

**Address**

Department of Physics and Astronomy  
Bates College, 44 Campus Avenue  
Lewiston, ME 04240-6018  
(207) 786-6323 Fax (207) 786-8334  
E-mail: [jmedley@bates.edu](mailto:jmedley@bates.edu) Home page: <http://www.bates.edu/~jsmedley/>

**Education**

B.A. Physics and Chemistry, 1979, Colby College. Phi Beta Kappa; Charles A. Dana Scholar, 1976-1979; William A. Rogers Prize in Physics; Chemistry Department Prize; German Book Award; American Institute of Chemists Award; Sigma Pi Sigma

Ph.D. Chemical Physics, University of Colorado at Boulder. University of Colorado Graduate Fellowship, 1981-1983; Exxon Foundation Fellowship, 1984; Coblenz Society Award, 1987. Thesis Title: Laser studies of molecular dissociation by photons and collisions. Thesis Advisor: Stephen R. Leone

**Appointments**

Research Associate, Joint Institute for Laboratory Astrophysics, 1987  
Assistant Professor of Physics, Bates College, 1987-1994  
Associate Professor of Physics, Bates College, 1994 – 2000  
Visiting Fellow, Joint Institute for Laboratory Astrophysics, 1994-1995  
Chair, Program in Environmental Studies, 1995-1999  
Professor of Physics, Bates College, 2001 - present  
Chair of Interdisciplinary Programs, 2001 - present

**Courses and Units Taught**

Music s21: Exploring Jazz Guitar <http://www.bates.edu/~jsmedley/muss27/course.htm>  
Physics 103: Musical Acoustics <http://www.bates.edu/~jsmedley/phys103/>  
Physics 104: Physics of Electronic Sound <http://www.bates.edu/~jsmedley/phys104/>  
√Physics 106: Energy and Environment <http://www.bates.edu/~jsmedley/phys106/>  
Physics 107-108: Introductory Classical Physics and Modern Physics  
Physics s24: Musical Acoustics  
Physics s27: Earth Under Siege: Atmospheric Environmental Problems (with J. Hughes and T. Wenzel)  
Physics s30: Electronics  
Physics 228: Caring For Creation: Physics, Religion and the Environment (with T. Tracy)  
<http://www.bates.edu/~jsmedley/phys228/p228gi.htm>  
Physics 231-232: Laboratory Physics  
Physics 301: Mathematical Methods of Physics  
Physics 315: Acoustics  
Physics 373: Classical and Modern Optics  
Physics 308: Introductory Quantum Mechanics  
Physics 409: Advanced Quantum Mechanics  
Physics 422: Electromagnetic Theory.

**Scientific Interests**

Spectroscopic studies of atomic and molecular collisions. Energy and environment. Musical acoustics.

**Memberships**

Acoustical Society of America  
American Association of Physics Teachers  
American Physical Society - Division of Atomic, Molecular and Optical Physics; Division of Laser Science  
Forum on Education; Forum on Science and Society; New England Section.  
Association of Women in Science  
Sigma Xi - Secretary/Treasurer of Southern Maine Club, 1990 - 1992.

## Publications

Harold V. Parks, Eileen M. Spain, John E. Smedley, and Stephen R. Leone, "Experimental investigation of the initial-state alignment dependence in the energy pooling process:  $\text{Ca}(4s\ 4p\ ^3P_1) + \text{Ca}(4s\ 4p\ ^3P_1) \rightarrow \text{Ca}(4s\ 4p\ ^1P_1) + \text{Ca}(4s^2)$ ," *Physical Review A* **58**, 2136-2147 (1998).

J.E. Smedley, "Spectrum Analysis for Musical Acoustics," *American Journal of Physics* **66**, 144-147 (1998).

H.Q. Lorensen, H.V. Parks, E.M. Spain, J.E. Smedley, C.H. Greene and S. R. Leone, "The resonant formation of  $\text{Ca}^+$  from the  $\text{Ca}^*(4s25d\ ^1D_2)$  level explained by autoionization through the  $3d_{3/2}9f_{5/2}$ ,  $J^n=2$  resonance," *Physical Review A* **54**, 1577 (1996).

J.K. Pribram, J.E. Smedley and M.D. Semon, Post-use review, *Modern Physics for Scientists and Engineers* by J.R. Taylor and C.D. Zafiratos, *American Journal of Physics* **62**, 189 (1994).

J.E. Smedley, Post-use review, *Principles of Quantum Mechanics* by H.C. Ohanian, *American Journal of Physics* **61**, 382 (1993).

J.E. Smedley, D.F. Marran,\* M.R. Peabody\* and C.N. Marquis,\* "Electronic energy transfer in  $\text{Ba}\ 6s8p\ ^1P_1$  - rare gas collisions," *Journal of Chemical Physics* **98**, 1093 (1993).

J.E. Smedley and D. F. Marran,\* "Radiative lifetimes of the  $6s8p\ ^1P_1$  and near-resonant states in barium," *Physical Review A* **47**, 126 (1993).

H.C. Miller, K. Yamasaki, J.E. Smedley and S.R. Leone, "An optically pumped ultraviolet laser on  $\text{SO}(B^3\Sigma^- - X^3\Sigma^-)$ ," *Chemical Physics Letters* **181**, 250 (1991).

J.E. Smedley, "Laser physics in the undergraduate curriculum," *Council on Undergraduate Research Newsletter* **X**, 64 (1989).

J.E. Smedley, H.K. Haugen and S.R. Leone, "Hot band quantum yield of  $\text{Br}^*(^2P_{1/2})$  in the laser photodissociation of  $\text{Br}_2$  from 510-550 nm," *Journal of Chemical Physics* **87**, 2700 (1987).

J.E. Smedley, H.K. Haugen and S.R. Leone, "Collision-induced dissociation of laser-excited  $\text{Br}_2(B^3\Pi(0_u^+); v', J')$ : Formation of  $\text{Br}^*(^2P_{1/2}) + \text{Br}(^2P_{3/2})$  at energies 1-5 kT below dissociation," *Journal of Chemical Physics* **86**, 6801 (1987).

J.E. Smedley, W.P. Hess, H.K. Haugen and S.R. Leone, "Transient gain-vs.-absorption laser probing of spin-orbit states, kinetics and dynamics," *Journal de Chimie Physique* **84**, 385 (1987).

J.E. Smedley and S.R. Leone, "Relative quantum yield of  $\text{I}^*(^2P_{1/2})$  in the tunable laser uv photodissociation of  $\text{I-C}_3\text{F}_7\text{I}$  and  $\text{n-C}_3\text{F}_7\text{I}$ : Effect of temperature and exciplex emission" *Journal of Chemical Physics* **79**, 2687 (1983).

\*Bates College student co-worker.

## Grants

√Hughes Student-Faculty Research Grant, with Neha Duggar '06 and Mark Semon, 5/1/04-7/1/04, \$4,000.

√Hughes Medical Institute Outreach Grant to Central Maine Physics Association, co-sponsor with Jeff Steinert, 9/2003-5/2004, \$5000

Hughes Medical Institute Outreach Grant to Central Maine Physics Association, co-sponsor with Jeff Steinert, 1/2003-5/2003, \$5000

Hughes Medical Institute Curriculum Development Grant, Bates College, 5/18/01, \$3500.

Summer Research Apprentice grant, Bates College, awarded 2/15/00, \$3,000.

Hughes Medical Institute Summer Research Grant, Bates College, 1998, \$5,000.

Templeton Science and Religion Course Award (with Tom Tracy), for "Caring for Creation" course, 1997, \$10,000.

National Science Foundation Instrumentation and Laboratory Improvement Grant #DUE-9552206, "Microcomputer Based Measurement and Simulation for Introductory Acoustics," 6/26/95-12/26/97, \$34,942.

National Science Foundation Research Opportunity Award, for sabbatical research at the Joint Institute for Laboratory Astrophysics, supplement to JILA block grant, August 1994 - July, 1995, \$50,000.

Hughes Council, Bates College, Grant for optics workshops for Maine science teachers, March 21, 28, April 11, 1994, \$11,039.40.

Council on Undergraduate Research, CURSOR Fellowship (with K.N. LaFortune), Summer, 1993, \$3,150.

National Science Foundation Research in Undergraduate Institutions Grant No. PHY-9208013, "Energy transfer in collisions of highly-excited atoms," 9/15/92 - 3/15/96, \$90,000.

Maine Mathematics and Science Alliance MERITS Grant, in support of a high school research assistant Maine EPSCOR/MMSA, July-August 1992, \$2,750.

National Science Foundation Instrumentation and Laboratory Improvement Grant No. USE-9251188, "A laboratory for introductory musical acoustics," \$35,932, 4/92-9/94.

New England Consortium for Undergraduate Science Education Introductory Physics Project, "Mechanical oscillators: From regular to irregular motion," \$14,000, 4/92-9/92.

Roger C. Schmutz Faculty Research Grant, "An optically-pumped atomic barium laser." \$848, 12/91.

American Chemical Society Petroleum Research Fund Grant #22682-GB6, "Kinetic and spectroscopic studies of energy transfer in atomic collisions." \$18,000, 2/1/90 - 8/31/92.

Roger C. Schmutz Faculty Research Grant, \$890, 12/89.

Roger C. Schmutz Faculty Research Grant, \$1,000, 12/88.

National Science Foundation Instrumentation and Laboratory Improvement Grant USE-851997, "Microcomputer-based undergraduate experiments in laser spectroscopy and atomic collision phenomena." \$27,030, 8/88 - 2/91

GTE Foundation Series, "The Laser Revolution in Science, Technology and Society." \$4,000, 4/88.

Research Corporation Grant C-2522, "Excitation transfer in laser-excited metal atoms: A kinetic and spectroscopic approach." \$19,400, 6/88-6/89.

Roger C. Schmutz Faculty Research Grant, \$985, 12/87.

### **Abstracts and Poster Presentations**

S. Sharif\* and J. E. Smedley, "Experimental studies of collision-induced absorption in a barium-rare gas vapor," Mount David Summit, Bates College, 3/30/03

P.S. Khadka\* and J.E. Smedley, "Relative rates for fine-structure changing collisions of Ba 5d7p  $^3D_1$  with helium," Student Research Symposium, Bates College, 5/01

J.E. Smedley, S.K. Coulter\*, E. J. Felton\* and K. Zomlefer, "Collisional deactivation of Ba 5d7p  $^3D_1$  by rare gases," New England Section of the American Physical Society Fall Meeting, Colby College, November 6, 1999.

J.E. Smedley, Poster on "The environmental studies major at Bates," and "Caring for Creation," Maine Global Change

Conference, Lewiston, Maine, April 7, 1999.

P.T. Whelan\*, K.N. LaFortune\*, and J.E. Smedley, "Collision induced absorption in a barium-rare gas vapor," Gordon Conference on Atomic Physics, New England College, June 29-July 4, 1997.

P.T. Whelan\* and J.E. Smedley, "Collision induced absorption by barium-helium complexes," New England Section of the American Physical Society Spring Meeting, April 11-12, 1997, University of Maine, Orono.

John E. Smedley, Sarah K. Coulter\*, and Kayla Zomlefer, "Energy transfer in Ba(5d7p)  $^3D_1$  - rare gas collisions," poster presentation at Gordon Conference on Atomic and Molecular Interactions, Colby-Sawyer College, June 30-July 4, 1996

K. Corwin, Z-T. Lu, J. Smedley, C. Wieman, T. Dinneen, and H. Gould, "Toward Trapping  $^{221}\text{Fr}$  Atoms," Gordon Research Conference on Atomic Physics, 3-7 July, 1995.

H.Q. Lorensen, H. Parks, J. Smedley, E. M. Spain, S. R. Leone, "Alignment and state dependence on resonant formation of Ca-ions from Ca(4s25d  $^1D$  + Ca collisions," Division of Atomic, Molecular and Optical Physics of the American Physical Society Meeting, Toronto, Ontario, Canada, 17-19 May, 1995.

J.E. Smedley, J.P. Gray\*, J.P. Brainerd\*, K.N. LaFortune\*, K. Zomlefer, "Collisional and radiative properties of highly-excited barium atoms," International Conference on Atomic Physics XIV, 1Q-8, Boulder, Colorado, August 2, 1994.

K.N. LaFortune\*, J.Gray\*, and J.E. Smedley, "Energy transfer in Ba 6s7d  $^3D_2$  - rare gas collisions," Fall Meeting of the New England Section of the American Physical Society, Amherst College, October 15-16, 1993.

J.E. Smedley, K. Zomlefer, K.N. LaFortune\*, D.F. Marran\*, C.N. Marquis\*, M.R. Peabody\*, "Collisional and radiative properties of highly excited levels in barium," DAMOP Meeting, Reno, NV, 16-19 May, 1993.

J.E. Smedley, "Spectrum analysis in introductory musical acoustics," Conference on the Introductory Physics Course, Rensselaer Polytechnic Institute, 20-23 May, 1993.

J.P. Brainerd\*, J.E. Smedley, and C.N. Marquis\*, "An optically pumped atomic barium laser on 6s8s  $^1S_0 \rightarrow 6s6p \ ^3P_1$  at 460.0 nm," New England Section of the American Physical Society, Williams College, 2-3 April, 1993.

C.N. Marquis\* and J.E. Smedley, "Collisional spectroscopy of energy transfer from Ba(6s8p) $^1P$ ," Fall Meeting of the New England Section of the American Physical Society, Bates College, 1991, Bulletin of the American Physical Society.

J.E. Smedley, D.F. Marran\* and M.R. Peabody,\* "Energy transfer in Ba (6s8p) $^1P$  Collisions," Bulletin of the American Physical Society, **36**, 1378 (1991).

J.E. Smedley, H.K. Haugen and S.R. Leone, "Laser studies of photo- and collisional dissociation of Br $_2$ ," Bulletin of the American Physical Society, **32**, 1254 (1987).

J.E. Smedley, H.K. Haugen and S.R. Leone, "Collisional release of Br $_2$ ," XVII Informal Conference on Photochemistry **Mon-16**, Boulder, CO 22-26 June (1986).

J.E. Smedley, H.K. Haugen and S.R. Leone, "Collisional release of Br $_2$ ," Forty-first Symposium on Molecular Spectroscopy **FB5**, Ohio State University, 16-20 June (1986).

J.E. Smedley and S.R. Leone, "Relative quantum yields of excited I( $^2P_{1/2}$ ) atoms in the ultraviolet photodissociation of I-C $_3$ F $_7$ I and n-C $_3$ F $_7$ I," American Chemical Society, 185th National Meeting, Seattle, WA 20-25 March (1983).

\*Bates College student co-worker

## Talks

√"Physics and Music," – Fall Meeting of the New England Sections of the American Physical Society and American Association of Physics Teachers, Bates College, October 3, 2003.

"Terror and Peace in the 21<sup>st</sup> century - A Panel on Scientific Responsibility and Ethics," with Frank Chessa, Chris Gray and Bonnie Shulman, Bates College, February 4, 2003.

"Physics Inside and Out," American Association of Physics Teachers meeting, Bates College, Nov. 3-4, 1995.

"The physics of musical acoustics," Joint Institute for Laboratory Astrophysics, University of Colorado, April 28, 1995.

"Collisional and radiative properties of highly excited barium," Chemical Physics Colloquium, JILA, University of Colorado, October 14, 1994.

"Teaching at a liberal arts college," JILA, University of Colorado, September 13, 1994.

"Spectrum analysis in introductory musical acoustics," Maine Association of Physics Faculty Annual Meeting, Colby College, April 30, 1994.

"Mechanical oscillators: From regular to irregular motion," New England Consortium for Undergraduate Science Education Introductory Physics Group Meeting II, Smith College, October 23, 1992.

"Mechanical oscillators: From regular to irregular motion," New England Consortium for Undergraduate Science Education Introductory Physics Group Meeting I, Bowdoin College, May 2, 1992.

"Time-resolved emission spectroscopy in the undergraduate curriculum," Maine Association of Physics Professors Annual Meeting, Orono, ME, 27 April, 1991.

"Laser studies of energy transfer in atomic collisions," Colby College, 5 May, 1991.

"Energy transfer in collisions of excited barium atoms," Physics department colloquium, Wesleyan University, 30 November .

"The physics curriculum at Bates College," New England Consortium for Undergraduate Science Education Meeting on Physics Curricula, Wellesley College, October 21, 1989.

"Energy transfer in barium - helium collisions," Bates College, Fall 1989.

"Laser studies of energy transfer in atomic collisions," Physics department colloquium, Amherst College, 26 April, 1989.

"Energy transfer in atomic collisions," Faculty Luncheon Seminar, Bates, October, 1988.

"Pounding the light out of atoms," Physics Department Colloquium, Bates College, September, 1987.

"Laser studies of photoprocesses in bromine," Physics Department Colloquium, Bates College, January 28, 1987.

### **Musical Compositions**

Wes' Tune (1977)

Morning Song (1977)

If We Live (1993)

Side by Side (1993)

Every Knee Should Bend (1993)

Rejoice in the Lord v.1 (1993)

Grace to You and Peace (1993)

Nos. 1 and 2 (1993)

Amen No. 1 (1993)

Amen No. 2 (1993)  
Make a Joyful Noise (1993)  
Magnificat (1993)  
Psalm 29, untitled (1994)  
I Am Still With You (1994)  
Trust In God at All Times (1994)  
The Prophet (1994)  
Praise! (1994)  
Gather My Faithful (1994)  
May My Words Give Praise (1994)  
Psalm 4, untitled (1994)  
Psalm 23, untitled (1994)  
Be Around (1994)  
I Believe in the Holy Spirit (1995)  
O Lord, Our Sovereign (1995)  
An Offertory Prayer (1996)  
Song of dedication for Andrew Avram (1996)  
Sing your hearts out to God (1996)  
God of love (1996)  
Come to the Table (with David Wood, 1996)  
Magnificat (1996)  
Our Purpose (1997)  
God's Love is Like a Song (1997)  
Let the Words of My Mouth (1997)  
We Live by Faith (1997)  
Song of Hope (and dedication for Julian, 1997)  
Love is the Final Word (1997)  
Know What, Daddy? (1999)  
Waltz for Carole (2001)  
Blues for Epaphroditus (2001)  
Euodia and Synthyce (2001)  
Rejoice in the Lord v. 2 (2001)  
Blues for Ian (2001)  
Thanksgiving Song (2001)  
Ode to Blues (Beethoven's Ode to Ann) (2003)  
√Gened Blues (2003)  
√Linda (2003)  
√Mr. MR (2003)  
√Rosie (2004)  
Isosceles (2004)

### **Recent Musical Performances**

Concert, with "Isosceles Trio," Gardiner, Maine, June 18, 2004.  
Solo guitar performance, Sesquicentennial concert, Trinity Episcopal Church, Lewiston, June 12, 2004  
√Jazz Coffeehouse, with Michael Hansen and Michael Roberts, Chase Lounge, May 16, 2004.  
√Noonday Concert, with Michael Hansen and Michael Roberts, Olin Concert Hall, March 18, 2004  
√Coffeehouse, with Lou Scolnik, Michael Hansen and Michael Roberts, Temple Shalom, February 28, 2004  
Ronjstock, with Jesse Fox and Michael Roberts, May 3, 2003.  
Concert for Ann Scott, with Jesse Fox, Michael Roberts and Linda Williams, Olin, April 8, 2003.  
Jesse Fox Senior Recital, with Jesse Fox and Michael Roberts, Olin, March 30, 2003.  
Jazz at the Ronj, Bates College, with Jesse Fox and Michael Roberts, February 11, 2003  
Noonday Concert, Bates College, with Jesse Fox and Michael Roberts, February 4, 2003  
Martin Luther King, Jr. Day concert with Trudy Pitts and Mr. C., Olin Concert Hall, January 20, 2003  
Inauguration Coffeehouse, with John McClendon, Jesse Fox, Tom Schipper and Charlie Sanders, Alumni Gym, November 8, 2002  
Jazz at the Ronj, Bates College, with Jesse Fox and Michael Roberts, May, 2002  
Noonday Concert, Bates College, January, 2002

Performance, "Family Percussion Jam," Auburn Public Library, Auburn, Maine, Feb. 12, 2000.

Presentation/Performance on African-American jazz composers for Black History Month, Auburn Public Library, Auburn, Maine, Jan. 28, 1999.