

Résumé
RICHARD L. BOWMAN
(September 2011)

Department of Physics
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Education

PhD (1979) Biophysics

Oregon State University, Corvallis, Oregon

MA (1974) Physics

Kent State University, Kent, Ohio

BS (1970) Physics, Mathematics

Eastern Mennonite College, Harrisonburg, Virginia

Educational Experience

July 1986 - Present

Professor of Physics, Bridgewater College, Virginia.

Teaches all levels of undergraduate physics courses, including introductory astronomy and an occasional computer science course. (Chair of the Department: 9/86 – 8/03; Assistant Professor: 9/86 – 8/87; Associate Professor: 9/87 – 8/94; Professor: 9/94 – present.)

November 1996 – August 2011

Director of Academic Computing (quarter-time), Bridgewater College, Virginia

Assisted college faculty in and taught workshops on using computing technology in education and acted as faculty liaison with the Information Technology Center staff. Writes and publishes an academic computing blog and tutorials residing on the web.

August 1980 - June 1986

Assistant Professor of Physics, Elizabethtown College, Pennsylvania.

Taught all levels of undergraduate physics courses, introductory astronomy and some computer science courses. (Chairman of the Department from 1/85 to 6/86.)

August 1979 - August 1980

Assistant Professor of Chemistry, Bethel College, Kansas.

Taught chemistry to all levels of undergraduate students.

September 1973 - June 1974

Teaching Assistant in Physics, Kent State University, Ohio.

Taught laboratory sections of undergraduate physics courses.

Fall 1972

Teacher, Belize Technical College, Belize City, Belize, Central America.

Taught physics and mathematics courses for high school students.

Community Experience: Additional Educational Activities

Summer 2005

Physics Consultant on the Middle School Science Laboratory Project

Cognitive Learning Institute, Elizabethtown, Pennsylvania

Developed several laboratory modules for middle school classes and taught in a two-week workshop for middle school teachers. (Occasional consultant: 7/02 – present.)

January 8-15, 2003

Member, Brethren Colleges Abroad, Faculty Forum

Cochin University of Science and Technology, Kochi, India

September 1998 – February 1999

Consultant on the Core Values Committee of the Alternate Self-Study

Eastern Mennonite University, Virginia.

Participated in the formation of a draft core values statement for the university.

May 1990 – May 1993

Director, Resource Network for Middle School Science Teachers

Bridgewater College, Virginia

Directed and taught in a two-week summer program for middle school science teachers funded by the Jessie Ball duPont Fund.

Academic Year 1988-89

Member, Committee on the Purpose Statement (a self-study committee for re-accreditation)

Eastern Mennonite High School, Virginia

Concluded a major re-vamping of the purpose statement for EMHS.

1984

Member, Science Consulting Team

Elizabethtown Area School District, Pennsylvania.

Evaluated the science program in 6th through 12th grades.

1978 – Present

Science demonstrator to community organizations and elementary and secondary school classes.

1978 – Present

Speaker on integrating science and Christian faith to middle school, high school and college student groups.

Research Experience

August 1979 - Present

Physics Professor at Bridgewater College, Elizabethtown College, & Bethel College.

Studying the theoretical link between circular dichroism spectra and molecular structure.

July 1985 – March 2002

General User, Synchrotron Radiation Center, Univ. of Wisconsin.

Using synchrotron light at vacuum ultraviolet wavelengths to obtain circular dichroism spectra of molecules.

October 1985 - September 1988

General User, National Synchrotron Light Source, Brookhaven National Laboratories, Long Island, New York.

Collected circular dichroism spectra at vacuum ultraviolet wavelengths.

October 1978 - August 1979

Post-doctoral Researcher, Department of Chemistry, University of Southern California.

(Advisor: Dr. Philip J. Stephens)

Calculated theoretical vibrational circular dichroism spectra.

September 1974 - October 1978

Graduate Research Assistant, Department of Biochemistry and Biophysics, Oregon State University. (Advisor: Dr. W. Curtis Johnson, Jr.)

Doctoral dissertation title: "Interpreting the Circular Dichroism of Cyclic Dimers of Amino Acids".

Summers 1966 & 1967

Laboratory Assistant; Lancaster Laboratories, Inc., Lancaster, Pennsylvania.

Did biochemical testing, e.g. water purity, fungicide effectiveness.

Awards, Grants and Fellowships

Martha B. Thorton Faculty Recognition Award (April 1999) –award from Bridgewater College recognizing "talented teaching, dedicated service, and concern for students."

Synchrotron Radiation Center Grant (1986 - 2002) –for research time on the synchrotron.

Crestar Bank (1996) –for a computerized 10-inch telescope.

Research Corporation Grant (1991 - 1993) –for summer research including student support.

Jessie Ball duPont Fund Grant (1990 - 1993) –for improving middle school science teaching.

NSLS Faculty and Student Support Grant (1985 - 1988) –for research time on the synchrotron.

Faculty Research Grants: Bridgewater, Elizabethtown, & Bethel Col. (1979 - present).

National Teaching Fellow, Bethel College (1979-1980).

Professional Memberships

American Physical Society
American Association of Physics Teachers
American Scientific Affiliation

Professional Publications and Presentations

R. L. Bowman, C. Bertucci & W. C. Johnson, Jr., "A Theoretical And Experimental Study Of The VUV Circular Dichroism Spectra Of (1R)-(-)-Fenchone And (3S:5S)-(-)-2,2,3,5-Tetramethylheptane," (in preparation).

R. L. Bowman, "The "Game of Life" in Small Universes with Various Boundary Conditions: An Experimental Approach,' (in preparation).

R. L. Bowman, "Exploring 'The Game of Life' in Small Worlds," Virginia Academy of Science (Harrisonburg, VA), 21 May 2010.

R. L. Bowman, "Introducing ISAW as an Example of Web-based Science Simulations Constructed Using JavaScript and HTML Forms," MERLOT Seventh International Conference, New Orleans, LA, USA, 7-10 August 2007.

R. L. Bowman, "Web Enhancing Courses with Freeware Components: a Flexible, Efficient, and Low-cost Alternative," MERLOT Seventh International Conference, New Orleans, LA, USA, 7-10 August 2007.

R. L. Bowman, "Summer Educational Technology Workshops Teach Faculty through Instructor-defined Projects," MERLOT Seventh International Conference, New Orleans, LA, USA, 7-10 August 2007.

R. L. Bowman, Response to: Dr. Gerald Schroeder, "The Physics of Free Will," Eastern Mennonite University, April, 5, 2006.

R. L. Bowman, "The Search for Extra-solar Planets: An Introduction and a Simulation," SPS Zone 4 (Bridgewater College), April 2, 2005.

R. L. Bowman, "Using *Mathematica* in Upper Division Courses: Examples and Hints," Virginia Academy of Science (Charlottesville, VA), 29-30 May 2003.

R. L. Bowman, "Constructing Web-based Science Simulations," Virginia Academy of Science (Hampton, VA), 23 May 2002.

R. L. Bowman, "Introduction to Web Interactivity: Forms and JavaScript," Faculty Academy on Instructional Technology, Mary Washington College (Fredericksburg, VA), 13 May 2002.

R. L. Bowman, "Incorporating Web-based Components into an Astronomy Course," Faculty Academy on Instructional Technology, Mary Washington College (Fredericksburg, VA), 13 May 2002.

R. L. Bowman, "Can We Trust the Logic of Function," *Perspectives on Science and Christian Faith*, **54**, 34 (2002).

R. L. Bowman, "Implementing A Virtual Educational Environment: Inaugurating A Web-Based MOO," 2000 Information Technology Workshop, Council of Independent College (Pittsburgh, PA), 30 March-1 April 2000.

R. L. Bowman, "Creating 'Interactive Science Activities on the Web' (ISAW)," *Proceedings of M/SET 99* (International Conference on Mathematics/Science Education & Technology, San Antonio, Texas), 1-4 March 1999.

R. L. Bowman, "The Role of Technology In The Classroom Using Form-based Questions, Web-based Assignments, And Collaborative Web-based Projects In Introductory Science Courses," *Syllabus* Conference (Washington, DC), 5-8 November 1998.

R. L. Bowman, "Evaluating Pseudo-Random Number Generators," reprinted in: C. A. Pickover, ed., *Chaos and Fractals: A Computer Graphical Journey (Ten Year Compilation of Advanced Research)*, Elsevier, 1998.

R. L. Bowman, "Evaluating Pseudo-Random Number Generators," *Computers and Graphics*, **19**, 315-324 (1995).

R. L. Bowman, "Fractal Metamorphosis: A Brief Student Tutorial," *Computers and Graphics*, **19**, 157-164 (1995).

R. L. Bowman and D. L. Pugh, "Modeling Air Friction in Projectile Motion," Virginia Academy of Sciences (Harrisonburg, VA), 18-20 May 1994.

R. L. Bowman, "Mathematica in Science Education" (panel discussion), 1992 *Mathematica* Conference (Rotterdam, Netherlands), 1-4 September 1992.

R. L. Bowman, L. A. Meyerhoeffler and A. G. Showalter, "Importing, Smoothing, Calibrating, and Merging Molecular Spectra," 1992 *Mathematica* Conference (Rotterdam, Netherlands), 1-4 September 1992.

R. L. Bowman, G. Gum, J. Colvin & L. Herman, "Using Synchrotron Radiation to Probe the Structure of Molecules", Am. Assoc. of Physics Teachers (Chesapeake Section meeting), 27-28 October 1989.

R. L. Bowman, P. A. Snyder & R. W. C. Hansen, "Natural Circular Dichroism of Ringed Ketones", *Abstracts of the 1988 SRC Users Group Meeting*, 68-69 (1988).

R. L. Bowman, "Electronic Spreadsheets for Physics Students Use", *Am. J. Phys.* **56**, 184-185 (1988).

R. L. Bowman and D. A. Smith, "VUV Circular Dichroism of Bicyclic Carbonyl Compounds", *NLSL Annual Report 1986*, 163-164 (1986).

R. L. Bowman, "Studying Non-linear Behavior: The Stretching of a Rubber Band and the Friction Between Wood Blocks", Am. Assoc. of Phys. Teachers (Central Pa. Section meeting), 13 April 1984.

R. L. Bowman, C. Bertucci, & W. C. Johnson, Jr., "Experimental and Theoretical $\sigma \rightarrow \sigma^*$ Circular Dichroism Spectra for Some Cyclic Compounds: Diamides, Ketones, and Hydrocarbons", Am. Phys. Soc. (national meeting), 24-27 January 1983.

R. L. Bowman, M. Kellerman, & W. C. Johnson, Jr., "Optical Properties of Cyclic Dimers of Amino Acids: An Experimental and Theoretical Study", *Biopolymers*, **22**, 1045-1070 (1983).

R. L. Bowman, "Space Travel and Relativity, II. Some Analytical Solutions", Am. Assoc. of Physics Teachers (Central Pa. Section meeting), 23-24 April 1982.

R. L. Bowman, "Comment On: Spectral Analysis Using a Camera", *Am. J. Phys.*, **41**, 1297 (1973).

R. L. Bowman, "Folklore in the Classroom", *The Phys. Teacher*, **10**, 174 (1972).

Internet Projects Created and Maintained

Ed Tech by Bowman (2011 – present)

<http://www.bridgewater.edu/index.php?id=180>

This site focuses on the effective use of educational technology including tutorials for Moodle.

Academic Computing at Bridgewater College (1997 – 2011)

<http://people.bridgewater.edu/~rbowman/acadcomp/>

Most of the tutorials and other resources for faculty have been updated and transferred to the Ed Tech by Bowman site shown above.

JS Quiz Maker (2003 – present)

<http://www.edtechbybowman.net/JSQuizMaker/>

This is a stand-alone quiz module enabling teachers and other web authors to construct quizzes that can be taken by students and other users with the results being displayed immediately to the one taking the quiz and emailed to the instructor.

Phys-Astro Sims (2011 – present)

<http://www.edtechbybowman.net/PhysAstroSims/>

[Formerly Interactive Science Activities on the Web (ISAW) (1997 – 2011)

<http://people.bridgewater.edu/~rbowman/ISAW/>]

Currently Phys-Astro Sims contains four simulations: Extrasolar Planets, IFS Fractals, Game of Life, and Planetary Orbits.

Department of Physics (1997 – present)

<http://www.bridgewater.edu/Academics/AcademicDepartments/Physics>

Manager of the content since 1997; prior to that also author of the design of the pages.

“Little Rich’s Questions” (2001 – present)

<http://mountclinton.va.us.mennonite.net/LittleRichsQ.html>

Cartoonist for this “op-ed” Christian cartoon.

Mount Clinton Mennonite Church (2000 – present)

<http://mountclinton.va.us.mennonite.net/>

Mennonite Congregational Resource Center (2000 – 2005)

<http://www.emu.edu/mcrc/>

This is now under new management and has a different web address.

Community Experience: Church-Related Activities

September 2005 – present

Secretary, Faith and Life Commission, Virginia Mennonite Conference

September 2003 – present

Overseer (bishop), Central District, Virginia Mennonite Conference

September 1999 – August 2003

Minister-at-Large, Central District, Virginia Mennonite Conference

Chair, Central District Council

September 1999 – December 1999

Interim Minister, Zion Hill Mennonite Church.

September 1993 – August 1999

Assistant Pastor, Mount Clinton Mennonite Church. (Ordained: 10/95.)

July 1988 – July 1994

Member, Board of Trustees. (Chair: 1988-93.)

Virginia Mennonite Board of Missions.

September 1985 – July 1986

Elder, Elizabethtown Mennonite Church.

July 1982 – July 1986

Member, Board of Trustees. (Vice-chair: 1983-86.)
Lancaster Mennonite High School, Lancaster, Pennsylvania.

Spring 1977 – Fall 1978

Assistant Pastor, Corvallis Mennonite Church, Corvallis, Oregon.

August 1970 – May 1973

Pastor, Belize City Mennonite Church, Belize, Central America.

Church-Related Publications

“In Celebration of Everyday Worship,” *The Mennonite*, September 21, 2004.

"Coming To Terms With Who I Am," *The Mennonite*, September 22, 1998.

A Winner, Family Photo Contest, *Christian Living*, March 1982.

"The After-Easter Blues," *Gospel Herald*, April 8, 1975.

"How Meaningful Is Baptism?" *Gospel Herald*, January 20, 1970.

Some 20 other articles, poems and short stories published in *Purpose*, *Missionary Messenger*, *Youth Messenger*, and *The Volunteer* between 1964 and 1975.

Personal Data

I was born December 13, 1948 in Lancaster County, Pennsylvania. Elsie Hamilton (BSN from EMC in 1969) and I were married on June 20, 1970. We are the proud parents of four children: Todd, Jonathan, Jennifer and Heidi (ages: 28-38) and grandparents of six grandchildren. I enjoy a variety of hobbies including gardening, house remodeling, working with computers, writing and reading.

References

Letters of reference, including contact information for each person, will be provided upon request.