

-----**CHARLES S. FADLEY--CURRICULUM VITAE**-----

10 April, 2019

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This curriculum vitae regularly updated online:
<http://www.physics.ucdavis.edu/fadleygroup/FADLEYCV.pdf>

Education:

Ph.D. in Chemical Physics, University of California at Berkeley, 1970

Thesis: "Core and Valence Electronic States Studied
with X-ray Photoelectron Spectroscopy"

Thesis adviser: D. A. Shirley

M.S. in Chemical Engineering, University of California at Berkeley, 1965

Thesis: "Electrical Conductivity and Ionic Transport Phenomena
in a Polycationic Membrane"

Thesis adviser: R. A. Wallace

B.S. in Chemical Engineering, Massachusetts Institute of Technology, 1963

High School Diploma (as Co-Valedictorian), Norwalk Ohio, 1959

Honors:

Honorary session for Chuck Fadley, *Frontiers of Photoemission with Synchrotron and XFEL Radiation/Advances in High-resolution Imaging*, organized by Maya Kiskinova and Olivier Renault, AVS 63rd International Symposium and Exhibition, Nashville, Tennessee, 6-11 November, 2016.

Symposium honoring Chuck Fadley: *A Voyage Through Four Generations of Synchrotron Radiation Research*, organized by Z. Hussain and P. J. Fischer, sponsored by Prevac, Toyama, The Moore Foundation, and RoΣo, Berkeley, California, 2 September, 2016.

Honorary Member of the International Scientific Committee of the International Vacuum Ultraviolet and X-Ray Physics (VUVX) Conferences, July, 2016, with laudatio as:

"The International Science Committee (ISC) for the VUVX conference series, during its meeting in July 2016 in Zurich on the occasion of the 39th conference in this series, has elected Charles Fadley, a Distinguished Professor of Physics at the University of California Davis and Senior Faculty Scientist at the Lawrence Berkeley National Laboratory, a new

Honorary Member of the ISC. Fadley is widely regarded as the most inspiring scientist in the field of condensed matter who has given fundamental contributions to the development of photoelectron spectroscopy, diffraction and holography worldwide. He has also chaired the VUV Conference in Hawaii in 1989, he has chaired the VUV International Advisory Board through three cycles, in Tokyo, Paris, and Berkeley, he has been a member of the International Program Committee for Trieste, Cairns, and Vancouver, he has given invited talks at seven of the conferences, and he has contributed to the development of science in our field in many ways through the years."

The VUVX Conferences are one of two major triennial international conference series of 300-500 attendees that deal with all aspects of electron and x-ray spectroscopy, including synchrotron radiation and free-electron lasers. They represent a merger, in 2010, of the International Conferences on Vacuum Ultraviolet Radiation Physics (VUV) and the International Conferences on X-ray and Inner-shell Processes (X). The other Honorary Members in 2016 were: Jean-Pierre Briand (France), Keith Codling (United Kingdom), Takehiko Ishii (Japan), Ulrik Gelius (Sweden), Christof Kunz (Germany), Frank P. Larkins (Australia), T. Sasaki (Japan), David A. Shirley (USA), Bernd Sonntag (Germany), T. Darrah Thomas (USA), John B. West (United Kingdom), and Francois Wuilleumier (France).

International Fellow of the Surface Science Society of Japan (SSSJ), May, 2015. The SSSJ has over 1700 members in Japan, and this is the first election of International Fellows for it. Three were chosen, Prof. Charles Fadley, Prof. Roland Wiesendanger (Univ. Hamburg, Germany), an expert in scanning tunneling microscopy, and Prof. Qi-Kun Xue (Tsinghua Univ., China), also a leader in scanning tunneling microscopy and other surface science techniques. See http://www.sssj.org/files/International_Fellow2015.pdf .

David A. Shirley Award for Outstanding Scientific Achievement at the Advanced Light Source, presented by the ALS Users Executive Committee *"in recognition of his significant contributions to a better understanding of surfaces and interfaces through the development of novel x-ray photoemission spectroscopy techniques"*, including a \$1500 cash award, and sponsored by the Lawrence Berkeley National Laboratory, 7 October, 2014.

Honorary doctorate in physics, awarded January 24, 2014, by the Department of Physics, Uppsala University, Sweden, with laudatio as: *"Professor Charles S. Fadley, of the University of California Davis and Lawrence Berkeley National Laboratory, specializes in condensed matter, materials, and surface/interface physics, as well as molecular physics. His work, especially synchrotron-light-based spectroscopic studies of surfaces, magnetic materials, and nanostructures, has inspired researchers around the world and at Uppsala. Professor Fadley has also served as Chair of the Physics Panel for two campus-wide research assessments "Quality and Renewal" that were undertaken at Uppsala University in 2007(http://uadm.uu.se/digitalAssets/75/75199_KoF07.pdf) and 2011(<http://uu.diva-portal.org/smash/get/diva2:461235/FULLTEXT01.pdf>)." News account at: <http://blogs.ucdavis.edu/egghead/2014/02/05/swedish-laurels-for-physics-professor/> .*

Distinguished Visiting Professorship (Chaire Senior) award of 185k Eu (ca. \$250k) from the French national program to promote world-class laboratories in physics (*Laboratoires d'Excellence: Physique: Atomes, Lumiere, Matiere--PALM*) that will provide support over 2013-2015 as a Distinguished Visiting Professor (Chaire Senior) in the Paris-Saclay Triangle de Physique (http://triangleledelaphysique.fr/Triangle_Physique_Campus-Paris-Saclay). The Triangle includes the University de Paris Sud, the CEA Saclay Laboratory, and the newly-commissioned national synchrotron radiation facility Soleil. The award is entitled *Advanced Photoemission Techniques for Complex Materials--APTCOM*, and it includes sabbatical, postdoctoral, and equipment support. The research collaborations in

the Triangle will involve studies of magnetic and strongly correlated materials and nanostructures with soft and hard x-ray angle-resolved, as well as standing-wave-excited, photoemission, together with photoelectron microscopy.

Elected to Senior Member status in the IEEE, June, 2012, a professional recognition by peers in the IEEE for technical and professional excellence.

Selection in December 2012 as one of the first three recipients of the status of Fellow of Elettra, the Italian national synchrotron radiation and free electron laser facility (<http://www.elettra.trieste.it>), with laudatio as: *“Professor Charles S. Fadley is a distinguished solid state physicist and materials scientist who has given fundamental contributions to the development of photoelectron spectroscopy, diffraction and holography worldwide. As a member of the Scientific Advisory Council of Sincrotrone Trieste for many years he has also provided invaluable advice on scientific developments and strategies in areas as diverse as solid state, surface and interface physics, magnetic materials and nanostructures, spectroscopy and diffraction techniques, thus greatly contributing to the success of our organization.”*

Elected to Fellowship in the American Association for the Advancement of Science, January, 2011. See press release at:

http://www.news.ucdavis.edu/search/news_detail.lasso?id=9732

Who's Who in America 2010 to present.

Royal Society of Sciences in Uppsala, elected foreign member in 2009, as one of 12 U.S.-based members at that time. See press release at:

http://www.news.ucdavis.edu/search/news_detail.lasso?id=9165 .

Japanese Society for the Promotion of Science, Microbeam Analysis Committee 141 Award *“for contributions to atomic-level characterization of novel materials and devices through the development of novel techniques based on photoelectron spectroscopy and synchrotron radiation, and for mentoring of young scientists.”* Presented at the 6th International Symposium on Atomic Level Characterizations for New Materials and Devices '07, Kanazawa, Japan, October, 2007. Prior winners of this award have been E. Bauer (Arizona State)-low energy electron microscopy, O.C. Wells (IBM)-scanning electron microscopy, A. Tonomura (Hitachi)-electron holography, H. Rose (Darmstadt)-aberration correction in electron microscopy, and G.A. Somorjai (Berkeley)-surface chemistry and catalysis

Helmholtz-Humboldt Research Award, 2006-2007, via nomination of C.M. Schneider & U. Hillebrecht (Forschungszentrum Jülich) and W. Würth (Univ. of Hamburg); one of six such prizes given annually, including a 50,000 Euro cash award and 25,000 Euros toward collaborative research. This is a new category of Humboldt program begun in 2004, and this award was the second to a U.S. scientist, and the first to an experimentalist from the U.S.

Medard W. Welch Award of the AVS Science and Technology Society, 2005, the highest award from this surface-science-based society, including a \$10,000 cash award, and with a citation reading *“For the development of novel techniques based on photoelectron spectroscopy and synchrotron radiation, and their application to the study of the atomic, electronic, and magnetic structure of surfaces and buried interfaces; and for the mentoring of young scientists”*. Details and past awardees at: <http://www.avs.org/about-awards/medard-w-welch-award.aspx> .

Nominated by the Dept. of Physics, UC Davis for a campus-wide Distinguished Graduate Mentoring Award, 2003-2004 and 2004-2005

Elected Fellow of the Institute of Physics (London), 2004. (In 2004, there were ~500 Fellows in the U.S. out of ~3700 total, with the number of Fellows being ~10% of the total IoP membership.)

Elected to Hall of Fame as Alumni Scholar/Educator, Norwalk High School, Norwalk, Ohio, 2004

Honorary issue of the *Journal of Electron Spectroscopy and Related Phenomena* (celebrating the 60th birthdays of C.S. Fadley and N.V. Smith), Z. Hussain, P.D. Johnson, S.D. Kevan, and B. Sinkovic, Editors, Volume 126, Issues 1-3, October, 2002

Promoted to Distinguished Professor, Above Scale, University of California, Davis, 1999 (Highest rank in the University of California System)

Elected Fellow of the American Vacuum Society, 1994

Elected Foreign Member of the Russian Academy of Natural Sciences, 1993. (In 1995, there were approximately 160 foreign members, with 30 from the U.S.)

Elected Fellow of the American Physical Society, 1987 (By 2014, there were ~6400 Fellows, which was ~13% of the total APS membership of 51,000.)

Regents' Medal for Excellence in Research, University of Hawaii, 1990 (Two awards per year among a faculty of ~1500)

Invited lecturer in Soviet Union under auspices of USSR and Ukrainian Academies of Science, with talks in Moscow, Leningrad, Kiev and Novosibirsk, August, 1988

Fujio Matsuda Scholar, University of Hawaii, 1986-87 (\$15,000 award for research excellence, of which up to 3 are given each year among a faculty of ~1500)

University of Hawaii Merit Award with Excellence, 1981-82

Visiting Professor (Professeur Associé), University of Paris, 1978-79 and 1986-87

Alfred P. Sloan Research Fellowship, 1975-77

At M.I.T.:

Dean's List for Outstanding Academic Performance, last six semesters
Freshman Competitive, Elks National Foundation, and Sloan Foundation Scholarships
Sigma Xi, science honorary
Phi Lambda Upsilon, chemistry honorary
Tau Beta Pi, engineering honorary

Professional Experience:

Advanced Light Source Professor of Physics, joint between the University of California-Davis and Materials Sciences Division, Lawrence Berkeley Laboratory, November 1990 to present. Promoted to Distinguished Professor of Physics in Davis in 1999.

Affiliate Professor of Physics (unpaid), Department of Physics, University of Hawaii, Honolulu, Hawaii, August 1991 to December 2001.

Professor, Department of Chemistry, University of Hawaii, Honolulu, Hawaii, July 1978-July 1991.

Visiting Professor, Laboratory for the Utilization of Electromagnetic Radiation (L.U.R.E.), University of Paris, Orsay, France, December 1986-July 1987. (During sabbatical leave from Hawaii.)

Professor of Chemistry (2/3-time) and Physics (1/3-time), Departments of Chemistry and Physics, University of Utah, Salt Lake City, Utah, July 1979-June 1980. (During leave from Hawaii.)

Visiting Professor, Laboratory for the Utilization of Electromagnetic Radiation (L.U.R.E.), University of Paris, Orsay, France, October 1978-July 1979. (During sabbatical leave from Hawaii.)

Associate Professor, Department of Chemistry, University of Hawaii, Honolulu, Hawaii, July 1974-June 1978.

Assistant Professor, Department of Chemistry, University of Hawaii, Honolulu, Hawaii, September 1972-June 1974.

Visiting Research Associate, Department of Physics, Linkoping University, Linkoping, Sweden, August 1972.

Senior Lecturer, Department of Physics, University of Dar es Salaam, Dar es Salaam, Tanzania, September 1971-July 1972.

Postdoctoral Research Fellow, Department of Physics, Linkoping University, Linkoping, Sweden, June 1971-August 1971.

Postdoctoral Research Fellow, Department of Physics, Chalmers Institute of Technology, Gothenburg, Sweden, May 1970-May 1971.

Graduate Student Research Assistant, University of California, Lawrence Berkeley Laboratory, Berkeley, California, March 1965-April 1970.

Graduate Student Research Assistant, Sea Water Conversion Laboratory, University of California Berkeley, California, September 1963-February 1965.

Professional Societies:

American Physical Society

American Vacuum Society--AVS

American Association for the Advancement of Science

Materials Research Society

IEEE--Magnetics Section

Mentoring of Students and Young Scientists:

The group at present consists of 2 postdoctoral associates, 4 graduate students, and a self-supported senior scientist, with more details at <http://www.physics.ucdavis.edu/fadleygroup/>.

34 Ph.D., 4 M.S., and 6 Senior Honors theses have been completed under my direction. The four most recent PhDs were in 2011, 2012, 2015, and 2018; three more people are scheduled to finish in 2018-19. 38 postdoctoral research associates from 13 countries have worked under my direction, with 19 coming with their own funding.

A total of 28 of the Ph.D.s and postdocs have gone on to faculty positions in physics, chemistry, electrical engineering or chemical engineering:

1. R.J. Baird (Ford Research, now Wayne State Univ., Michigan)
2. B. Balke (University of Mainz, Germany)
3. E. Bullock (Western Washington Univ., now Santa Barbara City College, California)
4. H. Daimon (Nara Inst. of Sci. and Tech., Japan, various prizes in Japan)
5. R. Denecke (Leipzig Univ., Germany)
6. D. Eiteneer-Harmon (Folsom Lake College, Rancho Cordoba, CA)
7. A.X. Gray (Temple University, Philadelphia, Pennsylvania, 2018 DOE Early Career Award)
8. A.A. Greer (University of the Pacific, Stockton, California)
9. G.S. Herman (Oregon State University, Corvallis, Oregon-AVS Fellow)

10. K. Higashiyama (Tsukuba Univ., Japan)
11. A.P. Kaduwela (University of California Davis, California)
12. A. Keqi (California Northstate University College of Medicine, Elk Grove, CA)
13. Y.J. Kim (Hanbat Univ., Daejeon, South Korea)
14. S. Kono (Tohoku Univ., Sendai, Japan)
15. P.M. Len (Cuesta College, San Luis Obispo, California)
16. N. Mannella (Univ. of Tennessee, Knoxville-2012 NSF CAREER Awardee)
17. J. Morais (Univ. of Rio Grande do Sul, Brazil)
18. B.S. Mun (Hanyang University, now Gwangju Institute of Science and Technology Korea)
19. J. Osterwalder (University of Zürich, Switzerland)
20. C. Papp (Erlangen University, Germany)
21. Lars-Gunnar Petersson (Linköping University, Sweden)
22. A. Rosenhahn (University of Bochum, Germany)
23. G. Schonhense (Univ. of Mainz, Germany)
24. B.C. Sell (Otterbein College, Ohio, now Wright-Patterson Air Force Base)
25. B. Sinkovic (Univ. of Connecticut, Storrs Connecticut)
26. R. Trehan (Tougaloo College, Tougaloo, MS)
27. C. Westphal (Univ. of Dortmund, Germany)
28. R.C. White (George Washington Univ., DC)

Other former group members have gone on into leading research and development laboratories around the world. These include:

1. E. Arenholz (Advanced Light Source, Lawrence Berkeley National Laboratory, now Scientific Director, CHESS Light Source, Cornell)
2. D.J. Friedman (National Renewal Energy Laboratory, Boulder, Colorado)
3. F. J. Garcia de Abajo (Institute for Photonic Science, Barcelona, Spain)
4. T. Greber (SPECS, Berlin, Germany)
5. G. Herman (HP, Oregon, then Sharp Laboratories of America, Washington, now academic-see above)
6. Z. Hussain (Advanced Light Source, Lawrence Berkeley National Laboratory, winner of the 2018 Keithley Prize of the American Physical Society)
7. A.P. Kaduwela (California Air Resources Board, also now academic-see above)
8. A.W. Kay (Intel, Corvallis, Oregon)
9. T. Lindner (HP, Oregon)
10. A.M. Kaiser (SPECS Surface Nano Analysis GmbH, Berlin, now Oerlikon Leybold Vacuum GmbH, Cologne, Germany)
11. S. Marchesini (Advanced Light Source, and Center for Applied Mathematics for Energy Research Applications, Lawrence Berkeley National Laboratory)
12. B.S. Mun (Advanced Light Source, Lawrence Berkeley National Laboratory, now academic, see above)
13. A. Nambu (Brookhaven National Laboratory, now Hitachi Advanced Research Laboratory)
14. S. Nemšák (Peter Grünberg Institute, Jülich Research Center, Germany, now Advanced Light Source, LBNL, Berkeley)
15. S. Omori (Sony Research, Japan)
16. F.J. Palomares (Institute for Materials Science, Madrid, Spain)
17. G.K. Pálsson (Institute Laue-Langevin, Grenoble, France, and Uppsala University, Sweden)
18. L. Plucinski (Peter Grünberg Institute, Jülich Research Center, Germany)
19. A. Rattachanata (Thailand Synchrotron Light Research Institute, Nakhon-Ratchasima, Thailand)
20. J. Rault (Soleil Synchrotron, France)
21. S. Ruebush (Seagate Corporation, Minneapolis)
22. M. Sagurton (National Synchrotron Light Source, Brookhaven National Laboratory, New York)

23. R.S. Saiki (Dept. of Health, State of Hawaii)
24. B.C. Sell (formerly academic, now at Wright Patterson Air Base, Dayton, Ohio)
25. S. Thevuthasan (Pacific Northwest National Laboratory, Washington-AVS Fellow)
26. K. Thompson (Y12 National Security Complex, Tennessee)
27. R.C. White (Science Applications International, Maryland, also now academic-see above)
28. T. Willey (Lawrence Livermore National Laboratory)
29. M. Yamada (Institute for Solid State Physics, Tokyo, Japan, now RIKEN Low Temperature Physics Laboratory)
30. S.-H. Yang (IBM Almaden Research, San Jose, California)
31. R.X. Ynzunza (KLA Tennco, California)

Others have been successful in the business or administrative world. These include:

1. M. Gehlmann, software engineering
2. N.F.T. Hall (CEO, SVB Alliant, venture capital firm)
3. B.D. Hermsmeier (Hyundai Magnetics, VP for Research, then CEO, PanaStat Inc., now CEO, Alterlume, LED lighting, San Jose, California)
4. S. Lewis (Earthtech Inc., Honolulu, Hawaii)
5. S. Locklin (Rapt Inc., now an independent financial consultant and bitcoin investor, Berkeley, California)
6. J. Menchero (BARRA Inc., Berkeley, California)
7. T. Tran School of Engineering, Oregon State, Corvallis, Oregon)
8. E.D. Tober (Nuance Inc., now Interactive Intelligence, Indianapolis, Indiana)

Various sabbatical or extended-stay visitors from around the world have also contributed significantly to our research. These include: C. R. Brundle (IBM), Y. Enta (Hirosaki Univ., Japan), G. Fecher (Mainz Univ., Germany), G. Granozzi (Univ. of Padua, Italy), K. Hricovini (Univ. Sergy-Pontoise, France), S. Hüfner (Saarbrücken Univ., Germany), K. Ibrahim (Beijing Synchrotron Radiation Facility, China), E. Kisker (Univ. of Düsseldorf, Germany), J. Lecante (LURE, Orsay, France), J. Liesegang (Latrobe Univ., Australia), R. Manne (Univ. of Bergen, Norway), D. Menzel (Technical University of Munich, Germany), M. Polak (Ben-Gurion Univ., Israel), W. Schattke (Kiel Univ., Germany), C.M. Schneider (Jülich Research Center, Germany).

Research Funding:

Support for my research has over the years come from the National Science Foundation, the Office of Naval Research, the Petroleum Research Foundation, the Sloan Foundation, NATO, the DAAD (Germany), the Department of Energy, the Helmholtz Society, the Humboldt Foundation, and the Army Office of Research.

Recent and current support is from the *Department of Energy*, Lawrence Berkeley National Laboratory, Materials Sciences Division, via the Magnetic Materials Program involving P.J. Fischer, F. Hellman, and J.B. Kortright, as well as the LBNL Center for X-Ray Optics; from the LBNL Laboratory Directed Research and Development Fund; from the *Department of Energy*, Office of Basic Energy Sciences, Materials Sciences and Engineering Division, Scattering and Instrumentation Sciences Program; from the *Army Research Office*, via a Multi-University Research Initiative entitled "Emergent Properties of Mott Interfaces" (<http://mottmuri.mrl.ucsb.edu/index.html>); from the *Peter Grünberg Institute* of the Jülich Research Center, PGI-6 Electronic Properties (group of C.M. Schneider); and from the *Labex APTCOM Project of the Triangle de Physique*, Paris, which includes collaborators at the Soleil Synchrotron and Université de Paris Sud (see detailed description under Honors above).

Service in the Scientific Community:

Member of the Organizing Committee, International Conference on Electron Spectroscopy, Asilomar, California, September 7-10, 1971.

Chair, Symposium on Electron- and Soft-X-Ray-Spectroscopy, Northwest Regional American Chemical Society Meeting, Honolulu, Hawaii, June 12-13, 1975, approximately 80 participants.

Vice Chair, Gordon Conference on Electron Spectroscopy, Wolfeboro, New Hampshire, July 19-23, 1976. Chair of the next Conference in this series held July 17-21, 1978. Proposals to NSF that I was responsible for writing in connection with these conferences led to a total of \$6,000 in additional support beyond the usual Gordon allocations. Both conferences had approximately 120-140 participants, with the one I chaired being the largest in this series.

Local host, Japan-U.S. Seminar on Synchrotron Radiation Instrumentation, Honolulu, Hawaii, November 5-9, 1979.

Member of the Editorial Board, Journal de Microscopie et de Spectroscopie Electroniques, 1981-1991.

Co-chair, Symposium on Application of Electron Spectroscopy to Surface Science, Northwest Regional American Chemical Society Meeting, Bozeman, Montana, June 17-19, 1981, approximately 60 participants.

Member, Proposal Review Panel, Vacuum Ultraviolet Section, Stanford Synchrotron Radiation Laboratory, Stanford, California, March, 1981-June, 1990.

Member, Advisory Committee, National Center for Research in Surface Science and Submicron Analysis, Montana State University, Bozeman, Montana, 1981-1983.

Co-chair, with Professor Marvin L. Cohen of U.C. Berkeley, of an *ad hoc* group working to establish an East-West Pure and Applied Science Institute at the Univ. of Hawaii, 1979-1986.

Chair, Symposium on Electron-, X-ray-, and Ion-Spectroscopies and Their Application to Surfaces, Northwest Regional American Chemical Society Meeting, Honolulu, Hawaii, December 28-30, 1983, approximately 80 participants.

Member, Eisenberger/Knotek Committee of the Department of Energy charged with a Planning Study for National Advanced Synchrotron Radiation Facilities, Fall/Spring, 1983-84. (See article in Science, Vol. 222, p. 826 (1984)).

Member, National Steering Committee of the Department of Energy charged with Planning a New 6 GeV Synchrotron Radiation Source, 1985-86. (See article in Science, Vol. 227, p. 396 (1985)).

Member, Organizing Committee, Workshop on an Advanced Soft X-ray and Ultraviolet Synchrotron Radiation Source, Berkeley, California, November 13-15, 1985, approximately 200 participants.

Elective Member, Vice Chair, and Chair, Executive Committee of the Advanced Light Source Users' Organization, and Lawrence Berkeley Laboratory, 1987-1991: Vice Chairman for 1989; Chairman for 1990.

Co-organizer (with W. Eberhardt) of Workshop on New Opportunities in Surface Science at the Advanced Light Source, Berkeley, California, April 28-29, 1988, approximately 80 participants.

Member, Organizing and Program Committees, Fourth International Conference on Electron Spectroscopy, University of Hawaii, Honolulu, Hawaii, July 10-14, 1989, 220 participants.

Chair, Ninth International Conference on Vacuum Ultraviolet Radiation Physics (VUV9), University of Hawaii, Honolulu, Hawaii, July 17-21, 1989, 396 participants from 25 countries, with over \$50,000 in federal funding obtained for this conference.

Organizer, Advanced Light Source Users Organization Meeting, Berkeley, California, August 23-24, 1990, 140 participants.

Member, Editorial Board of Chemical Physics Letters, 1991-1993.

- Member, Executive Committee of The Stanford Synchrotron Radiation Laboratory Users' Organization, 1991-1993.**
- Member, Program Committee, Tenth International Conference on Vacuum Ultraviolet Radiation Physics, Paris, France, July 27-31, 1992.**
- Member, Program Committee, Annual Surface-Interface Research Meetings of the Northern California Chapter of the American Vacuum Society, 1992-2000, with one meeting in this series being held for the first time on the UC Davis Campus in September, 1998.**
- Member, Organizing Committee and Program Committee, Fifth International Conference on Electron Spectroscopy, Kiev, Ukraine, 26-30 July, 1993.**
- Member, Committee on Core Competencies, Lawrence Berkeley Laboratory, part of a laboratory-wide strategic planning study, 1992-93, leading to a final written report.**
- Chair, Subcommittee of the Stanford Synchrotron Radiation Laboratory (SSRL) Users Organization charged with planning of future vacuum ultraviolet/soft x-ray research at SSRL, summer-fall, 1993. [This aspect has continued one of the great strengths of SSRL.]**
- Member, Organizing Committee, Winter Workshop on Electron Diffraction and Imaging at Surfaces, 3-6 January, 1996, Scottsdale, Arizona.**
- Co-Editor (with A.M. Bradshaw and N. Martensson) of a special issue of the Journal of Electron Spectroscopy entitled "Future Perspectives for Electron Spectroscopy with Synchrotron Radiation" (A Festschrift for D.A. Shirley), and appearing as Volume 75 in 1995.**
- Member and Chair, International Advisory Board for the International Conferences on Vacuum Ultraviolet Radiation Physics: Member for 1989-1992, Chair for 1992-1995, with reelection to a second term as Chair for 1995-1998. These are major conferences with approximately 400-500 people attending from around the world.**
- Member, National Science Foundation Review Panel for Major Research Instrumentation, 12 May, 1997, Arlington, Virginia.**
- Co-Organizer (with L.F. Allard, A. Carim, Y. Ono, and E. Voelkl) of Symposium HH: Materials Applications of Electron Holography and Related Techniques, held as part of the Materials Research Society Meeting, Boston, Massachusetts, Fall, 1997**
- Member, Organizing Committee, Workshop on Theory and Computation for Synchrotron Radiation Applications, at the Advanced Light Source, 15-16 October, 1997, Berkeley, California.**
- Member, Department of Energy panel for Workshop on Future Directions in Atomic, Molecular, and Optical Physics, 21-24 September, 1997, Chantilly, Virginia.**
- Member, Local Organizing Committee, Workshop on Scientific Directions for the Advanced Light Source, 21-23 March, 1998, Berkeley, California, including coordination and report writing for the surface science section of the final document.**
- Member, Organizing Committee, Third International School on the Applications of Surface Science Techniques (IASST-3), April, 1998, Erice, Italy.**
- Elective Member, Executive Committee of the Advanced Light Source Users Organization, 1998-2001, including representing Committee in weekly ALS management meetings over a two-year period.**
- Member, Director's Task Force on Advanced Light Source User Policies and Issues, Lawrence Berkeley National Laboratory, March-July, 1998, including various meetings on and off site, and the writing of a report with recommendations for future changes to improve user relations and the user program, a response to the Birgeneau Report criticisms of the ALS. This also involved later meetings at one-year intervals to assess progress.**

- Co-Editor (with P.S. Bagus and G.E. McGuire) of a special issue of the Journal of Electron Spectroscopy dedicated to C.R. Brundle's 25 years as editor, Volume 99, January, 1999.
- Member, Organizing Committee, Workshop on The Scientific Case for an X-ray Free-Electron Laser (Linac Coherent Light Source) at Stanford, and Co-Chair of Working Group on Photon Correlation Spectroscopy, Speckle, and Holography, January 12-14, 1999, Stanford, California.
- Invited reviewer, Planning Retreat for the Chemical Dynamics Facility, Advanced Light Source, January 15, 1999, Berkeley, California.
- Co-Chair (with I. McNulty) of Working Group on Imaging Techniques with Intense X-ray Beams, International Conference on Future Accelerators, 17th Advanced Beam Dynamics Workshop on Future Light Sources, Argonne National Laboratory, 6-9 April, 1999.
- Chair, International Program Advisory Committee, 2nd International Swiss Light Source Workshop on Synchrotron Radiation, Oct 26- 30, 1999, Brunnen, Switzerland.
- Member, Local Organizing Committee, Physical Electronics Conference (PEC99), July 6-9, 1999, Berkeley, California.
- Member, Search Committee for an Advanced Light Source Professor, joint between the College of Engineering and the College of Arts and Sciences, Division of Mathematical and Physical Sciences, U.C. Davis, fall, 1999.
- Member, Examining Committee, for the public defense of a Ph.D. thesis entitled "Probing Molecular Adsorbates with Core Level Spectroscopies", by Alexander Föhlisch, Institute of Physics, Faculty of Science and Technology, Uppsala University, Uppsala, Sweden October 1, 1999.
- Co-Director, International School on Synchrotron Radiation, International Center for Theoretical Physics, Trieste, Italy, held in November, 1995; November-December, 1997; April-May, 1999; November-December 2000; May, 2002; May, 2004; May 2006. This biennial school brought together 20-30 lecturers from Europe and the U.S. with 60-80 students from developing countries. The students spent about one month in the school, learning all elements of modern synchrotron radiation research.
- Member, Program Committee, Workshop on Surface Holography and Other Direct Methods for Surface Structure Determination, supported by the International Union for Vacuum Science, Technique, and Applications (IUVSTA), Hong Kong, August 15-19, 2000.
- Member, Organizing Committee, 1st International AVS Conference on Microelectronics and Interfaces, held in Santa Clara, California, February 2-7, 2000.
- Member, International Program Advisory Committee, 3rd International Swiss Light Source Workshop on Synchrotron Radiation, Oct 16- 20, 2000, Les Diablerets, Switzerland.
- Member, American Institute of Physics Committee for the Physics and Astronomy Classification Scheme (PACS), Nanotechnology Section of PACS, 2000-2001.
- Member, group of eight Lawrence Berkeley National Laboratory Scientists chosen to meet with the University of California Academic Senate Committee on Research Policy (UCORP), Professor John Featherstone, Committee Chair, May 8, 2000.
- Member, group of six Lawrence Berkeley National Laboratory Scientists chosen to meet with the Director's Review Board assessing the Directorship of C.V. Shank, with Dr. Alan Schriesheim as Board Chair, June 8, 2000.
- Co-Chair (with L.J. Terminello), Eighth International Conference on Electronic Spectroscopy and Structure (formerly the International Conference on Electron Spectroscopy), held in Berkeley, California, August 8-12, 2000, and involving 413 participants from 34 countries. This involved making many of the overall programmatic and day-to-day decisions concerning this conference, which was the largest in the series to date by almost a factor of two. This

conference also earned a net of approximately \$40,000 that has been passed along as a trust fund for future conferences.

Co-Organizer, Two workshops on "Detectors for Synchrotron Radiation" (with A.C. Thompson H.A. Padmore, and T. Earnest) and "Hard X-ray Spectroscopy and Holography" (with H. Frei) held as part of the Advanced Light Source Users Meeting, Berkeley, October 16-18, 2000.

Member, Review Committee for the Aloisa Beamline at the Elettra Synchrotron Radiation Laboratory, Trieste, Italy, April 24, 2001.

Principle Examiner ("Faculty Opponent"), for the public defense of a Ph.D. thesis entitled "Vibrational Fine Structure in Adsorbates and the Use of Core-Level Photoemission for Studying Adsorbate Systems" by Maria Smedh, Department of Synchrotron Radiation Research, Lund University, Lund, Sweden, April 27, 2001.

Member, International Program Committee, 13th International Conference on Vacuum Ultraviolet Radiation Physics (VUV13), Trieste, Italy, July 23-27, 2001.

Member, Surface and Interface Science Editorial Board, Journal of Physics-Condensed Matter, London, 2000-2004.

Member, group of six Lawrence Berkeley National Laboratory Faculty Scientists chosen to meet with the University of California Academic Senate Committee on Research Policy (UCORP), Professor H. D. Abarbanel, Committee Chair, October 12, 2001

Member (with J. Chelikowsky, S. Louie, and J. Rehr), of a committee organizing a Symposium on Excited State Spectroscopy as part of the March, 2002 meeting of the American Physical Society.

External Referee for the habilitation thesis entitled "Investigation of clean and adsorbate covered metal surfaces by synchrotron radiation" of Mikhail Zharnikov, Department of Chemistry, Ruprecht-Karls-Universität Heidelberg, Heidelberg, Germany, September, 2001.

Member, Review Committee for the Graduate Program in Chemistry, UC Davis, with Y. Yeh (Chair), B.C. Gates, and W. Miller (UC Berkeley), February, 2003.

Member, Lawrence Berkeley National Laboratory employee group of ca. 20 people selected to provide input to the University of California President's Committee in charge of selecting a new Director for the Laboratory, April, 2004.

Member, International Program Committee, 14th International Conference on Vacuum Ultraviolet Radiation Physics (VUV14), Cairns, Australia, July 19-23, 2004.

Member, Review Panel for Circular Polarization Beamline ID12 at the European Synchrotron Radiation Facility, Grenoble, France, September 29-30, 2004.

Member, Review Panel for Infrared, Vacuum Ultraviolet, and Soft X-Ray Beamlines at the National Synchrotron Light Source, Brookhaven, January 27-28, 2005.

External Referee, Ph.D. thesis of Andre Klein, "Surface science studies of the bonding and reaction of nitrogen- and sulfur- containing compounds on transition metal surfaces", Latrobe University, Australia, February, 2005.

Chair, Committee for the evaluation of scientific projects for the Fermi free-electron laser project at Elettra, the Italian synchrotron radiation facility, Trieste, Italy, June 23-24, 2005.

Lawrence Berkeley National Laboratory Future Photon Source Retreat, co-facilitator, Grand Challenges Sessions, August 10-11, 2005., and co-writer of report of Petroff breakout group on "New ideas in imaging and spectroscopy, correlated electronic and magnetic systems"

Host for weekend tours of the Berkeley Lab Friends of Science at the Lawrence Berkeley National Laboratory, beginning in 2005 and continuing into 2006, one-to-two times per year.

External referee, habilitation thesis of Dr. Alexander Föhlisch, University of Hamburg, entitled "Ultrafast dynamics on the atomic scale: resonant x-ray spectroscopy for atom-specific electronic structure and dynamics", October, 2006.

- Chair, Panel evaluating research in the Departments of Physics, Theoretical Physics, Astronomy-and-Space Physics, and Nuclear-and-Particle Physics at Uppsala University, as part of a campus-wide evaluation entitled “Quality and Renewal 2007”, Spring, 2007.
- Chair, Review Panel for Variable-Polarization Soft X-Ray Spectroscopy Beamline ID08 at the European Synchrotron Radiation Facility, Grenoble, France, May 22-23, 2007.
- Member, International Advisory Committee for the Symposia on Surface Physics, with the last Symposium (SSP11) held in Prague, Czech Republic, June 3—July 4, 2008.
- Chair, Academic Planning Committee of the UC Davis Department of Physics, charged with developing a five-year plan for 2009-2014, December-April, 2008.
- Co-Organizer, with A. Fedorov, of a Workshop on Hard X-Ray Photoemission in Materials Sciences: Recent Progress and Future Directions, held as part of the 2008 Advanced Light Source Users Meeting, October 14-15, 2008, Berkeley, California. Details at: <http://ssg.als.lbl.gov/ssgdirectory/fedorov/workshops/index.html> .
- Chair, International Advisory Board for the the Third International Workshop on Hard X-Ray Photoelectron Spectroscopy (HAXPES09), held at Brookhaven National Laboratory over May 20-22, 2009. Details at: <http://www.nsls.bnl.gov/newsroom/events/workshops/2009/haxpes/> .
- Member, UC Davis campus-wide Energy Institute Steering Committee, 2008-2016.
- Member, International Advisory Committee, Workshop on Hard X-Ray Photoemission, held at Soleil, the French national synchrotron radiation facility, Saclay, France, January 18-19, 2010.
- Member, Local Organizing and Program Committees, and Chair, Award Committee for prizes for a mid-career scientist and a student, the XUV 2010 Conference (combining for the first time the International Vacuum Ultraviolet Radiation Physics and X-Ray and Inner Shell Processes Conferences), held in Vancouver, Canada, July 11-16, 2010.
- Member, International Program Committee of the International Workshop on Photoionization, with for the workshop held in Las Vegas, in May 2011.
- Chair, Panel reevaluating research in the Departments of Physics, Theoretical Physics, Astronomy-and-Space Physics, and Nuclear-and-Particle Physics at Uppsala University, as part of a campus-wide evaluation entitled “Quality and Renewal 2011”, May, 2011.
- Member, International Program Advisory Board, International Symposium on Surface Science (ISS-6)--Focusing on Nano-, Green-, and Bio-echnologies, held in Tokyo, Dec. 11-15, 2011.
- Associate Editor, International Journal of Nanoscience, Singapore, 2001-present.
- Member of the Editorial Board, Journal of Electron Spectroscopy and Related Phenomena, 1975-present.
- Member, International Advisory Board, International Symposia on Atomic-Level Characterizations for New Materials and Devices (ALC), with the next meeting in this Japanese-sponsored series held in Lihue, Kauai, December, 2017
- Spokesperson/P.I. for the DOE-supported Magnetic Nanomaterials Program, Materials Sciences Division, Lawrence Berkeley National Laboratory, including also P. Fischer, F. Hellman, and J.B. Kortright, 2006-2012.
- Honorary International Member, Microbeam Analysis Committee 141 of the Japanese Society for the Promotion of Science, October, 2008-present.
- Member, Scientific Advisory Committee, Italian national synchrotron radiation facility Elettra, Fall, 2005 to Fall, 2012.
- Member, UC Davis campus-wide Steering Committee for the Energy for the Future Initiative involving 12 faculty positions over several colleges, February, 2006-June 2016.
- Member, Machine and Experiment Committee, Delta Center for Synchrotron Radiation Research, University of Dortmund, Dortmund, Germany, 2008-present

- Member, International Advisory Committee, International Conferences on the Structure of Surfaces, 1993-present.**
- Chair and Member, International Advisory Board for International Conferences on on Hard X-Ray Photoemission, 2009-present**
- Co-Editor, with Claus M. Schneider, of a special issue of the Journal of Electron Spectroscopy and Related Phenomena dedicated to Modern Trends in Magnetic Spectroscopy, 2011-2013.**
- Member, International Program Advisory Board for the 7th International Symposium on Surface Science (ISSS-7), Matsue, Japan, November 2-6, 2014.**
- Chair, International Advisory Committee (IAC) for the Energy Materials In-Situ Laboratory (EMIL) at Helmholtz Zentrum Berlin-BESSY II, consisting of coincident-beam soft+hard x-ray beamlines for photovoltaic research and high-pressure photoemission, 2011-present.**
- Member, Search Committee for a Professorship within the Molecular and Condensed Matter Physics Division, Department of Physics, Uppsala University, 2013.**
- Member, International Advisory Board for the 30th European Conference on Surface Science, Antalya, Turkey, 31 August-5 September, 2013.**
- Chair, Review Committee for the P22 hard x-ray photoemission and photoelectron microscopy beamline at DESY Petra III, Hamburg, 12 September, 2014.**
- Member, Condensed Matter Physics Working Group (six external invitees), Diamond 10 Vision Meeting, planning of Diamond II, 30 September-1 October, 2014, Diamond Light Source, Didcot, UK.**
- Member, Selection Committee for the Siegbahn Prize, 2015. Awarded by Nuclear Instruments and Methods for outstanding experimental achievements in synchrotron radiation research with a significant component of instrument development.**
- International Adviser, “Three-Dimensional Active-Site Science”, a five-year project of the Japanese Ministry of Education, H. Daimon, PI, devoted to the further development of local-site imaging method, including photoelectron and x-ray fluorescence holography, February, 2015 onward.**
- Member, International Advisory Board for the International Conferences on Electron Spectroscopy (renamed Electronic Spectroscopy and Structure in 1999), 1989-present, and Chair for 1997-2000, and 200-2012.. Under my chairmanship, the conference title and scope were widened, and attendance numbers increased significantly.**
- Member, International Scientific Committee of the workshop “Photon and fast Ion induced Processes in Atoms, MOlecules and Nanostructures” (PIPAMON), 24-26 March, 2015, Debrecen, Hungary.**
- External referee for a Senior Scientist Position, National Synchrotron Radiation Research Center, Hsinhua, Taiwan, April, 2016.**
- Member, International Advisory Panel, National Engineering and Physical Sciences Research Council XPS Users' Facility, Newcastle University, UK, 2016-**
- Co-chair, with Z. Hussain and P. Pianetta, of the Seventh International Conference on Hard X-Ray Photoemission, to be held 11-15 September, 2017, at the Lawrence Berkeley National Laboratory, Berkeley, California.**
- Chair, International Advisory Committee for the International Conferences on Hard X-Ray Photoemission, 2017-2019, with the next conference to be held in Paris in June, 2019.**
- Invited Talks and Lectures at Scientific Conferences, Workshops, and Research-Related Schools:**
Career total of over 235 invited talks and lectures in 30 countries at major scientific conferences, workshops, and specialty schools in surface, interface, and materials science, as well as synchrotron radiation, with 43 of these during the five-year period 2013-2017.

- (1) "Current Experiments in X-ray Photoemission Spectroscopy", C. S. Fadley. Invited talk at the Symposium on the Theory of Singular Effects and Satellite Structure in Solids, International Centre for Theoretical Physics, Trieste, Italy, 1-4 July, 1970.
- (2) "Multiplet Splittings in Photoelectron Spectra", C. S. Fadley. Invited talk at the International Conference on Electron Spectroscopy, Asilomar, California, 7-10 September, 1971.
- (3) "Theoretical Aspects of X-ray Photoelectron Spectroscopy", C. S. Fadley. Four invited lectures at the NATO Summer School on Electron Emission Spectroscopy, Ghent, Belgium, 23 August-9 September, 1972.
- (4) "Instrumentation for Surface Studies: XPS Angular Distributions", C. S. Fadley. Invited review talk presented at the International Conference on Electron Spectroscopy, Namur, Belgium, 15-19 April, 1974.
- (5) "Relative Intensities and Fine Structure in X-ray Photoelectron Spectra", C. S. Fadley. Invited talk at the Gordon Conference on X-ray Photoelectron Spectroscopy, Wolfeboro, New Hampshire, 15-19 July, 1974.
- (6) "Surface Chemical Information from XPS Angular Distributions", C. S. Fadley. Invited talk at the Symposium on the Photoelectron Spectroscopy of Surfaces. American Chemical Society National Meeting, Philadelphia, Pennsylvania, 6-11 April, 1975.
- (7) "Surface Analysis, Peak Intensities, and Angular Distributions in X-ray Photoelectron Spectroscopy", C. S. Fadley. Invited talk for the Faraday Society Discussion on Electron Spectroscopy of Solids and Surfaces, Vancouver, British Columbia, 15-18 July, 1975.
- (8) "Application of Angular-Dependent X-ray Photoelectron Spectroscopy to Solid-State- and Surface-Characterization", R. J. Baird, C. S. Fadley, J. M. Hill, M. Mehta and L. F. Wagner. Invited talk presented by C. S. Fadley at the Symposium on the Chemistry of Electrode Surfaces, First Chemical Congress of North America, Mexico City, Mexico, 16-21 November, 1975.
- (9) "Angular-Dependent X-ray Photoelectron Spectroscopy", C. S. Fadley. Invited talk presented at the Symposium on Surfaces and Interfaces, American Physical Society Meeting, San Diego, California, 21-24 March, 1977.
- (10) "The Study of Solid Surfaces and Surface Chemistry by Angular-Dependent X-ray Photoelectron Spectroscopy", C. S. Fadley. Invited talk presented at the 13th Annual Symposium of the New Mexico Chapter of the American Vacuum Society, Albuquerque, New Mexico, 18-21 April, 1977.
- (11) "Surface Analysis by Means of Angular-Dependent X-ray Photoelectron Spectroscopy", C. S. Fadley. Invited talk presented at the 37th Physical Electronics Conference, Stanford, California, 20-22 June, 1977.
- (12) "Angle-Resolved X-ray Photoemission", C. S. Fadley. Invited talk presented at the Daresbury Symposium on the Application of Synchrotron Radiation to Surface Studies, Daresbury, England, November, 1978.
- (13) "Angle-Resolved X-ray Photoemission", C. S. Fadley. Invited talk presented at the 16th Solid State Physics Conference of the British Physical Society, Warwick, England, January, 1979.
- (14) "Determination of Surface Atomic Geometries from Angle-Resolved Photoelectron Spectroscopy of Core Levels", C. S. Fadley. Invited talk presented at the Symposium on Core and Surface Processes in Matter, International Centre for Theoretical Physics, Trieste, Italy, 31 July-3 August, 1979.
- (15) "Surface Geometry Determination from Angle-Resolved X-ray Photoelectron Spectroscopy", C. S. Fadley. Invited lectures at the conference "Trends in Studies of Electronic Properties of Metals by Photoemission", Les Houches, France, 3-13 March, 1980.

- (16) "Angle-Resolved X-ray Photoemission Studies of Surface Atomic Geometries and Bulk Valence Bands", C. S. Fadley. Keynote speaker for the International Conference on X-ray Processes and Inner-Shell Ionization, 25-29 August, 1980, Glasgow, Scotland.
- (17) "Surface Atomic Geometry Determinations from Core-Level X-ray Photoelectron Angular Distributions", C. S. Fadley, S. Kono, J. T. Lloyd, and K. A. Thompson. Invited talk at the Cannes International Surface Conference, 22-26 September, 1980, Cannes, France.
- (18) "Non-Destructive Surface Analysis Using XPS with Variable Take-Off Angle", C. S. Fadley. Invited talk at the Pittsburgh Conference on Analytical Chemistry, 9-13 March, 1981, Atlantic City, New Jersey.
- (19) "Surface Analysis by Means of Angle-Resolved X-ray Photoelectron Spectroscopy", C. S. Fadley. Invited talk at the 9th International Conference on Atomic Spectroscopy and XXII Colloquium Spectroscopicum Internationale, 4-8 September, 1981, Tokyo, Japan.
- (20) "Near-Surface Depth Profiling by Means of Grazing-Emission X-ray Photoelectron Spectroscopy", C. S. Fadley. Invited talk at the Symposium on Analytical Spectroscopy for Trace Characterization, 11-12 September, 1981, Kyoto, Japan.
- (21) "Surface Structure Studies by Means of High-Energy Angle-Resolved Photoemission from Adsorbate Core Levels", C. S. Fadley. Invited talk at Symposium on Molecular Processes at Solid Surfaces, American Chemical Society Meeting, 28 March-2 April, 1982, Las Vegas, Nevada.
- (22) "Surface Science", C. S. Fadley. Five invited lectures at the Eighth International Nathiagali Summer College on Physics and Contemporary Needs, 23 July-11 August, 1983, Islamabad, Pakistan.
- (23) "Surface Structures from Core-Level Photoelectron Diffraction", C. S. Fadley. Invited talk at the Pacific Conference on Chemistry and Spectroscopy, 26-28 October, 1983, Pasadena, California.
- (24) "Surface Structures from High-Energy Photoelectron Diffraction", C. S. Fadley. Invited talk at the Gordon Conference on Electron Spectroscopy, 16-19 July, 1984, Wolfeboro, New Hampshire.
- (25) "Surface Structure Studies by X-ray Photoelectron Diffraction," C. S. Fadley. Invited talk at the First International Conference on the Structure of Surfaces, 13-16 August, 1984, Berkeley, California.
- (26) "Surface Structure Studies by X-ray Photoelectron Diffraction", C. S. Fadley. Invited talk at the Third International Conference on Solid Films and Surfaces, 27-31 August, 1984, Sydney, Australia
- (27) "Surface Structures from X-ray Photoelectron Diffraction", C. S. Fadley. Invited talk in the Symposium on Surface Science of Catalysis: Synchrotron Radiation Studies of Molecular Bonding, Reactions, and Transformations on Surfaces, American Chemical Society Meeting, 13-18 April, 1986, New York, New York.
- (28) "Photoelectron Diffraction", C. S. Fadley. Invited talk at the Eighth International Conference on Vacuum Ultraviolet Radiation Physics, 4-8 August, 1986, Lund, Sweden.
- (29) "Surface and Epitaxial Structures from X-ray Photoelectron Diffraction", C. S. Fadley. Invited talk at the S.P.I.E. Conference on X-rays in Materials Analysis: Novel Applications and Recent Developments, 17-22 August, 1986, San Diego, California.
- (30) "Photoelectron Diffraction in the Study of Magnetic Materials", C. S. Fadley. Invited talk at the Conference on Magnetic Materials Research Using Synchrotron Radiation, 8-10 October, 1986, Argonne National Laboratory, Argonne, Illinois.
- (31) "Studies of Catalytic Intermediates with X-ray Photoelectron Diffraction", C. S. Fadley. Invited talk in the Symposium on Molecular Processes at Solid Surfaces: Spectroscopy of Intermediates and Adsorbate Interactions, American Chemical Society Meeting, 5-10 April, 1987, Denver, Colorado.

- (32) "Possibilities for X-ray Photoelectron Diffraction at the European Synchrotron Radiation Source (E.S.R.F.)", C. S. Fadley. Invited talk at the Workshop on Photoemission at the E.S.R.F., 1-2 June, 1987, Grenoble, France.
- (33) "X-ray Photoelectron Diffraction", C. S. Fadley. Invited talk at the Fourth International Symposium on Surface Physics, 7-11 September, 1987, Bechyne, Czechoslovakia.
- (34) "Photoelectron Diffraction: A Diverse Probe of Surface Structures and Short-Range Magnetic Order", C. S. Fadley. Two invited lectures at the Tenth Taniguchi International Symposium on the Theory of Condensed Matter: Core Level Spectroscopy in Condensed Systems, 19-23 October, 1987, Shima, Japan
- (35) "Spin-Polarized Photoelectron Diffraction: A New Probe of Short-Range Magnetic Order", C. S. Fadley. Invited talk at the 32nd Conference on Magnetism and Magnetic Materials, 9-12 November, 1987, Chicago, Illinois.
- (36) "Scanned-Angle Photoelectron Diffraction", C. S. Fadley. Invited talk in The Symposium on Electron and Positron Probes of Surfaces, American Physical Society Meeting, 21-25 March, 1988, New Orleans, Louisiana.
- (37) "Spin-Polarized Photoelectron Diffraction: A New Probe of Short-Range Magnetic Order", C. S. Fadley, B. Sinkovic, B. D. Hermsmeier, J. Osterwalder, D. J. Friedman, and T. T. Tran. Invited talk at the International Conference on Magnetism (ICM88), 25-29 July, 1988, Paris, France.
- (38) "New Developments in Photoelectron Diffraction", C. S. Fadley. Plenary lecture presented at the 1988 International Synchrotron Radiation Conference (SR88), 18-22 August, 1988, Novosibirsk, USSR.
- (39) "Photoelectron Diffraction Studies of Surface Structures, Interface Growth, and Clusters", C. S. Fadley. Invited talk presented at the International Research Workshop on Future Prospects in Microcluster Research, 14-15 November, 1988, Sendai, Japan.
- (40) "Application of Photoelectron Diffraction to the Study of Semiconductor Surface Structures", C. S. Fadley. Invited talk at the 16th Conference on the Physics of Compound Semiconductor Interfaces (PCSI), 7-9 February, 1989, Bozeman, Montana.
- (41) "Introduction to Photoelectron Diffraction and Spin-Dependent Photoelectron Diffraction as Probes of Magnetic Surfaces and Interfaces", C. S. Fadley. Three invited lectures at the Workshop on Polarized Electrons, Synchrotron Radiation, and Magnetism: Trends and Perspectives, 12-18 March, 1989, Mittelwihr, France.
- (42) "Study of Short-Range Magnetic Order Transitions by Spin-Polarized Photoelectron Diffraction", C. S. Fadley. Invited talk at the International Workshop on the Magnetic Properties of Low-Dimensional Systems, 22-26 May, 1989, San Luis Potosi, Mexico.
- (43) "Characterization of Surfaces on an Atomic Scale: Recent Studies Using Photoelectron Diffraction", C. S. Fadley. Invited talk at the 6th National Conference on Synchrotron Radiation Instrumentation, 7-10 August, 1989, Berkeley, California.
- (44) "Photoelectron Diffraction in the Study of Surface Magnetism", C. S. Fadley. Invited talk at the International Workshop on Monolayer Magnetism, 14-17 August, 1989, Berkeley Springs, West Virginia.
- (45) "Elastic and Inelastic Scattering in Core and Valence Electron Emission from Solids: Some New Directions", C.S. Fadley. Invited talk at the Fifteenth International Conference on X-ray and Inner Shell Processes (X90), 9-13 July, 1990, Knoxville, Tennessee.
- (46) "Surface Structures from Photoelectron and Auger Electron Diffraction: Recent Developments and Theoretical Problems", C. S. Fadley. Invited talk in the Advanced Light Source Workshop on Challenges for Interface Theory, 20-24 August, 1990, Berkeley, California.
- (47) "Spectroscopy, Diffraction, and Holography with High-Energy Photoelectrons," C.S. Fadley. Invited talk at the Workshop on Opportunities in High Brightness Soft X-Ray Science in the

- 1-4 keV Range, Stanford Synchrotron Radiation Laboratory, 1 October, 1990, Stanford, California.
- (48) "Imaging Internal Microcluster Structure Using Electron Emission Holography and Scanning Tunneling Microscopy," C.S. Fadley. Invited talk at the Japan/U.S. Workshop on Novel Microcluster Assemblies, University of Maryland, 15-16 March, 1991, College Park, Maryland.
 - (49) "Electron Emission Holography: Prospects and Limitations", C.S. Fadley. Invited talk at the European Science Foundation Workshop on Electron Holography, Warwick University, 30 March - 4 April, 1991, Bradford, U.K.
 - (50) "Surface Structures from Photoelectron and Auger-Electron Diffraction and Holography", C.S. Fadley. Invited talk at the Third European Conference on Surface Structure, 26-29 May, 1991, San Miniato, Italy.
 - (51) "Prospects for Advanced Photoelectron Diffraction", C.S. Fadley. Invited talk at the Workshop on Spectroscopic Imaging, Diffraction, and Holography with X-ray Photoemission, 14 August, 1991, Berkeley, California.
 - (52) "Recent Developments in Photoelectron Diffraction and Holography", C.S. Fadley. Invited talk at the annual Surface/Interface Research Meeting of the Northern California Chapter of the American Vacuum Society, 19 June, 1992, Berkeley, California.
 - (53) "Some New Directions in Photoelectron and Auger Electron Diffraction and Holography", C.S. Fadley. Invited lecture at the Tenth International Summer Institute in Surface Science, 29 June - 2 July, 1992, University of Wisconsin-Milwaukee, Milwaukee, Wisconsin.
 - (54) "Photoelectron Diffraction and Holography", C.S. Fadley. Invited talk at the Gordon Conference on Electron Spectroscopy, 13-17 July, 1992, Wolfeboro, New Hampshire.
 - (55) "Diffraction and Holography in Electron and X-ray Emission", C.S. Fadley. Invited talk at the European Workshop on Holography and Local Diffraction at Surfaces, 23-26 September 1992, El Escorial, Spain.
 - (56) "Research in Surface Science, Materials Science and Chemical Physics Using an X-ray Laser", C.S. Fadley. Invited talk at the Stanford Linear Accelerator Workshop on Scientific Applications of Short Wavelength Coherent Light Sources, 21 October 1992, Palo Alto, California.
 - (57) "Photoelectron Diffraction and Holography", C.S. Fadley. Invited lecture in a tutorial session entitled "Recent Advances in Surface Science Techniques", American Vacuum Society National Symposium, 8-13 November, 1992, Chicago, Illinois.
 - (58) "Imaging Atoms and Magnetic Moments Near Surfaces by Photoelectron Diffraction, Photoelectron Holography, and Related Techniques", C.S. Fadley, S. Thevuthasan, A.P. Kaduwela, and M.A. Van Hove, invited talk by C.S.F. at the Fall Meeting of the Materials Research Society, 30 November 4 December, 1992, Boston, Massachusetts.
 - (59) "Surface Characterization by Photoelectron Diffraction and Photoelectron Holography: Present Status and Future Prospects", C.S. Fadley. Invited talk at the Japan-U.S. Seminar on Surface Characterization, 16-19 March, 1993, Kailua-Kona, Hawaii.
 - (60) "Some Recent Developments in Photoelectron Diffraction and Holography" C.S. Fadley. Invited talk at the European Workshop on Photoelectron Diffraction, 31 March to 2 April, 1993, Gwatt, Switzerland.
 - (61) "Diffraction and Holography of Photoelectrons and Fluorescent X-rays" C.S. Fadley. Invited talk at Spring Meeting of the Materials Research Society, 19-23 April, 1993, San Francisco, California.
 - (62) "Photoelectron Diffraction and Holography: Present Status and Future Prospects", C.S. Fadley. Plenary Lecture at the Fifth International Conference on Electron Spectroscopy, 26 July-1 August, 1993, Kiev, Ukraine.

- (63) "Photoelectron Diffraction and Holography: Some New Directions", C.S. Fadley. Invited talk at the Fourth International Conference on the Structure of Surfaces, 16-19 August, 1993, Shanghai, China.
- (64) "Photoelectron Spectroscopy, Diffraction and Holography with Next-Generation Synchrotron Radiation Sources", C.S. Fadley. 8 invited lectures at the International School on Synchrotron Radiation, International Centre for Theoretical Physics, 8-12 November, 1993, Trieste, Italy.
- (65) "Core-Level Photoelectron Spectroscopy, Diffraction, and Holography of Magnetic Systems", C.S. Fadley. 3 invited lectures at the NATO Advanced Study Institute on Core-Level Spectroscopies for Magnetic Phenomena: Theory and Experiment, 15-26 May, 1994, Erice, Sicily, Italy.
- (66) "Circular Dichroism in Core-Level Photoemission from Non-Magnetic and Magnetic Systems: A Photoelectron Diffraction Viewpoint", A.P. Kaduwela, H. Xiao, S. Thevuthasan, C. Westphal, M.A. Van Hove and C.S. Fadley. Invited talk at the 6th Joint MMM-Intermag Conference, 20-23 June, 1994, Albuquerque, NM
- (67) "Photoelectron Diffraction and Photoelectron Holography", C.S. Fadley. Invited talk at the Fifteenth Brazilian Congress on Vacuum Applications in Industry and Science", 26-28 August, 1994, Sao Carlos, Brazil.
- (68) "Photoelectron Diffraction and Holography: New Directions in Imaging", C.S. Fadley. Invited talk at the Scanning Microscopy International 1995 Meeting, 6-11 May, 1995, Houston, Texas.
- (69) "The Future of Electron Spectroscopy", C.S. Fadley. Plenary talk summarizing the Sixth International Conference on Electron Spectroscopy, 19-23 June, 1995, Rome, Italy.
- (70) "Photoelectron Diffraction and Holography: New Techniques for Surface Characterization", C.S. Fadley. Invited talk at the Microscopy Society of America Meeting, 13-18 August, 1995, Kansas City, Missouri.
- (71) "Application of Photoelectron Diffraction Theory to Circular Dichroism and Spin-Polarized Photoelectron Emission", M.A. Van Hove, A.P. Kaduwela, H. Xiao, W. Schattke, and C.S. Fadley. Invited talk presented by M.A. Van Hove at the Eleventh International Conference on Vacuum Ultraviolet Radiation Physics, 28 August-1 September, 1995, Tokyo, Japan.
- (72) "Photoelectron Diffraction and Holography: Space, Spin, and Time Dependence of Surface Structures", C.S. Fadley. Invited talk presented at the Thirteenth International Vacuum Congress/Ninth International Conference on Solid Surfaces, 25-29 September, 1995, Yokohama, Japan.
- (73) "Studies of Magnetic Surfaces and Interfaces Using High-Resolution Photoelectron Diffraction in Combination with Other Techniques", C.S. Fadley. Invited talk presented at the 42nd National Symposium of the American Vacuum Society, 16-20 October, 1995, Minneapolis, Minnesota.
- (74) "Photoelectron Spectroscopy, Diffraction, and Holography", C.S. Fadley. 11 invited lectures at the International School on Synchrotron Radiation, International Centre for Theoretical Physics, 30 October-1 December, 1995, Trieste, Italy.
- (75) "Photoelectron Diffraction: Space, Time, and Spin Dependence of Surface Structures", C.S. Fadley, invited talk at the Winter Workshop on Electron Diffraction and Imaging, 3-6 January, 1996, Scottsdale, Arizona.
- (76) "Photoelectron Diffraction: New Dimensions in Space, Time, and Spin", C.S. Fadley. Invited talk at the Spring Meeting of the Materials Research Society, 17-21 April, 1996, San Francisco, California.
- (77) "Photoelectron Diffraction and Holography: The Next Generation", C.S. Fadley. Invited lecture at the 7th Symposium on Surface Physics, 31 June-4 July, 1996, Trest, Czech Republic.

- (78) "Photoelectron and X-Ray Diffraction and Holography: Some New Possibilities with Third-Generation Instrumentation", C.S. Fadley. Invited talk at the Annual Surface and Interface Symposium of the Northern California Chapter of the American Vacuum Society, 17 September, 1996, Stanford, California.
- (79) "Photoelectron Diffraction and Holography at the ALS: New Dimensions in Space, Time, and Spin", C.S. Fadley. Invited talk at the Advanced Light Source Users' Association Annual Meeting, 21-22 October, 1996, Berkeley, California.
- (80) "Surface, Interface, and Nanostructure Characterization with Photoelectron Diffraction and Photoelectron and X-ray Holography", C.S. Fadley. Invited talk at the Second International Symposium on Advanced Physical Fields, 19-21 February, 1997, Tsukuba, Japan.
- (81) "Materials and Surface Physics at the Advanced Light Source", C.S. Fadley. Invited talk as part of the All-University of California Physics Meeting, 4-5 April, 1997. Berkeley, California.
- (82) "Atomic and Magnetic Structures at Surfaces and Interfaces from Photoelectron Diffraction and Holography", C.S. Fadley. Invited presented at the Second Swedish Vacuum Society Meeting, 18-20 August, 1997, Linköping, Sweden.
- (83) "Surface and Interface Magnetism Studies Using Photoelectron Spectroscopy and Diffraction and Other Probes", C.S. Fadley. Invited talk at "Physics by the Bay" (a Bay Area Condensed Matter Meeting), 20 September, 1997, Berkeley, California.
- (84) "Photoelectron Diffraction: Experiment and Theory", C.S. Fadley. Invited talk at the ALS Workshop on Theory and Computation for Synchrotron Radiation Applications, 15-16 October, 1997.
- (85) "Atomic-Resolution Holography with Photoelectrons and Fluorescent X-Rays", P.M. Len and C.S. Fadley. Invited talk given by C.S.F. at the ALS Workshop on Theory and Computation for Synchrotron Radiation Applications, 15-16 October, 1997, Berkeley, California.
- (86) "Final-State Effects in Quantitative XPS Analysis: the Ion and the Photoelectron", C.S. Fadley. Invited talk at 44th National Symposium of the American Vacuum Society, 20-24 October, 1997, San Jose, California.
- (87) "Surface Science Using Synchrotron Radiation: Photoelectron Spectroscopy, Diffraction, and Holography", C.S. Fadley. 11 invited lectures given at the International School on Synchrotron Radiation, International Centre for Theoretical Physics, 3 November-5 December, 1997, Trieste, Italy.
- (88) "Characterization of Magnetic Surfaces, Interfaces, and Nanostructures with Photoelectrons and Soft X-Rays", C.S. Fadley. Invited talk presented at the Second Gordon Research Conference on Magnetic Nanostructures", 25-29 January, 1998, Ventura, California.
- (89) "Monitoring Thin-Film Growth with Core and Valence Photoemission: New Directions and Theory Issues", C.S. Fadley. Invited talk at the Crosscutting Workshop of the DARPA Virtual Integrated Prototyping Program, 27 April-2 May, 1998, Arlington, Virginia.
- (90) "Surface Science, Electron Spectroscopy, and Synchrotron Radiation", C.S. Fadley. 10 invited lectures at the University of Florence, 8-12 June, 1998, Florence, Italy.
- (91) "Surface, Interface, and Nanostructure Characterization Using Photoelectron Spectroscopy, Diffraction, and Holography", C.S. Fadley. Invited talk at the 9th CIMTEC - World Ceramics Congress and Forum on New Materials, 14-19 June, 1998, Florence, Italy.
- (92) "Some New Developments in Time-Resolved and Resonant Photoemission with a Third-Generation Source", C.S. Fadley. Invited talk at the Italian Synchrotron Radiation Society Meeting, 18-20 June, 1998, Padua, Italy.
- (93) "New Directions in Surface and Interface Science Using Photoelectron Diffraction and Holography with Third-Generation Synchrotron Radiation", C.S. Fadley. 10 invited lectures at the University of Padua, 22-26 June, 1998, Padua, Italy.

- (94) "Electron Spectroscopy: A View to the Future", C.S. Fadley. Invited keynote address at the Gordon Conference on Electron Spectroscopy, 26-31 July, 1998, Henniker, New Hampshire.
- (95) "Investigating Magnetic Materials with Soft X-rays at the Advanced Light Source", C.S. Fadley, invited lecture in a special session of the 43rd Annual Conference on Magnetism and Magnetic Materials entitled "Tutorial on National Facilities Open to the Magnetism Community", 9-12 November, 1998, Miami, Florida.
- (96) "Atoms Talking to One Another: Multi-Atom Resonant Photoemission as a New Materials Characterization Tool", J. Garcia de Abajo and C.S. Fadley. Invited talk given by J. Garcia de Abajo at the Golden Gate Materials and Welding Technologies Conference, 4-5 February, 1999, San Francisco, California.
- (97) "From Multiplet Splittings to Multi-Atom Resonant Photoemission", C.S. Fadley. Invited talk at the Symposium on Spectroscopy and the Structure of Matter (honoring Professor David A. Shirley on the occasion of his 65th birthday), Lawrence Berkeley National Laboratory, 28-29 March, 1999, Berkeley, California.
- (98) "Holography, Interatomic Resonance, and Other Interesting Things To Do in the Next Generation of X-ray Photoelectron (and X-ray Emission) Spectroscopy", C.S. Fadley. Invited talk at the International Workshop "XPS: From Physics to Data", sponsored by the International Union for Vacuum, Science, Technique, and Applications, 26-30 April, 1999, Hortobagy, Hungary.
- (99) "Characterization of Magnetic Surfaces, Interfaces, and Nanostructures with Soft X-rays and Photoelectrons", C.S. Fadley. Invited talk at the May 1999 Santa Clara Valley IEEE Magnetics Society Meeting, 11 May, 1999, Milpitas, California.
- (100) "Photoemission and Related Techniques: Solids, Surfaces, Molecules, and Atoms", C.S. Fadley. 11 invited lectures given at the International School on Synchrotron Radiation, International Centre for Theoretical Physics, 17-21 May, 1999, Trieste, Italy
- (101) "Multi-Atom Resonant Photoemission", C.S. Fadley. Invited talk at the the Twenty-Fourth International Conference on X-ray and Inner Shell Processes (X99), 23-27 August, 1999, Chicago, Illinois.
- (102) "Magnetism and Surface/Interface Studies at the Advanced Light Source: Some New Results and Techniques", C.S. Fadley. Invited talk at the UC Campus-Laboratory Collaboration Workshop on Novel Materials, 13-14 September, 1999, Livermore, California.
- (103) "Some Recent Developments and Theoretical Challenges in Core-Level Photoelectron Spectroscopy, Diffraction, and Holography, and X-ray Fluorescence Holography", C.S. Fadley. Invited talk at Synchrotron Radiation Research Theory Network (SRRTNET) Workshop, INFN National Laboratory, 23-25 September, 1999, Frascati, Italy, (This Workshop is a sequel to those held in 1997 in Berkeley and in 1998 at Argonne.)
- (104) "Multi-Atom Resonant Photoemission and Other Strange Things for the Future", C.S. Fadley. Invited talk at the 12th Annual Meeting of the Maxlab Organization for Users of Synchrotron Radiation, 27-28 September, 1999, Lund, Sweden.
- (105) "Next-Generation Core-Level Spectroscopy, Diffraction, and Holography: Pushing the Limits in Resonance; Energy-, Time-, and Spatial-Resolution; and Pressure", C.S. Fadley. Invited talk at the Symposium on Next Generation Spectroscopy and Chemical Surface Science, 29 September-1 October, 1999, Uppsala, Sweden.
- (106) "Photoemission: Multi-Atom Resonant Processes and Other Recent Developments", C.S. Fadley. Invited talk at the 2nd International Swiss Light Source Workshop on Synchrotron Radiation, Brunnen, Switzerland, 26-30 October, 1999.
- (107) "Low-Dimensional Systems Studied by Core-Level Photoemission and X-ray Emission: Some New Directions, C.S. Fadley. Invited talk at the International Workshop on the Physics of Low Dimensions (honoring Professor Hans Siegmann on his 65th birthday), Oaxaca, Mexico, 16-21 January, 2000.

- (108) "Probing Magnetic Surfaces and Interfaces with Novel Aspects of X-Ray Photoemission", C.S. Fadley. Invited talk at the L.M. Falicov Symposium in Condensed Matter Physics, Department of Physics, UC Berkeley, Berkeley, California, 25 March, 2000.
- (109) "Novel Soft X-ray Synchrotron Radiation Techniques", C.S. Fadley. Invited talk at the Workshop on New Probes of Complex Adaptive Matter, Institute for Complex Adaptive Matter, Los Alamos National Laboratory, Los Alamos, New Mexico, 1-3 May, 2000.
- (110) "Photoelectron and X-Ray Fluorescence Holography: Some Views on the Future", C.S. Fadley. Invited talk at the 26th IUVESTA Workshop--Surface Holography and Other Direct Methods, Hong Kong University, Hong Kong, China, 15-18 August, 2000
- (111) "Novel Effects in Core-Level Photoemission and X-Ray Emission: Circular Dichroism, Multi-Atom Resonance, and Standing-Wave Effects", C.S. Fadley. Invited talk in the Workshop "X-ray Gyrotropy and Synchrotron-Radiation-Based Chiroptical Spectroscopies", European Synchrotron Radiation Facility, Grenoble, 21-23 September, 2000.
- (112) "New Developments in Surface and Interface Analysis Using Photoelectron Spectroscopy: Time-Resolved Kinetics, Multi-Atom Resonance, and Standing Waves", C.S. Fadley. Invited talk at the Asia-Pacific Surface and Interface Analysis Conference (APSIAC-2000), Beijing, China, 23-26 October, 2000.
- (113) "Spectroscopy and Atomic Structure Determinations with Soft and Hard X-rays: Future Detector Needs", C.S. Fadley. DOE-sponsored "Workshop on Detectors for Synchrotron Radiation Research," Washington, DC, 30-31 October, 2000 (<http://xraysweb.lbl.gov/esg/meetings/detectorsync/index.html> and <http://www-esg.lbl.gov/Conferences%20&%20Meetings/detectorsync/wdsr.html>).
- (114) "Some New Directions in Surface, Interface, and Nanostructure Studies Using Synchrotron Radiation", C.S. Fadley. Invited talk in the International Symposium on the Science of Surfaces and Nanostructures, Singapore, 22-24 November, 2000.
- (115) "Surface and Interface Science Using Synchrotron Radiation: Photoelectron Spectroscopy, Diffraction, Holography, and Microscopy", C.S. Fadley. 9 tutorial lectures given in the International School on Synchrotron Radiation, International Centre for Theoretical Physics, 29 November-4 December 4, 2000, Trieste, Italy.
- (116) "New Methods for Studying Surface Reaction Kinetics, Compositional Heterogeneity, and Interface Properties with X-ray Photoelectron Spectroscopy", C.S. Fadley. Invited talk in the Symposium on Soft X-ray Spectroscopy: New Evaluation Methods for Functional Materials", held as part of The International Chemical Congress of Pacific Basin Societies (Pacifichem 2000), Honolulu, Hawaii, 14-19 December, 2000.
- (117) "Some New Directions in Surface, Interface, and Nanostructure Studies Using Synchrotron Radiation", C.S. Fadley. Invited talk at the Tenth Anniversary Symposium of the Korean Vacuum Society, Seoul, Korea, 22-23 February, 2001.
- (118) "Structure of Surfaces, Interfaces, and Materials from Photoelectron Spectroscopy, Diffraction, Holography, and Microscopy, and X-ray Fluorescence Holography", C.S. Fadley, 6 hours of invited lectures in the VIII Escuela Internacional de Ciencia de Materiales (8th International School on Materials Science), University of Havana, Havana, Cuba, 11-13 July, 2001.
- (119) "Core-Level Spectroscopy, Diffraction, and Holography: Some Recent Developments and Future Prospects", C.S. Fadley. Invited talk at the Thirteenth International Conference on Vacuum Ultraviolet Radiation Physics, Trieste, Italy, 23-27 July, 2001.
- (120) "New Analytical Methods Using Soft and Hard X-rays", C.S. Fadley. Invited talk presented at the International Congress on Analytical Sciences 2001, sponsored by the International Union for Pure and Applied Chemistry, Waseda University, Tokyo, Japan, 6-10 August, 2001. [On final program, but medical emergency in family forced cancellation of talk a day before leaving for Tokyo.]

- (121) "Studies of Magnetic Surfaces, Interfaces, and Materials by Photoelectron Spectroscopy, Diffraction, and Holography", C.S. Fadley. 7 hours of invited lectures in the Ecole d'Ete "Les Fondements Physiques de l'Electronique de Spin (Summer School "Physical Fundamentals of Spintronics"), organized by G. Lampel et al., Cargese, Corsica, France, 10-14 September, 2001, including a day that changed the world.
- (122) "Probing Nanostructures with Photoemission, X-ray Emission, and X-ray Scattering", C.S. Fadley. Invited talk in the Combined Workshops on "Future Directions in Soft X-ray Molecular Environmental Science" and "Theory, Computation, and Synchrotron Radiation Experiments" held as part of the Advanced Light Source Users Meeting, Berkeley, California, 15-17 October, 2001.
- (123) "Future Detector Needs for Photoelectron Spectroscopy, Diffraction and Holography, X-ray Fluorescence Holography, and Soft X-ray Absorption/Emission", C.S. Fadley. Invited talk in the Workshop on "Advanced Detectors for Synchrotron Radiation Experiments" held as part of the Advanced Light Source Users Meeting, Berkeley, California, 15-17 October, 2001.
- (124) "Probing Buried Magnetic Interfaces Using Photoemission Excited by Soft X-ray Standing Waves", C.S. Fadley. Invited talk at the International Workshop on X-ray Spectroscopies of Magnetic Solids (XRMS-2001), Max-Planck Institut für Mikrostrukturphysik, Halle, Germany, 8-9 December, 2001.
- (125) "Surface and Interface Science Using Synchrotron Radiation: Photoelectron Spectroscopy, Diffraction, Holography, and Microscopy", C.S. Fadley. 8 tutorial lectures in the International School on Synchrotron Radiation, International Centre for Theoretical Physics, 20-24 May, 2002, Trieste, Italy.
- (126) "Spectroscopic Probing of Surfaces, Interfaces, and Nanostructures with X-ray Standing Waves, Resonant Effects, and Holography", C.S. Fadley, invited talk at the 19th International Conference on X-ray and Inner-Shell Processes (X02), 24-28 June, 2002, Rome, Italy.
- (127) "Holographic Imaging of Local Atomic Structure: Where Is It and Where Can It Go?", C.S. Fadley, invited talk in the Workshop "X-ray Imaging and Spectro-microscopy: the Present and the Future", held as part of the Stanford Synchrotron Radiation Laboratory 29th Users Meeting, 7-9 October, 2002, Palo Alto, California.
- (128) "Holographic Imaging of Local Atomic Structure: Where Is It and Where Can It Go?", and "X-Ray Optics and Standing Waves in Soft X-Ray Spectroscopy: Studying Surfaces, Buried Interfaces, Nanostructures", C.S. Fadley. Two invited tutorial lectures in the ALS Colloquium Series, 22 May and 5 June, 2003, Berkeley, California.
- (129) "Observation of a High-Temperature Electronic Phase in the Colossal Magnetoresistive Oxides $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$: Evidence for Phase Separation", N. Mannella and C.S. Fadley, invited talk given by N. Mannella (then a Ph.D. student) in an Advanced Light Source Workshop "Phase Competition in Transition-Metal Oxides and Other Compounds", organized by E. Dagatto, D.-H. Lee, and J. Mitchell, 14-16 May, 2003, Berkeley, California.
- (130) "X-ray Optics, Standing Waves, and Some Future Directions in Spectroscopy and Microscopy", C.S. Fadley, invited talk at the Ninth International Conference on Electron Spectroscopy and Related Phenomena (ICESS9), Uppsala, Sweden, 4 July, 2003.
- (131) "Holographic Imaging of Local Atomic Structure: Where Is It and Where Can It Go?", C.S. Fadley, invited Colloquium at the European Synchrotron Radiation Facility, Grenoble, France, 10 September, 2003.
- (132) "X-ray Photoelectron Spectroscopy and Diffraction in the 5-10 keV Range: Fundamental Considerations", C.S. Fadley, invited talk in the International Workshop on Hard X-ray Photoelectron Spectroscopy, European Synchrotron Radiation Facility, Grenoble, France, 11-12 September, 2003.
- (133) "Holographic Imaging of Local Atomic Structure: Recent Developments and Future Prospects", C.S. Fadley, invited talk in the Fourth International Symposium on Atomic Level Characterization for New Materials and Devices (ALC'03), Kauai, Hawaii, 5-10 October, 2003.

- (134) "Novel x-ray based methods for determining local atomic structure and characterizing buried interfaces", C.S. Fadley, invited talk presented at the 7th International Conference on Atomically Controlled Surfaces, Interfaces and Nanostructures (ACSIN7), Nara, Japan, 16-20 November, 2003.
- (135) "Surface Science, Synchrotron Radiation, and Photoemission", C.S. Fadley, 12 invited lectures at the Third National School on Synchrotron Radiation, Korat, Thailand, 2-5 February, 2004.
- (136) "Surface Science, Photoemission and Related Techniques", C.S. Fadley, 20 hours of invited lectures and 6 hours of computer tutorial supervision in the International Center for Theoretical Physics School on Synchrotron Radiation and Applications, Trieste, Italy, 4-8 May, 2004.
- (137) "Synchrotron Radiation Spectroscopy of Colossal Magnetoresistive Oxides and Buried Magnetic Interfaces—Some Recent Results and Some New Directions Relevant to the APS (0.5-10 keV)", C.S. Fadley, invited talk in the Advanced Photon Source Planning Workshop "Nanomagnetism Studies Using X-ray Techniques", Lake Geneva, Wisconsin, 29 August-1 September, 2004.
- (138) "Some New Directions in Surface and Interface Science with Soft and Hard X-Rays", C.S. Fadley, invited talk in the Workshop on Surface and Interface Science at the ESRF, Grenoble, France, 30 September-1 October, 2004.
- (139) "Surface and Buried Interface Studies with the Synchrotron Radiation Spectroscopies: Some New Directions", C. S. Fadley, invited talk presented at the 10th Symposium on Surface Physics, Prague, Czech Republic, 10-14 July, 2005.
- (140) "Diffraction, Holography, and Standing Wave Effects with Photoelectrons and X-Rays", C.S. Fadley, invited lecture in the 12th International Summer School "Nicolás Cabrera" on "Synchrotron Light as a Powerful Tool for Materials Analysis", Miraflores de la Sierra (Madrid), Spain, 19-23 September, 2005.
- (141) "Surface and Buried Interface Characterization with Photoelectron Spectroscopy and X-ray Spectroscopy", C.S. Fadley, plenary talk presented at the 11th European Conference on Applications of Surface and Interface Analysis, Vienna, Austria, 25-30 September, 2005.
- (142) "Probing buried solid-solid and solid-liquid interfaces with standing-wave-excited soft x-ray emission and resonant inelastic scattering", C.S. Fadley, invited talk in the Workshop on Soft-X-Ray Photon-In and Photon-Out Spectroscopy: New Frontiers, ALS Users Meeting, Berkeley, CA, 20-22 October, 2005.
- (143) "Studies of Magnetic Materials and Nanostructures using Synchrotron Radiation Spectroscopy, Diffraction, and Holography", C.S. Fadley, invited Welch Award talk given at the AVS 52nd International Symposium, Boston, Massachusetts, 30 October-4 November, 2005.
- (144) "Einstein's Double Life: Light, the Photon, and Other Remarkable & Perplexing Things", public lecture as part of the Year of Physics, UC Davis, 28 November, 2005. (Video at: <http://www.physics.ucdavis.edu/WYOPLectures.htm>)
- (145) "Characterization of Nanoscale Structures with Synchrotron Radiation Spectroscopies", C.S. Fadley, plenary talk at the 5th International Symposium on Atomic-Level Characterizations for New Materials and Devices (ALC ,05), Keauhou, Hawaii, 4-9 December, 2005.
- (146) "X-ray photoelectron spectroscopy and diffraction in the hard X-ray regime," C.S. Fadley, invited talk given at the March Meeting of the American Physical Society, Baltimore, Maryland, 13-17 March, 2005.
- (147) "Surface, Interface, and Materials Science Using Synchrotron Radiation: Photoelectron Spectroscopy, Diffraction, and Holography", C.S. Fadley. 10 hours of lectures and 6 hours of tutorial and problem solving sessions in the Fuggle-Fonda School on Synchrotron

Radiation and Applications, International Centre for Theoretical Physics, 18-22 May, 2006, Trieste, Italy.

- (148) "Hard X-Ray Photoelectron Spectroscopy: Recent Development and Future Directions", C.S. Fadley, invited talk in the Second International Workshop on Hard X-ray Photoelectron Spectroscopy, 19-20 September, 2006, SPring8, Hyogo, Japan.
- (149) "X-ray photoelectron spectroscopy and diffraction in the hard X-ray regime: an overview", C.S. Fadley, invited talk at the Fall Meeting of the Physical Society of Japan, 23-26 September, 2006, Chiba, Japan.
- (150) "Photoelectron Spectroscopy, Diffraction, and Holography", C.S. Fadley, 2 invited lectures at the First 1st International Summer School of the Mainz-MATCOR Graduate School of Excellence, 25-30 September, 2006, University of Mainz, Mainz, Germany.

2007:

- (151) "Core- and Valence-Level Photoemission", C.S. Fadley, 2 invited lectures in the 38th Spring School of the Institute for Solid State Physics—"Probing the Nanoworld: Microscopies, Scattering, and Spectroscopies of the Solid State", Jülich Research Center, Jülich, Germany, March 12-23, 2007.
- (152) "Angle-resolved XPS, Hard X-ray and Standing-Wave Photoemission: Basic Concepts and Future Applications", C.S. Fadley, invited talk at the 47th IUVESTA Workshop--Angle-Resolved XPS: The Current Status and Future Prospects for Angle-Resolved XPS of Nano and Subnano Films, Riviera Maya, Mexico, March 26-30, 2007.
- (153) "Atomic-Level Characterization of Materials with Core and Valence Photoemission", invited lecture at the 6th International Symposium on Atomic Level Characterizations for New Materials and Devices (ALC '07), Kanazawa, Japan, October 28-November 2, 2007.
- (154) "Probing Multilayer Spintronic Structures with Photoelectron and X-Ray Emission Spectroscopies Excited by Soft X-Ray Standing Waves", C.S. Fadley, invited talk at the 52nd Magnetism and Magnetic Materials Conference, Tampa, Florida, November 5-9, 2007.

2008:

- (155) "Introduction to Surface and Interface Science; Photoelectron Spectroscopy, Diffraction, and Holography; and Related Techniques", 12 hours of invited lectures at the Advanced School on Synchrotron Radiation and Free Electron Laser Sources, and their Multidisciplinary Applications, International Center for Theoretical Physics, Trieste, Italy, April 16-18, 2008.
- (156) "Electron Spectroscopy in Berkeley: Past, Present, and Future", C.S. Fadley, invited talk in the inauguration ceremony for an exhibition honoring Nobel Laureate Kai Siegbahn's scientific contributions, Ångström Laboratory, Uppsala University, Uppsala, Sweden, April 23, 2008.
- (157) "Turning the Argument Around: Resonant Inelastic X-Ray Scattering with Sub-Nanometer Depth Resolution", invited keynote lecture in the Resonant Inelastic Scattering Workshop 2008 (RIXS08), Ångström Laboratory, Uppsala University, Uppsala, Sweden, June 13-14, 2008.
- (158) "Looking deeper: hard x-ray and standing-wave photoemission", invited talk in the 21st International Conference on X-ray and Inner-Shell Processes, June 22-27, 2008, Paris, France.
- (159) "Looking beneath the surface with standing wave and hard x-ray photoemission", C.S. Fadley, invited talk in the 11th Symposium on Surface Physics, Prague, Czech Republic, June 30-July 4, 2008.
- (160) "Looking beneath the surface: electron spectroscopy with x-ray standing waves and hard x-rays", invited talk in the 55th AVS International Symposium and Exhibition, Boston, Massachusetts, October 19-24, 2008.

- (161) "Novel detection and measurement methods in photoelectron spectroscopy: standing waves, hard x-rays, and time resolution", C.S. Fadley, invited talk in the 4th Vacuum and Surface Sciences Conference of Asia and Australia, Matsue, Japan, October 28-31, 2008.

2009:

- (162) "Novel surface and interface probes using photoelectron spectroscopy: standing waves and hard x-rays" as invited talk and "Surface and Interface Characterization with Core and Valence Photoemission" as tutorial lecture, C.S. Fadley, in the 2nd International Conference on Physics at Surfaces and Interfaces, Puri, Orissa, India, 23-27 February, 2009.
- (163) "Hard X-Ray Photoemission: Where are we and what does the future hold?", C.S. Fadley, invited talk in the International Workshop for New Opportunities in Hard X-ray Photoelectron Spectroscopy", NSLS, Brookhaven, 20-22 May, 2009.
- (164) "Photoemission studies with next generation synchrotron radiation sources", C.S. Fadley, plenary talk in the Second Planning Workshop for the Scientific Case of LCLS-2, Campinas, Brazil, 27-28 August, 2009.
- (165) "Photoelectron spectroscopy: new instrumentation, new tricks, new science", invited talk at the ceremony for the first awarding of the Siegbahn Prize of Nuclear Instruments and Methods A, Uppsala, Sweden, 2 October, 2009.
- (166) "Hard x-ray photoemission: recent progress and some future directions", C.S. Fadley, invited talk at the 11th International Conference on Electronic Spectroscopy and Structure, Nara, Japan, 6-10 October, 2009.
- (167) "Probing bulk properties and buried interfaces with standing wave-excited and hard x-ray photoemission", C.S. Fadley, invited talk in the International Workshop on Electronic Spectroscopy for Gas-phase Molecules and Solid Surfaces (IWES2009), Matsushima (Sendai), Japan, 12-15 October, 2009.
- (168) "Looking at buried layers and interfaces: photoelectron spectroscopy with x-ray standing waves and hard x-rays", C. S. Fadley, invited talk in the 13th European Conference on Applications of Surface and Interface Analysis (ECASIA'09), Antalya, Turkey, 18-23 October, 2009.
- (169) "Digging Deeper: Characterization of Buried Layers and Interfaces with Standing Wave- and Hard X-Ray- Photoemission", C.S. Fadley, invited talk given in the 7th International Symposium on Atomic Level Characterizations for New Materials and Devices (ALC'09), Maui, Hawaii, 6-11 December, 2009.

2010:

- (170) "Hard x-ray photoemission with standing-wave excitation and angular resolution", C.S. Fadley, invited talk presented at the Soleil User Meeting, Satellite Workshop on Hard X-Ray Photoelectron Spectroscopy, Gif-sur-Yvette, France, 18-19 January, 2010.
- (171) "Some new directions in photoemission studies of surfaces, interfaces and complex materials: hard x-rays, standing waves, and high pressure", C.S. Fadley, two hours of invited lectures in the International Workshop and Winter School: Photoemission, Dijon, France, 21-27 February, 2010.
- (172) "Synchrotron Radiation Photoemission Studies of Surfaces, Interfaces, and Complex Materials", C.S. Fadley, 8 hours of invited lectures and 4 hours of computer exercise supervision at the Advanced School on Synchrotron Radiation and Free Electron Laser Sources, and their Multidisciplinary Applications, International Center for Theoretical Physics, Trieste, Italy, 26 April-7 May, 2010.
- (173) "Adding depth resolution to soft x-ray photoelectron microscopy with standing-wave excitation: applications to spintronic nanostructures...and other things", C.S. Fadley, invited talk in the workshop Advanced Soft X-Ray Microscopy for Nanomaterials Sciences, at the Advanced Light Source Users Meeting, Berkeley, CA, 14 October, 2010.

- (174) “Understanding and Exploiting Core-Level Spin Polarization in 3rd and 4th Generation Experiments”, C.S. Fadley, invited talk in the workshop Spin-Resolved Photoemission, at the Advanced Light Source Users Meeting, Berkeley, CA, 15 October, 2010.

2011:

- (175) “Digging Deeper: Looking Below the Surface to Buried Layers and Interfaces with Hard X-ray and Standing Wave Photoemission”, C.S. Fadley, invited talk in the symposium Analytical Chemistry/Characterization at the Interfaces, as part of Pittcon 2011—The major annual conference and exposition for laboratory science, Atlanta, Georgia, 13-18 March, 2011.
- (176) “Disecting complex oxide heterostructures with standing-wave and hard x-ray photoemission“, C.S. Fadley, invited talk in the 2011 Villa Conference on Complex Oxide Heterostructures (VCOOH), Las Vegas, NV, 21-25 April, 2011.
- (177) “Probing buried magnetic layers and interfaces with standing-wave and hard x-ray photoemission”, C.S. Fadley, invited talk in the IEEE International Magnetic Conference—Intermag 2011, Taipei, Taiwan, 25-29 April, 2011.
- (178) “Surface Physics and Photoelectron Spectroscopy”, C.S. Fadley, invited talk in ALC ’11—The 8th International Symposium on Atomic Level Characterizations for New Materials and Devices, Seoul, Korea, 22-27 May, 2011.
- (179) “Electronic structure of complex materials and nanostructures from core and valence photoemission with standing-wave and hard x-ray excitation“, C.S. Fadley, three hours of invited lectures in the Summer School on Complex Oxides and Strongly Correlated Materials, Venice, Italy, 29 May-4 June, 2011.
- (180) “Basic Concepts and New directions in Photoelectron Spectroscopy”, C.S. Fadley, 12 hours of invited lectures at the University of Rome Three, Rome, Italy, 20 June-1 July, 2011.
- (181) “Probing buried oxide layers and interfaces with standing-wave and soft and hard x-ray photoemission”, C.S. Fadley, invited talk at the *Workshop on Oxide Interfaces*, IBM Almaden Laboratory, San Jose, California, 29-30 August, 2011.
- (182) “Hard x-ray photoemission: current status and future prospects”, C.S. Fadley, plenary lecture and concluding remarks at the International Workshop on Hard X-ray Photoemission (HAXPES 2011), Hasyllab, Hamburg, Germany, 14-16 September, 2011.
- (183) “Soft and Hard X-Ray Photoemission: Some New Directions”, C.S. Fadley, keynote talk given at the Helmholtz Zentrum Berlin/BESSY, Annual Users Meeting, Berlin, Germany, 30 November-2 December, 2011

2012:

- (184) “Hard x-ray photoemission: the present and the future”, C.S. Fadley, keynote talk given at the *Workshop on Hard X-ray Photoelectron Spectroscopy and Standing Waves : Status and Trends* held as part of the 2011 ESRF Users Meeting, Grenoble, France, 6-9 February, 2012.
- (185) “Synchrotron Radiation Photoemission Studies of Surfaces, Interfaces, and Complex Materials”, C.S. Fadley, 3 hours of invited lectures and 3 hours of computer exercise supervision at the *School on Synchrotron Radiation and FEL Based Methods and their Multi-Disciplinary Applications*, International Center for Theoretical Physics, Trieste, Italy, 26-28 March, 2012.
- (186) “Studies of spintronic materials and multilayer structures with soft and hard x-ray photoemission including standing-wave excitation”, C.S. Fadley, invited talk in *Symposium LL on New Trends and Developments in Nanomagnetism* at the Materials Research Society Spring Meeting, San Francisco, 9-13 April, 2012.
- (187) “Photoemission with hard x-rays and standing waves: some new possibilities”, C.S. Fadley, invited lecture in the *11th International School and Symposium on Synchrotron Radiation in Natural Science* in Kraków-Tyniec, Poland, 20-25 May, 2012.

- (188) “Probing Bulk Materials and Buried Layers and Interfaces with Hard-X-Ray and Standing-Wave Photoemission”, C.S. Fadley, invited talk in the combined *Surface Analysis '12 and Pacific Northwest AVS Chapter Joint Symposium*, Pacific Northwest National Laboratory, Richland, WA, 19-22 June, 2012.
- (189) “The electronic structure of oxide interfaces from soft and hard x-ray photoemission with standing-wave excitation”, C.S. Fadley, invited talk in the *ARO Workshop on Future Directions for Emergent Discoveries at Oxide Interfaces by Design*, Newport, Rhode Island, 9-10 July, 2012.
- (190) “Soft- and hard- x-ray ARPES and XPS at the Next Generation Light Source”, C.S. Fadley, invited presentation at the *NGLS Workshop on Quantum Materials, Magnetism & Spin Dynamics*, Berkeley, California, 27-28 August, 2012.
- (191) “Looking into magnetic materials with hard x-ray and standing-wave photoemission”, C.S. Fadley, invited talk in the *Workshop on Magnetic Order in Nanostructures and Spectroscopy*, University of Rome Three, Rome, Italy, 13–15 September, 2012.

2013:

- (192) “Hard x-ray photoemission with the x-ray free electron laser oscillator”, C.S. Fadley, invited talk at the *Workshop on Science Outlook and R&D Issues for an X-ray Free Electron Laser Oscillator*, Pohang, Korea, 14-15 February, 2013.
- (193) “Soft and hard x-ray photoemission studies of spintronic multilayer structures”, C.S. Fadley, V. V. Nemoshkalenko *Memorial Conference and Workshop: Electronic Structure and Electron Spectroscopies*, Institute of Metal Physics, Kyiv, Ukraine, 20-23 May 20-23, 2013.
- (194) “Soft and hard x-ray photoemission as novel probes of complex materials and buried interfaces”, C.S. Fadley, invited talk in the *Symposium on Photoemission of the 96th Canadian Chemistry Conference and Exhibition* in Québec City, Québec, Canada, 26-30 May, 2013.
- (195) “Characterization of Nanostructures with Hard X-Ray Photoemission”, C.S. Fadley, International Union of Vacuum Science and Technology *Workshop on Characterisation of Nanostructures by means of Electron Beam Techniques*, Castle Hertenstein (Vienna), 24-28 June 2013.
- (196) “Some future directions in photoemission: standing waves, hard x-rays, and time resolution”, C.S. Fadley, invited talk at the *38th International Conference on Vacuum Ultraviolet and X-Ray Physics (VUVX 2013)*, 12-18 July, 2013, Hefei, China
- (197) “Some future experimental and theoretical directions with soft and hard x-ray photoemission”, C.S. Fadley, invited talk in the *Workshop on Electronic Excitations and Photoelectron Spectroscopy: Bridging Theory and Experiment*, Oxford, UK, 23-24 July, 2013.
- (198) “Hard x-ray photoemission: Past, Present, and Future”, C.S. Fadley, invited talk in the *Symposium Celebrating the 70th Birthday of Ingolf Lindau*, Stanford University, 16 August, 2013.
- (199) “Hard x-ray photoemission: where is it and where is it going?”, C.S. Fadley, invited talk at the *20th Anniversary Users Meeting of the National Synchrotron Radiation Research Center*, Taipei, Taiwan, 5 September, 2013.
- (200) “Looking beneath the surface at buried layers and interfaces with standing-wave and hard x-ray photoemission”, C.S. Fadley, invited keynote lecture at the *19th International Vacuum Congress*, Paris, France, 9-13 September, 2013.
- (201) “Atomic-level characterization of buried interfaces and layers with hard x-ray and standing-wave photoemission”, C.S. Fadley, invited talk in the *9th International Symposium on Atomic Level Characterizations for New Materials and Devices '13 (ALC '13)*, Kailua, Kona, Hawaii, 2-6 December, 2013.

2014:

- (202) “Looking into multilayer energy-related devices with standing-wave and hard x-ray photoemission”, C.S. Fadley, invited talk in the *Workshop “From Sunlight to Fuels – Novel Materials and Processes for Photovoltaic and (Photo)Catalytic Applications”* in the session *New Methods in Spectroscopy*, Bad Honneff, Germany, 11-14 May, 2014.
- (203) “Probing the Electronic and Magnetic Properties of Bulk Materials, Buried Layers and Interfaces with Standing-Wave and Hard-X-Ray Photoemission”, invited lecture in the *12th International School and Symposium on Synchrotron Radiation in Natural Science (ISSRNS 2014)*, Warsaw, Poland, 15-20 June, 2014.
- (204) “Advances in photoemission for the study of complex materials and nanostructures”, C.S. Fadley, invited keynote lecture in the *Annual Scientific Meeting of the Centre de Compétence en Nanosciences et Nanotechnologies de la région Provence-Alpes-Cote d’Azur*, Porquerolles Island, France, 23-25 June, 2014.
- (205) “Hard x-ray photoemission: Some future perspectives”, invited talk in the *DESY HXPES User Workshop - PETRA III Extension, Beamline P22*, Hamburg, Germany, 3 July, 2014.
- (206) “X-ray photoemission: from the Field Free Laboratory to Free-Electron Lasers”, invited talk in the *International Symposium “From Classical Physical Chemistry to Accelerator-Based Light Sources”* in honor of Professor David A. Shirley, 4 July, 2014.
- (207) “Looking below the surface with photoemission: standing waves and hard x-rays”, C.S. Fadley, invited talk in the *30th European Conference on Surface Science (ECOSS-30)*, Antalya, Turkey, 31 August-5 September, 2014.
- (208) “Application of soft- and hard- x-ray photoemission spectroscopy to the study of strongly-correlated-electron materials”, C.S. Fadley, two invited lectures of 90 minutes each in the *International Summer School on “Ultraviolet and X-ray spectroscopies for fundamental studies of correlated electron systems”*, Centre de Physique des Houches, Chamonix, French Alps, 1-12 September, 2014..
- (209) “Probing Complex Bulk Materials, Buried Layers and Interfaces with Soft/Hard X-Ray-, Standing Wave- and Resonant- Photoemission”, C.S. Fadley, invited David A. Shirley Award talk in the *Advanced Light Source User Meeting*, Berkeley, California, 7 October, 2014.
- (210) “Standing-wave ambient pressure photoemission: looking at solid/vapor, solid/liquid and solid/solid interfaces on the sub-nm scale”, C.S. Fadley, invited talk in the *Workshop on Chemistry at the Advanced Light Source*, as part of the *Advanced Light Source User Meeting*, Berkeley, California, 8 October, 2014.
- (211) “Advanced photoemission techniques for complex and correlated materials”, invited talk in the *Journée Scientifique, “Systèmes Quantiques Elementaires et Corrélés”*, Université de Paris-Sud, Orsay, France, 17 October, 2014.
- (212) “Looking into buried interfaces with soft/hard x-ray photoemission and standing-wave excitation”, C.S. Fadley, invited talk in the session “Synchrotron studies of processes in energy conversion, electronic devices and others materials” of the Focus Topic “*Novel trends in synchrotron & FEL-based Analysis*”, *61st Annual AVS International Symposium and Exhibition*, Baltimore, Maryland, USA, 9-14 November 2014.
- (213) “Revealing interfaces and buried layers in multilayer structures with hard x-ray and standing-wave photoemission”, *Pacific Rim Symposium on Surfaces, Coatings & Interfaces (PacSurf)*, Kona, Big Island, Hawaii 7-11 December, 2014

2015:

- (214) “Photoelectron microscopy with depth and angular resolution”, invited talk in a workshop sponsored by the *LBNL-Daegu Gyeongbuk Institute of Science and Technology Joint Institute for Microscopy (LDJIM)*, Berkeley, California, 6 February, 2015

- (215) “Momentum-resolved electronic structure at buried oxide interfaces from soft x-ray standing-wave angle-resolved photoemission”, C.S. Fadley, invited talk in Focus Session DMP 13.1.4--*Oxide Heterostructures, APS March Meeting, San Antonio, Texas, 2-6 March, 2015.*
- (216) “Hard X-Ray Photoemission: The Future”, C.S. Fadley, plenary talk in the workshop *Photon and fast-ion induced processes in atoms, molecules and nanostructures*, Debrecen, Hungary, 24-26 March, 2015.
- (217) “Hard x-ray photoemission: future directions with angular resolution, standing-wave excitation, and resonant phenomena”, C.S. Fadley, plenary talk in the *International Conference on Hard X-Ray Photoemission (HAXPES 2015)*, National Synchrotron Radiation Research Center (NSRRC), Hsinchu, Taiwan, 30 March to 4 April 4, 2015.
- (218) “Looking into oxide interfaces with x-ray optical effects in soft and hard x-ray photoemission”, C.S. Fadley, invited talk in *Workshop on Transition Metal Oxides, Superconductivity and Interfaces*, *Diamond Light Source Users Meeting*, Didcot, UK, 2-3 September, 2015.
- (219) “Application of standing-wave and soft/hard x-ray photoemission to complex materials and nanostructures”, C.S. Fadley, invited talk in the *International Conference on Electronic Spectroscopy and Structure (ICESS-15)*, Stony Brook University, Long Island, New York, 28 September-2 October, 2015.
- (220) “Making x-ray optics work in the study of buried solid/liquid and solid/solid interfaces”, invited science highlight address in the *Advanced Light Source Users Meeting*, Berkeley, California, 5-7 October, 2015.
- (221) “Looking into complex quantum materials and multilayer heterostructures with holographic, standing-wave, and resonant photoemission“, C.S. Fadley, invited talk in the *Tenth Atomic-Level Characterization Symposium (ALC '15)*, Matsue, Shimane, Japan, 25-30 October 25, 2015.
- (222) “Advanced photoemission techniques for the study of complex materials and heterostructures”, invited talk in *Symposium DDD: Lighting the Path Towards Non-Equilibrium Structure-Property Relationships in Complex Materials, in the 2015 MRS Fall Meeting*, Boston, Massachusetts, 29 November to 4 December, 2015.
- (223) “Synergies between AMO physics and materials science: a tribute to Dennis Lindle” in *Symposium 303: Advanced Analytical Applications and Technical Developments of Soft X-Ray Spectroscopy, in the Pacificchem 2015 Conference*, Honolulu, Hawaii, 15-20 December, 2015.

2016:

- (224) “Fundamentals and New Directions in Photoelectron Spectroscopy”, invited fifteen-hour short-course at the Department of Physics, Federal University of Paraná, Curitiba, Brazil, 4-8 April, 2016.
- (225) “Photoelectron spectroscopy: The photoelectric effect revisited as a diverse probe of matter“, invited lecture at the *Sociedad Científica Argentina*, Buenos Aires, Argentina, 18 April 2016.
- (226) "Using soft- and hard- x-ray electron spectroscopy to look into Nature's buried secrets", C.S. Fadley, invited talk in the conference *“The Future of X-Ray and Electron Spectroscopies”*, Uppsala University, 15-17 June, 2016.
- (227) “Looking Into Complex Quantum Materials and Multilayer Heterostructures with Holographic-, Standing Wave-, and Resonant- Photoemission“, C.S. Fadley, invited talk in the *Workshop on Three-Dimensional Imaging of Local Atomic and Electronic Structure of Functionally Active Sites*, a satellite conference of VUVX-2016, Zurich, Switzerland, 1 July, 2016.

- (228) “Depth-resolved photoemission from buried layers and interfaces: successes of and challenges for theory”, C.S. Fadley, invited talk at the *Workshop on the Occasion of the 75th Birthday of Rino Natoli*, Institute of Physics, CNRS, Rennes, France, 2 July, 2016.
- (229) “Probing Surface-, Interface-, and Bulk- Properties with Hard X-Ray-, Standing-Wave-, Total Reflection- and Resonant- Photoemission”, C.S. Fadley, invited talk in the 20th International Vacuum Congress, 21-26 August, 2016, Busan, Korea.
- (230) “Looking into complex materials and buried interfaces with soft & hard x-ray photoemission: standing waves and total reflection”, ALS User Meeting, Workshop on Combining X-ray Spectroscopy and Diffraction, Advanced Light Source Users Meeting, Berkeley, California, 5 October, 2016
- (231) “The Energy Materials In-Situ Laboratory (EMIL)”, keynote talk at the inauguration of the EMIL facility at BESSY II, Berlin, Germany, 31 October, 2016.
- (232) “Soft- and Hard- X-Ray Photoemission: Past, Present, and Future”, invited talk at the *63rd Annual AVS International Symposium and Exhibition, Session on Frontiers of photoemission with synchrotron and XFEL radiation*, Nashville, Tennessee, 6-11 November, 2016.

2017:

- (233) “The present and future of photoemission spectroscopy”, C.S. Fadley, invited talk in the RACIRI 2017 Summer School, Advanced Materials Design at X-Ray and Neutron Facilities, co-sponsored by the Swedish-German Röntgen-Angström Cluster (RAC) and the German-Russian Ioffe-Röntgen Institute (IRI), Ronneby and Lund, Sweden, 19-26 August, 2017.
- (234) “Looking Into Complex Quantum Materials and Multilayer Heterostructures with Standing Wave-, Holographic- and Resonant- Photoemission, C.S. Fadley, invited talk in the International Symposium on Atomic Level Characterizations for New Materials and Devices (ALC '17), Kauai, Hawaii, 3-8 December, 2017.

2018:

- (235) “Studying quantum materials and their heterostructures with soft- and hard- x-ray photoemission and ARPES and standing-waves”, C.S. Fadley, invited talk in the Advanced Light Source Quantum Materials Cross-Cutting Review, Berkeley, 30-31 January, 2018.
- (236) “Looking into materials in new ways with photoemission “, invited session in *Students Lunch with the Experts*, Materials Physics Program, C.S. Fadley, APS March Meeting, Los Angeles, 6 March, 2018.
- (237) “New directions in materials characterization with hard x-ray photoemission”, J.P. Rueff and C.S. Fadley, invited talk in the 14th International Ceramic Congress, Symposium CK-8 Functional Magnetic Oxides- Novel synthesis and characterization techniques, Perugia, Italy, 4-14 June, 2018.
- (238) “Probing the new frontier in surface science with x-ray standing wave photoemission: the buried interface”, C.S. Fadley, invited talk in the 84th IUVSTA Workshop “Surface Micro-Spectroscopy and Spectro-Microscopy of Electrical Phenomena: Advanced Methodologies for Nano-Characterization of Electronic Surface Phenomena, Weizmann Institute, Rehovot, Israel, 2-5 September, 2018-cancelled due to illness.
- (239) “Looking into complex materials and buried interfaces with photoemission: standing waves and hard x-rays, invited talk in the 36th Israel Vacuum Society Conference (IVS), Surface Spectroscopy Session, Ramat Gan, Israel, 6 September, 2018-cancelled due to illness.

(240) "Making use of resonance, standing waves, and soft/hard x-rays in advanced photoemission and RIXS experiments", S. Nemsak, C.S. Fadley, invited talk in Trends in Advanced Spectroscopy in Materials Science (TASPEC-- <http://www.hsrc.hiroshima-u.ac.jp/TASPEC/speakers.htm>), Hiroshima University, Japan, 4-6 October, 2018. Talk given by Slavomir Nemsak.

(241) "Probing buried interfaces with standing-wave soft- and hard- x-ray photoemission and RIXS", A. X. Grey, C.S. Fadley, invited talk in the 14th International Conference on Electronic Spectroscopy and Structure (<http://www.ices2018.org/speakers.php>), Shanghai, 8-12 October, 2018. Talk given by Alex Grey.

2019:

(242) "Hard x-ray photoelectron spectroscopy: an overview and future outlook", Honorary talk in the Eighth International Conference on Hard X-Ray Photoemission, to be held, at University of Paris Jussieu, Paris, 2-5 June, 2019.

(243) "Photoemission", invited tutorial lecture as part of the Advanced Light Source User Meeting, Berkeley, California, October 1–3, 2019.

Publications:

332 scientific papers, as listed here, have been published or will appear, including 48 invited book chapters or review articles (indicated by the prefix "**R**" in the list below), with 66 publications over the ten-year period 2009-2018. As some measures of impact, over 1967-present, the *Web of Science* shows 338 publications that have been cited over 12,400 times, with the present annual citation rate being about 515 per year, and an average citation rate per paper of 36. The resulting *h index* is 57. *Google Scholar* shows over 16,700 citations, an annual rate of about 750, and an *h-index* of 66.

As other measures of impact, in 2016, of the over 6800 papers in the *Journal of Electron Spectroscopy and Related Phenomena*, publication (21) is the 12th most cited, publication (60) ranks 15th, publication (106) ranks 68th, publication (123) ranks 74th, and publication (22) ranks 123rd. A more recent review in *JESRP* in May, 2010, publication (279), was downloaded over 2700 times in the first 28 months after its appearance, and is already ranked 131st. Another recent review in *Surface and Interface Analysis*, publication (270) was downloaded about 400 times during its first three years after publication. One very often cited review chapter "Basic Concepts of X-Ray Photoelectron Spectroscopy"--publication (40), does not appear in *Web of Science* citation lists due to its being part of a book, but has been cited at least 340 times according to *Google Scholar*, ranking it within the top ten publications listed here.

- (1) "Chemical Bonding Information from Photoelectron Spectroscopy", C. S. Fadley S. B. M. Hagstrom, J. M. Hollander, M. P. Klein, and D. A. Shirley, *Science* **157**, no. 3796, 1571 (1967).
- (2) "Electropolymer Studies II. Electrical Conductivity of a Polystyrene-Sulfonic Acid Membrane", C. S. Fadley and R. A. Wallace, *J. Electrochem. Soc.* **115** 1264 (1968).
- (3) "Chemical Effects on Core-Electron Binding Energies in Iodine and Europium", C. S. Fadley, S. B. M. Hagstrom, M. P. Klein, and D. A. Shirley, *J. Chem. Phys.* **48**, 3779 (1968).
- (4) "X-ray Photoelectron Spectroscopic Study of Iron, Cobalt, Nickel, Copper, and Platinum", C. S. Fadley and D. A. Shirley, *Phys. Rev. Letters* **21**, 980 (1968).
- (5) "Direct Voltage Calibration of an Electron Spectrometer", C. S. Fadley, G. L. Geoffroy, S. B. M. Hagstrom, and J. M. Hollander, *Nucl. Inst. and Methods* **68**, 177 (1969).
- (6) "X-ray Photoelectron Spectroscopy on Magnetic Metals", C. S. Fadley and D. A. Shirley, *J. Appl. Phys.* **40**, 1395 (1969).
- (7) "Design of a Magnetic Spectrometer for Photoelectron Spectroscopy", C. S. Fadley, C. E. Miner, and J.M. Hollander, *Appl. Phys. Letters* **15**, 223 (1969).

- (8) "Multiplet Splittings of Core-Electron Binding Energies in Transition-Metal Ions", C. S. Fadley, D. A. Shirley, A. J. Freeman, P. S. Bagus, and J. V. Mallow, *Phys. Rev. Letters* **23**, 1397 (1969).
- (9) "Electronic Densities of States from X-ray Photoelectron Spectroscopy", C. S. Fadley and D. A. Shirley, *NBS J. Res.* **74A**, 543 (1970).
- (10) **R** "X-ray Photoelectron Spectroscopy: A Tool for Research in Catalysis", W. N. Delgass, T. R. Hughes, and C. S. Fadley, *Catalysis Rev.* **4**, 179 (1970).
- (11) "Multiplet Splitting of Metal-Atom Electron Binding Energies", C. S. Fadley and D. A. Shirley, *Phys. Rev.* **A2**, 1109 (1970).
- (12) "Angular Distributions of Photoelectrons from a Metal Single Crystal", C. S. Fadley and S. A. L. Bergstrom, *Phys. Letters* **35A**, 375 (1971).
- (13) "What Changes in the Ferromagnetic Transition Metals at the Curie Point?", C. S. Fadley and E. P. Wohlfarth, *Comments on Sol. St. Phys.* **4**, 78 (1972).
- (14) "Design of a High-Resolution, High-Intensity, Magnetic Spectrometer for Electron Spectroscopy", C. S. Fadley, C. E. Miner, J. M. Hollander, and R. N. Healey, *J. Appl. Phys.* **43**, 1085 (1972).
- (15) "Design Study for a Magnetic Spectrometer for Electron Spectroscopy", C. S. Fadley, R. N. Healey, J. M. Hollander, and C. E. Miner, in *Electron Spectroscopy*, D. A. Shirley, Ed. (North-Holland Publishing Co., Amsterdam, 1972) p. 121.
- (16) "Angular Distributions of Photoelectrons from Metal Crystals", C. S. Fadley and S. A. L. Bergstrom, in *Electron Spectroscopy*, D. A. Shirley, Ed. (North-Holland Publishing Co., Amsterdam, 1972) p. 233.
- (17) **R** "Multiplet Splittings in Photoelectron Spectra", C. S. Fadley, in *Electron Spectroscopy*, D. A. Shirley, Ed. (North-Holland Publishing Co., Amsterdam, 1972) p. 781.
- (18) **R** "X-ray Photoelectron Spectroscopy", S. B. M. Hagstrom and C. S. Fadley, invited review for *X-ray Spectroscopy*, L. Azaroff, Ed. (McGraw-Hill Publishing Co., New York, 1974) Chap. 8.
- (19) **R** "Theoretical Aspects of X-ray Photoelectron Spectroscopy", C. S. Fadley, invited review lectures appearing in *Electron Emission Spectroscopy*, W. Dekeyser et al., Eds. (Reidel Publishing Co., Dordrecht, The Netherlands, 1973) Chap. 2.
- (20) "Photoelectric Cross Sections and Multielectron Transitions in the Sudden Approximation", C. S. Fadley, *Chem. Phys. Letters* **25**, 225 (1974).
- (21) **R** "Surface Analysis and Angular Distributions in X-ray Photoelectron Spectroscopy", C. S. Fadley, R. J. Baird, W. Siekhaus, T. Novakov, and S. A. L. Bergstrom, *J. Electron Spectrosc.* **4**, 93 (1974). (In 2016, this was the 12th most cited article in the history of this journal.)
- (22) **R** "Instrumentation for Surface Studies: XPS Angular Distributions", C. S. Fadley, invited review paper appearing in *J. Electron Spectrosc.* **5**, 725 (1974).
- (23) "Peak Intensities and Photoelectric Cross Sections in the Sudden Approximation", C. S. Fadley, *J. Electron Spectrosc.* **5**, 895 (1974).
- (24) "Direct Observation of Surface-Profile Effects on X-ray Photoelectron Angular Distributions", R. J. Baird, C. S. Fadley, S. Kawamoto, and M. Mehta, *Chem. Phys. Letters* **34**, 49 (1975).
- (25) "Photoelectron Peak Intensities and Atom/Ion Overlaps: An Analysis of Various Approximations", M. Mehta, C. S. Fadley, and P. S. Bagus, *Chem. Phys. Letters* **37**, 454 (1975).
- (26) "Enhancement of Surface-Atom Intensities in X-ray Photoelectron Spectra at Low X-ray Incidence Angles", M. Mehta and C. S. Fadley, *Phys. Letters* **55A**, 59 (1975).
- (27) "Surface Analysis, Peak Intensities and Angular Distributions in XPS", C. S. Fadley, *Faraday Society Discussion No. 60*, p. 18 (1975).

- (28) "Concentration Profiles for Irregular Surfaces from X-ray Photoelectron Angular Distributions", R. J. Baird, C. S. Fadley, S. Kawamoto, M. Mehta, R. Alvarez, and J. A. Silva, *Anal. Chem.* **48**, 843 (1976).
- (29) "A Study of Silicate Adsorption on Gibbsite (Al(OH)₃) by X-ray Photoelectron Spectroscopy", R. Alvarez, C. S. Fadley, J. A. Silva, and G. Uehara, *Soil Sci. Soc. Amer. J.* **40**, 615 (1976).
- (30) **R** "Solid State- and Surface- Analysis by Means of Angular-Dependent X-ray Photoelectron Spectroscopy", C. S. Fadley, invited review for *Progress in Solid State Chemistry*, G. A. Somorjai and J. O. McCaldin, Eds. (Pergamon Press, New York, 1976) Volume 11, p. 265, 79 pp, 39 figs.
- (31) "Angular Dependence of XPS Valence Spectra from Single-Crystal Gold", R. J. Baird, C. S. Fadley, and L. F. Wagner, *Phys. Rev. Letters* **37**, 111 (1976).
- (32) "Properties of Oxidized Silicon as Determined by Angular-Dependent XPS", J. M. Hill, D. G. Royce, C. S. Fadley, L. F. Wagner, and F. J. Grunthaler, *Chem. Phys. Letters* **44**, 225 (1976).
- (33) "Angular-Dependent XPS Peak Intensities from Single-Crystal Gold", R. J. Baird, C. S. Fadley, and L. F. Wagner, *Phys. Rev. B* **15**, 666 (1977).
- (34) "X-ray Photoelectron Angular Distributions with Dispersion-Compensating X-ray- and Electron- Optics", R. J. Baird and C. S. Fadley, *J. Electron Spectrosc.* **11**, 39 (1977).
- (35) "Angular-Dependent XPS Valence-Band Spectra from Single-Crystal Copper", L. F. Wagner, Z. Hussain, and C. S. Fadley, *Solid State Commun.* **21**, 453 (1977).
- (36) "Direct-Transition Interpretation of Angular-Dependent Valence-Band Photoemission from Single-Crystal Copper in the Energy Range $40 < h\nu < 200$ eV", L. F. Wagner, Z. Hussain, and C. S. Fadley, *Solid State Commun.* **21**, 2 (1977).
- (37) "Angular-Dependent X-ray Photoemission Study of Oxidized Silicon at Low X-Incidence Angles", M. Mehta and C. S. Fadley, *Chem. Phys. Letters* **46**, 225 (1977).
- (38) "The Angular Dependence of Plasmon Loss Features in XPS Spectra from Polycrystalline Aluminum: Clean Surfaces and Effects of Oxygen Adsorption", R. J. Baird, C. S. Fadley, S. M. Goldberg, P. J. Feibelman, and M. Sunjić, *Surf. Sci.* **72**, 495 (1978).
- (39) "Surface d-Band Narrowing in Copper from Angular-Dependent X-ray Photoelectron Spectra", M. Mehta and C. S. Fadley, *Phys. Rev. Letters* **39**, 1569 (1977).
- (40) **R** "Basic Concepts of X-ray Photoelectron Spectroscopy", C. S. Fadley, invited chapter for *Electron Spectroscopy: Theory, Techniques, and Applications*, C. R. Brundle and A. D. Baker, Eds. (Academic Press, London, 1978) Vol. II, Chap. 1, 145 pp., 53 figs.
- (41) "Evidence for Brillouin Zone Averaging in Angle-Resolved XPS Valence Spectra from Single-Crystal Gold and Aluminum", Z. Hussain, N. F. T. Hall, L. F. Wagner, S. P. Kowalczyk, C. S. Fadley, K. A. Thompson, and R. L. Dod, *Solid State Commun.* **25**, 907 (1978).
- (42) "Photoelectric Cross Sections for Fixed-Orientation Atomic Orbitals: Relationship to the Plane-Wave Final-State Approximation and Angle-Resolved Photoemission", S. M. Goldberg, C. S. Fadley, and S. Kono, *Solid State Commun.* **28**, 459 (1978).
- (43) "Azimuthal Anisotropy in Deep-Core-Level X-ray Photoemission from an Adsorbed Atom: Oxygen on Copper (001)", S. Kono, C. S. Fadley, N. F. T. Hall, and Z. Hussain, *Phys. Rev. Letters* **41**, 117 (1978).
- (44) "Azimuthal Anisotropy in Core-Level X-ray Photoemission from c(2x2)O on Cu(001): Experiment and Single-Scattering Theory", S. Kono, S. M. Goldberg, N. F. T. Hall, and C. S. Fadley, *Phys. Rev. Letters* **41**, 1831 (1978).
- (45) "Observation of d-Band Narrowing near Copper and Nickel Surfaces by Means of Angle-Resolved X-ray Photoelectron Spectroscopy", M. Mehta and C. S. Fadley, *Phys. Rev. B* **20**, 2280 (1979).

- (46) "Strengths of Intrinsic Plasmon Satellites in XPS from Adsorbates: Dispersion and Lifetime Effects", D. Sokcević, M. Sunjić, and C. S. Fadley, *Surf. Sci.* **82**, 383 (1979).
- (47) "Determination of Adsorbate Geometries from Intramolecular Scattering in Deep-Core-Level X-ray Photoemission: CO on Ni(001)", L.-G. Petersson, S. Kono, N. F. T. Hall, C. S. Fadley, and J. B. Pendry, *Phys. Rev. Lett.* **42**, 1545 (1979).
- (48) "Determination of Surface Atomic Geometries from Angular Distributions of Deep-Core-Level X-ray Photoelectrons", C. S. Fadley, S. Kono, L.-G. Petersson, S. M. Goldberg, N. F. T. Hall, J. T. Lloyd, and Z. Hussain, *Surf. Sci.* **89**, 52 (1979).
- (49) "The Energy Dependence of 3d, 4d, 5d, and 4f Partial Photoionization Cross Sections", L. I. Johansson, I. Lindau, M. Hecht, S. M. Goldberg, and C. S. Fadley, *Phys. Rev. B* **20**, 4126 (1979).
- (50) "Oxygen Chemisorbed on Cu(001): The Cu3d-O2p Interaction Studied by Angle-Resolved Photoemission Using Synchrotron Radiation", L.-G. Petersson, Z. Hussain, S. Kono, and C. S. Fadley, *Solid State Commun.* **34**, 549 (1980).
- (51) "Determination of Adsorbate Geometries from Final-State Scattering in X-ray Photoemission: CO and O on Ni(001)", L.-G. Petersson, S. Kono, N. F. T. Hall, S. M. Goldberg, J. T. Lloyd, and C. S. Fadley, *Mat. Sci. and Eng.* **42**, 111 (1980).
- (52) **R** "Determination of Surface Atomic Geometries from Angle-Resolved Photoemission of Core Levels", S. Kono and C. S. Fadley, *Nucl. Inst. and Meth.* **177**, 207 (1980).
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