and Learning Center at Wake Forest University, November 1998.

Service Outside of SBC

- Elected Physics Councilor for CUR (Council on Undergraduate Research) Spring 2004, reelected 2007, three year term, member of CUR outreach committee 2004, member of CUR finance committee 2005-current
- Grant Reviewer for U.S. State Department, U.S. Civilian Research & Development Foundation (CRDF) for the Independent States of the Former Soviet Union, Fall 2003
- Participating in Science Enrichment Program on "Electricity" at Paul Munro Elementary School (Lynchburg, VA), Spring 2003.
- Journal Reviewer, *IEEE Photonics Technology Letters*, Spring 2002.
- Peer Reviewer, MERLOT Project Physics Content, Spring 2002 - Present
- Science Fair Judge, Central Virginia Regional Science Fair, Spring 2000.

Invited Seminars

Lucent Technologies, November 2000	Sweet Briar College, April 1999 and May 2000
Allegheny College, March 1999	Davidson College, April 1998
Randolph-Macon Woman's College, April 2002, November 2000	
Radford University, April 2006	
James Madison University, February 2008	

Professional Society Memberships

American Physical Society	Council on Undergraduate Research
American Association of Physics Teachers	Sigma Xi, The Scientific Research Society
American Chemical Society	