



**Jerry L. Artz, PhD**  
**Director of Physical Sciences and Mathematical Modeling**

**Education:**

|             |                           |                          |
|-------------|---------------------------|--------------------------|
| 1974 - 1976 | Postdoctoral work         | University of MN         |
| 1974        | PhD Physics               | Florida State University |
| 1966        | MS Electrical Engineering | Stanford University      |
| 1965        | BS Electrical Engineering | University of Cincinnati |

**Dissertation:**

J.L. Artz, ( $^{12}\text{C}, ^8\text{Be}$ ) and ( $^{16}\text{O}, ^8\text{Be}$ ) Reactions on  $^{12}\text{C}$ ,  $^{16}\text{O}$ , and  $^{28}\text{Si}$  Nuclei (Ph.D. Thesis, Florida State University, Tallahassee, Florida, March 1974, 237 pp., University Microfilms Order No. 74-18, 065). For the Abstract of this dissertation, see Nuc. Sc. Abstracts 30, 3412 (1974).

**Professional Background:**

|                |  |
|----------------|--|
| 1989 - Present | Professor of Physics, Hamline University           |
| 1983 - 1989    | Associate Professor of Physics, Hamline University |
| 1977 - 1983    | Assistant Professor of Physics, Hamline University |
| 1976 - 1977    | Visiting Assistant Professor, Univ. of Notre Dame  |

**Teaching Experience:**

Hamline University, St. Paul, MN (9/77-present)

**Physics Major Courses:**

General (Calculus-based) Physics: 29 years  
Intro. to Electromagnetic Field Theory: 17 terms  
Theoretical Mechanics: 14 terms  
Advanced Electromagnetic Field Theory: 22 terms.  
Introduction to Relativity & Quantum Mechanics (Modern Physics): 5 terms.  
Advanced Quantum Mechanics: 2 terms.



**Non-Science Major Physics Courses:**

Energy, Environment, and the Economy: 14 terms + 54 summer session terms  
Physics for Poets: 6 terms + 53 summer session terms  
First-Year Seminar: 10 terms  
Evolution of the Modern World: 2 terms

**Continuing Education Workshops Taught:**

Energy, Environment, and the Economy: 22 Workshops  
Alternate Energy Resources: 3 workshops  
Nuclear Power, Radiation, and Nuclear Weapons: 1 workshop  
Elderhostel: "Energy Crisis"  
Elderhostel: "Chernobyl and Nuclear Power"

**Graduate MALS Courses Taught:**

Energy and Population Growth (with Hamline sociology dept.),  
The Impact of Physical Science on the Arts (with the Walker Art Center, Minneapolis, MN),  
The Science of Art, the Art of Science (with Hamline art dept.)

Also conducted or served on 19 undergraduate Independent Studies, 2 graduate Independent Studies, 16 Internships, 34 Honors Committees, and 2 graduate MALS Synthesis Committees.

University of Notre Dame, Notre Dame, IN (1976 - 1977)  
Taught two sections of the physics (calculus) sequence for pre-professional students.

St. Mary's Junior College, Minneapolis, MN (1975)  
Taught a one quarter introductory physics course for Respiratory Therapy students.

Florida State University, Tallahassee, FL (1968 - 1969)  
Taught Introductory and Engineering Physics Laboratories.

Columbia Basin (Jr.) College, Pasco, WA (1966 - 1968)  
Taught General Physical Science, General Physics (non-calculus) sequence, Engineering Physics (calculus) sequence, Engineering Static, and Aeronautics.



### **Research Experience:**

- 1978- Present     Energy and Environmental Concerns, especially Energy Conservation, Sustainability, Alternate Energy Resources, Water Quality, and Nuclear Power Plant Operation; Radiation Safety; Energy Policy; Student Assessment
- 1976 - 1977     Visiting Assistant Professor, University of Notre Dame
- 1974 - 1976     Postdoctoral Research Associate, University of Minnesota
- 1969 - 1978     Low Energy, Heavy-Ion, Experimental Nuclear Physics. The change from this topic to my current research interest was brought about in part by elimination of federal funding by the Energy Research & Development Agency of the Williams Laboratory of Nuclear Research at the University of Minnesota in 1979, and an unusually heavy teaching load at Hamline University. Previous to this, I had considerable practice with accelerator technology, negative ion sources, electronic instrumentation, FORTRAN programming, gas ion detectors, vacuum systems, and magnetic spectrometers.
- 1969 - 1974     NSF Traineeship and Research Assistant, Florida State University, Tallahassee, Florida.

### **Radiation Safety Officer:**

- 1999 – Present     I continue to serve as Hamline University's *Radiation Safety Officer (RSO)* for both the physics department's and chemistry department's nuclear radiation program. This job involves monitoring the usage and checking for radiation leakage of Hamline University's neutron source. This job also involves monitoring safety procedures with the physics department's X-Ray Diffraction source. Both sources are presently registered with and regulated by the MN Dept. of Public Safety. I have also written the *Hamline University Radiation Safety Manual* (2000)



### **Congressional Experience:**

1994, Spring Sabbatical Served on the staff of the United States House of Representatives Energy and Mineral Resources Subcommittee. My initial project was to investigate a possible problem with "Spent-Fuel-Rod Pool Cooling at Susquehanna Nuclear Power Plant in the event of Loss of Cooling Accident (LOCA) or Loss of Offsite Power (LOOP). I participated in Nuclear Regulatory Commission briefings. I also compared reports of Nuclear Regulatory Commission inspections of selected nuclear power plants (public documents) to those inspections made by the Institute of Nuclear Power Operations (non-public documents).

### **Industrial Experience:**

1/01-6/01 I was asked and accepted a GOALI NSF GRANT Faculty Internship at 3M Corporation, St. Paul, MN (The grant paid for hiring replacement faculty.) In my work as a faculty intern, I worked in the Department of Energy Management 3M Worldwide with Steven Schultz. My work consisted of working on various teams: (a) 3M California Plants' Power Crisis, (b) Energy Opportunity Assessment for Building 17 at Cottage Grove, MN, (c) Austin, TX cogeneration power plant status, (d) Earth Day culminating in having lunch with Sylvia Earle, famous oceanographer, (e) New Medtronic facility visitation team (HVAC control), (f) GRS-BFI visitation team investigating conversion of methane landfill gas to energy.

2/91 Consultant, 3M Company, St. Paul, MN. Helped with energy efficiency study of the company.

Summer 1988 Consultant, 3M Company, St. Paul, MN  
Did research with regard to magnetic field detection and presented seminar to Division.

1960 - 1965 Student CoOp (c/o a Sheffield Scholarship in Electrical Engineering), The Sheffield Corporation (a manufacturer of electrical & x-ray precision gauges), 721 Springfield Street, Dayton, Ohio 45401. A variety of work experience included Sales, Product Engineering, and Research & Development, the latter including helping to transistorize one of the Sheffield model x-ray gauges.



**Teaching Awards:**

June 2002 Hamline University Alumni Association's "Outstanding Teacher" Award

May 2000 Hamline University's Faculty Advisor-of-the-Year"

**Teaching Awards (cont):**

May 1995 Hamline University Student Congress "Faculty Member of the Year" (only Hamline faculty member to receive award three times.)

May 1993 Hamline University Student Congress "Faculty Member of the Year" (only Hamline faculty member to receive award two times.)

May 1990 Hamline University Student Congress "Faculty Member of the Year" (Second year award given).

May 1982 Hamline University "Outstanding Teacher" (My fourth year of teaching at Hamline), presented by Hamline faculty colleagues.

**Grant Awards:**

April 2001 In my capacity as "faculty intern," I wrote, applied for and received from the 3M Corporation a \$66,000 "Alpha" grant to be used for development of microturbines to be used for Volatile Organic Compound (VOC) Destruction and concomitantly to utilize the energy content of the VOCs to provide electricity and process steam for industrial use. I solicited and received the backing of two 3M Vice Presidents in writing the grant.

Served as Project Director and brought in the following awards (to be matched dollar for dollar by Hamline except where noted):

Minnesota Department of Public Service:

State of MN Grant #80500-07322, Maxi-Audit, 2/91 - 2/94,\$65,292  
(Hamline supplies an additional (\$17,123)



### **Editor:**

1989 - 1991 Newsletter of the Energy Educators Association based at Moorhead State University, Moorhead, MN 56560

### **Professional Organizations:**

Belong to Tau Beta Pi and Eta Kappa Nu national honorary fraternities, Sigma Phi Epsilon social fraternity, the American Physical Society (APS), and Council on Undergraduate Research (CUR). Within the structure of the APS, I belong to the Nuclear Physics Division, Physics of Beams Division, the Forum on Education, and the Forum on Physics and Society.

### **Publications in Professional Journals:**

1. "The  $^{18}\text{O}(^{18}\text{O}, ^{16}\text{O})^{20}\text{O}$  Reaction at 52 MeV," S. Kubono, T.K. Li, D. Dehnhard, D.A. Lewis, J.F. Peterson, and J.L. Artz, *Nuclear physics* **A313**, 434-444 (1979)
2. "j-Dependence of the ( $^{19}\text{F}, ^{16}\text{O}$ ) Reaction on Spin-Orbit Forces in the Heavy-Ion Optical Potential," S. Kubono, D. Dehnhard, D.A. Lewis, T.K. Li, J.L. Artz, D.J. Weber, P.J. Ellis, and A. Dudek-Ellis, *Physical Review Lett.* **38**, 817 (1977).
3. " $^8\text{Be}$  Producing Reactions in  $^{12}\text{C} + ^{12}\text{C}$ ,  $^{16}\text{O} + ^{16}\text{O}$ , and  $^{28}\text{Si} + ^{12}\text{C}$ ," J.L. Artz, M.B. Greenfield, and N.R. Fletcher, *Phys. Rev.* **C13**, 156 (1976).
4. " $^{29,30}\text{Si} (^{16}\text{O}, ^{15}\text{N})$  Proton Stripping Reaction at 60 MeV," D. Dehnhard, J.L. Artz, D.J. Weber, V. Shkolnik, and R.M. DeVries, *Phys. Rev.* **C13**, 164 (1976).
5. "Assignment of  $J^\pi=6^+$  to Two States of  $^{16}\text{O}$  Via the  $^{12}\text{C}(\alpha, ^8\text{Be})^8\text{Be}$  Reaction," D.R. James, J.L. Artz, M.B. Greenfield, and N.R. Fletcher, *Nucl. Phys.* **A227**, 349 (1974).

### **Congressional Report:**

"Is the Nuclear Regulatory Commission Adequately Identifying the Problems of Nuclear Reactors in the United States?," Jerry L. Artz\*, Special Assistant to Counsel, Subcommittee on Energy and Mineral Resources, U.S. House of Representatives, 818 O'Neill House Office Building, Washington DC 21515, 58 pp (1994). \*Current address: Hamline University, St. Paul, MN 55104.





### **Seminars and Papers Presented at Meetings & Conferences:**

“Teaching Nuclear Power to Non-science Majors & Monitoring Student Interest,” J.L.Artz, at *national* meeting of the American Physical Society, Denver CO, published Bull. APS **54**, 315 (2009)

“X-Rays, Nuclear Radiation and Safety,” J.L.Artz, Physics Seminar, Hamline University, St. Paul, MN (2007).

“Implementation, Analysis, and Assessment of On-line Teaching Evaluations,” J.L. Artz and A. R. Rundquist, at *national* meeting of the American Physical Society, Dallas TX, published Bull. APS **51**, 194 (2006),

“Implementation Analysis, and Assessment of On-line Teaching Evaluations,” J.L. Artz and A. R. Rundquist, meeting of the Minnesota American Association of Physics Teachers, Hamline University, Saint Paul MN (2006)

“CLA on-line evaluation results,” faculty meeting of the Hamline University CLA, St. Paul MN (2006)

A (one-page) “Biography of Carl Malmstrom,” *150 Lives that Made a Difference*, Hamline Univ. St. Paul, MN (2005)

“Implementation, Analysis, and Assessment of On-line Teaching Evaluations,” J.L. Artz and A. R. Rundquist, meeting of the Minnesota American Association of Physics Teachers, Bethel University, Saint Paul MN (2005)

“Implementation, Analysis, and Assessment of On-line Teaching Evaluations,” J.L. Artz and A. R. Rundquist, at national meeting of the American Physical Society, published Bull. APS **50**, 136 (2005), Tampa FL.

“Physics and the Hamline/3M Corp. GOALI Grant,” State Meeting of the MN Association of Physics Teachers, Gustavus Adolphus College, Saint Peter, MN

“Hamline/3M Corp. Project: Liaison for Curricular Change,” National Meeting of the American Physical Society, Albuquerque, NM, (2002).



**Seminars and Papers Presented at Meetings & Conferences (cont):**

"Industrial Destruction of Volatile Wastes and Comments Regarding Industrial Expectations of College Students," J.L.Artz, Physics Seminar, Hamline University, St. Paul, MN (2001).

"Industrial Destruction of Volatile Organic Compounds (VOCs)," J.L.Artz, meeting of Minnesota American Association of University Professors (MNAAPT), Univ. of St. Thomas, St. Paul, MN (2001)

"X-Ray and Nuclear Radiation, Radiation Safety, and Hamline Radiation Sources," J.L.Artz, Physics Seminar, Hamline University, St. Paul, MN (2000)

"The World's Nuclear Energy Dilemma," J.L. Artz, Physics Seminar, Hamline University, St. Paul, MN (1999)

"Nuclear Power Operation at Northern States Power," J.L. Artz, Physics Seminar, Hamline University, St. Paul, MN (1998)

"Gravitational Dynamics of Ground Water Motion in the Twin Cities," J.L. Artz, Physics Seminar, Hamline University, St. Paul, MN (1997)

"Physics of the Atmosphere: Developing Concerns," J.L. Artz, Physics Seminar, Hamline University, St. Paul, MN (1996)

"Federal Energy Grants at Hamline: Past, Present, and Future" J.L. Artz, Physics Seminar, Hamline University, St. Paul, MN (1995).

"The Removal of the Core at Three-Mile Island Nuclear Power Plant," J.L. Artz, Physics Seminar, Hamline University, St. Paul, MN (1995).

"Physics and Congressional Oversight of Nuclear Power Plants," J.L. Artz, Faculty Seminar, Hamline University, St. Paul, MN (1994)

"Whistleblowers, Nuclear Power, and Nuclear Regulatory Commission Action." J.L. Artz, Physics Seminar, Hamline University, St. Paul, MN (1994)

"Nuclear Waste: Utility and Public Concerns," J. L. Artz, Seminar Presentation, Hamline University,





**Seminars and Papers Presented at Meetings & Conferences (cont):**

St. Paul, MN (1993).

"Recent Trends in Energy Conservation," J.L. Artz, Seminar Presentation, Hamline University, St. Paul, MN (1992).

"Energy Resources in the 90's," J.L. Artz, Seminar Presentation, Hamline University, St. Paul, MN (1991).

"Nuclear Power Plant Operation Around the World," J.L. Artz, Seminar Presentation, Hamline University, St. Paul, MN (1990).

"Global Dynamics - The Physics of the Atmosphere," J.L. Artz, Seminar Presentation, Hamline University, St. Paul, MN (1989).

"Magnetic Field Detection via Induction Coils," J.L. Artz, Seminar Presentation at 3M Company, St. Paul, MN (1988)

"An Introductory Laboratory which Provides Data for College Policy Decision in Energy Conservation," J.L. Artz, MN Academy of Science, 49th Annual Spring Meeting, Minneapolis Community College, Minneapolis, MN May 2 (1981).

"Excitation of the First Two Excited  $O^+$  States of  $^{28}\text{Si}$  Via Inelastic  $^3\text{He}$  Scattering at 25 MeV," J.L. Artz, D. Dehnhard, M.P. Morsch, and T.K. Li, *Bull. A.P.S.* **25**, 593 (1980).

"Energy, Environment, and the Economy - A Relevant Approach for Teaching Non-Science Majors," J.L. Artz, MN Academy of Science Abstract of Papers, 47th Annual Spring Meeting, U of MN, Morris, p. 30, May 4,5 (1979).

"Discrete Ambiguities in the  $^{28,29,30}\text{Si}+^{16}\text{O}$  Optical Potential at 60 MeV," V. Shkolnik, D. Dehnhard, J.L. Artz, D.J. Weber, and M.A. Franey, *Bull. A.P.S.* **22**, 563 (1977).

"Coulomb Excitation of the First Excited  $2^+$  State in  $^{18}\text{O}$ ," J.L. Artz, D. Dehnhard, D.J. Weber, R.J. Falkenberg, T.K. Li, and S. Kubono, *Bull. A.P.S.* **21**, 965 (1976).

"The ( $^{19}\text{F}, ^{16}\text{O}$ ) Three Nucleon Transfer Reaction on  $^{28}\text{Si}$ ," S. Kubono, D.A. Lewis, T.K. Li, J.L. Artz, J.F. Petersen, D. Dehnhard, and D.J. Weber, *Bull. A.P.S.* **21**, 966 (1976).



**Seminars and Papers Presented at Meetings & Conferences (cont):**

"DWBA Analysis of the  $^{30}\text{Si}(^{16}\text{O}, ^{15}\text{N})^{31}\text{P}(\text{g.s.})$  Reaction at 60 MeV," D. Dehnhard, M.A. Franey, V. Shkolnik, D.J. Weber, and J.L. Artz, Bull. A.P.S. 21, 1006 (1976).

"Evidence for a Coulomb Absorption Term in the Optical Potential of Heavy Ions," D.J. Weber, M.A. Franey, D. Dehnhard, J.L. Artz, V. Shkolnik, and N.M. Hintz, Bull. A.P.S. 21, 1006 (1976).

"Oxygen on Silicon Elastic Scattering," J.F. Petersen, J.L. Artz, D. Dehnhard, S. Kubono, D.A. Lewis, T.K. Li, and D.J. Weber, Bull. A.P.S. 21, 1006 (1976).

"Elastic Scattering of  $^{16}\text{O}$  on  $^{28}\text{Si}$ ,  $^{29}\text{Si}$ , and  $^{30}\text{Si}$  and 60.0 MeV," V. Shkolnik, D. Dehnhard, J.L. Artz, D.J. Weber, and M. Franey, Bull. A.P.S. 21, 553 (1976) and Proceedings of the Symposium on Macroscopic Features of Heavy-Ion Collisions, Vol. II, Contributed Papers, Report No. ANL/PHY-76-2, Argonne National Laboratory, Argonne, Illinois (1976), p. 761.

"Coupled Channels Analysis of  $^{16}\text{O} + ^{148,150,152,154}\text{Sm}$ ," D. Weber, D. Dehnhard, V. Shkolnik, J.L. Artz, and N.M. Hintz, Bull. A.P.S. 21, 578 (1976).

"The  $^{18}\text{O}(^{18}\text{O}, ^{16}\text{O})^{20}\text{O}$  Reaction at 52 MeV," S. Kubono, T.K. Li, D. Dehnhard, J.L. Artz, J.F. Petersen, D.A. Lewis, and B.F. Bayman," Bull. A.P.S. 21, 578 (1976).

"Small Angle Structure in Inelastic  $^{16}\text{O}$  Scattering," H.P. Morsch, J.F. Petersen, D.A. Lewis, J.L. Artz, and D. Dehnhard, Proceedings of the Symposium on Macroscopic Features of Heavy-Ion Collisions, Vol. II, Contributed Papers, Report No. ANL/PHY-76-2, Argonne National Laboratory, Argonne, Illinois (1976), p. 699.

"Elastic and Inelastic Scattering of  $^{16}\text{O}$  on  $^{148,150,152}\text{Sm}$ ," D. Weber, V. Shkolnik, J.L. Artz, D. Dehnhard, and N.M. Hintz, Bull. A.P.S. 20, 575 (1975),

"A Search for Inelastic Monopole Transitions in Odd A (sd) Shell Nuclei," J.L. Artz, H.P. Morsch, T.K. Li, and D. Dehnhard, Bull. A.P.S. 20, 33 (1975).

"( $^{16}\text{O}, ^{15}\text{N}$ ) Proton Stripping into  $^{29}\text{Si}$  and  $^{30}\text{Si}$  at 60 MeV," D. Dehnhard, D.J. Weber, V. Shkolnik, and J.L. Artz, Bull. A.P.S. 20, 55 (1975).



**Seminars and Papers Presented at Meetings & Conferences (cont):**

"The ( $^{12}\text{C}, ^8\text{Be}$ ) and ( $^{16}\text{O}, ^8\text{Be}$ ) Reactions on  $^{12}\text{C}$ ,  $^{16}\text{O}$ , and  $^{28}\text{Si}$  Targets," J.L. Artz, M.B. Greenfield, and N.R. Fletcher, Bull. A.P.S. 19, 427 (1974).

"Another Search for an  $8^+$  Level in  $^{16}\text{O}$  with the  $^{12}\text{C}(\alpha, ^8\text{Be})^8\text{Be}$  Reaction," D.R. James, J.L. Artz, M.B. Greenfield, and N.R. Fletcher, Proceedings of the International Conference on Nuclear Physics, Edited by J. de Boer and H.J. Mang (North-Holland Publishing Co., Amsterdam and London, 1973) Vol. 1, p. 164.

"A Study of the  $^{12}\text{C}(^{16}\text{O}, ^8\text{Be})^{20}\text{Ne}$  and  $^{12}\text{C}(^{12}\text{C}, ^8\text{Be})^{16}\text{O}$  Reactions at 2-4 MeV/Nucleon," M.B. Greenfield, J. Artz, and N.R. Fletcher, Bull. A.P.S. 17, 921 (1972).

"Detection of  $^8\text{Be}$  by an  $\alpha$ - $\alpha$  Coincidence Technique and the  $^{12}\text{C}(^{16}\text{O}, ^8\text{Be})^{20}\text{Ne}$  Reaction," M.B. Greenfield, J.L. Artz, and N.R. Fletcher, Bull. A.P.S. 17, 489 (1972).

**Selected Teaching Institutes and Workshops Attended:**

May 2009 "Global Warming" Chautauqua Participation, University of Dayton, Dayton OH

March 2008 "Woodstock of Sustainable Energy", University of CA, Berkeley, Berkeley CA

May 2007 "Peak Oil" Chautauqua Participation, University of Dayton, Dayton OH

May 1990 "Leadership, Education, & Development (LEAD) Workshop" for college faculty to help students in the workplace, Hamline University, St. Paul, MN

June 1986 "Freshman Seminar Workshop," Hamline University, St. Paul, MN

August 1985 "Workshop for Developing Speaking and Writing Intensive Classes," Hamline University, St. Paul, MN

July 1985 "Acid Rain," Teaching Institute, Oak Ridge National Laboratory, Oak Ridge, TN

Nov 1983 "Workshop on Energy Grant Proposal/Report Writing," St. Paul, MN. U.S. Dept of Energy



**Selected Teaching Institutes and Workshops Attended (cont):**

- Aug 1983 "Update on the Breeder Reactor Programs & Associated Issues," Idaho Falls, ID.  
U.S. Dept. of Energy
- July 1981 "Energy Conservation," Argonne National Lab, Argonne, IL. U.S. Dept. of Energy
- June 1978 "Energy Education: An Integrative Approach," Rose-Hulman Institute of  
Technology, Terre Haute, IN. U.S. Dept. of Energy.
- May-June 1978 Summer Institute, "Energy and Coal Development for Educators," Bismarck, ND.  
U of ND in conjunction with the Dept. of Energy
- June-Sept 1968 Attended Summer Institute for Physics & Applied Mathematics for Junior College  
Teachers sponsored by the Pacific Northwest Association for College Physics,  
University of Washington, Seattle, Washington.
- June-Sept 1967 Attended Summer Institute for Small College Teachers sponsored by Oak Ridge  
Institute of Nuclear Studies, Oak Ridge, Tennessee.