

CURRICULUM VITAE

BRUCE A. BUNKER

PROFESSIONAL ADDRESS:

Department of Physics
University of Notre Dame
Notre Dame, IN 46556
Phone: (574) 631-7219 (office)
(574) 631- 5650 (lab)
fax: (574) 631-5952
e-mail: bunker@nd.edu

HOME ADDRESS:

52024 Carding Mill Ct.
Granger, IN 46530
Phone: (219) 277-6089

PERSONAL INFORMATION

Born April 20, 1952, Pasadena, CA
Married (Kathie E. Newman), two children

EDUCATION

B.Sc., Physics, 1974 University of Washington, Seattle, WA.
Ph.D., Physics, 1980 University of Washington, Seattle, WA.

HONORS AND ACTIVITIES

- Chair of a *National Science Foundation Site Visit Panel for a proposed Science and Technology Center at the Massachusetts Institute of Technology*, October 11-13, 2009.
- Elected *Vice Chair and Chair Elect* of the *International X-ray Absorption Society*, an international group chartered with representing users of these x-ray techniques and sponsoring international conferences and education and outreach programs.
- Member, *National Science Foundation Review Panel for the Cornell High-Energy Synchrotron Source*, October 15-16, 2007.
- Appointed to a two-year term on the *Peer Review Committee*, Canadian Light Source.
- Member, *Scientific Advisory Committee*, Advanced Photon Source, Argonne National Laboratory.
- Chair, Partner User Council of the Advanced Photon Source at Argonne National Laboratory.
- Director, *Materials Research Collaborative Access Team*, Advanced Photon Source, Argonne National Laboratory.
- Member, *Research Directorate*, Advanced Photon Source
- Member, *Advisory Council* of the Notre Dame *Environmental Molecular Sciences Institute*

- Member, *Executive Committee of the International XAFS Society*, 1993-1999.
- Co-chair, *XAFS X — The 10th International X-Ray Absorption Fine Structure Conference*, Chicago, August 10-14, 1998.
- Member, National Synchrotron Light Source Proposal Study Panel (panel for review of synchrotron-radiation beam-time proposals), Spring 1997- Fall, 1999, and Fall 1993 - Fall 1995.
- Member, National Science Foundation Materials Science Proposal Review Panel, May, 1993.
- IBM Postdoctoral Fellow, 1981-1983.

EMPLOYMENT

- Department Chair, Department of Physics, University of Notre Dame. August 1998 - June 2006
- Professor of Physics, University of Notre Dame. August 1994 - present.
- Associate Professor of Physics, University of Notre Dame. August 1987 - August 1994.
- Assistant Professor of Physics, University of Notre Dame. September 1983 - August 1987.
- IBM Postdoctoral Fellow, University of Illinois at Urbana-Champaign. November 1981- August 1983.
- Postdoctoral Research Associate, Materials Research Participating Research Team at Brookhaven National Laboratory. January-October, 1981.
- Postdoctoral Research Associate, University of Washington, Seattle, Washington. March-December, 1980.

TALKS AND PRESENTATIONS

Invited Presentations at Meetings

“Introduction and History of X-Ray Absorption Spectroscopy,” Invited Plenary Talk at the **Workshop on Advanced Topics in EXAFS Analysis and Applications**, 2008 LCLS/SSRL Annual Users’ Meeting, SLAC National Accelerator Laboratory, October 15-18, 2008.

“XAFS studies of nanosystems: How x-ray, electron microscopy, and optical techniques each contribute to structural characterization,” at the **Denver X-ray Conference**, Denver, Colorado, August 6, 2008.

“X-ray Absorption Fine Structure Spectroscopy and Nanomaterials,” at the conference workshop **Nanomaterials and Their Applications**, Denver, Colorado, August 5, 2008.

“Effect of Siderophores on Pb adsorption to kaolinite – XAFS study,” at the **Goldschmidt International Geochemistry Conference**, Moscow, ID, May 25, 2005 (Co-authors are B. Mishra, E.A. Haack, and P.A. Maurice).

“Structure of Core-Shell and Alloyed Binary Nanoparticles Studied with X-ray Absorption Fine Structure,” **Annual National Meeting of the American Crystallographic Association**, Hyatt Regency Hotel and Conference Center, Chicago, Illinois, July 19, 2004.

“Environmental Science on the Molecular Scale: How can a Physicist help?” **Notre Dame Environmental Research Symposium**, November 10, 2004.

“Probing Interfaces With X-rays: How we use x-ray reflectivity, x-ray diffraction, and reflection-mode XAFS used to study surfaces and internal interfaces,” and *“Three Recent XAFS Studies,”* **International XAFS Workshop**, University of Science and Technology, Hefei, China, Oct. 21-22, 2003.

“Reflectivity and Reflection-mode XAFS study of the Ill-V compound native oxide/GaAs Interface,” **11th International Conference on X-ray Absorption Fine Structure (XAFS XI)**, Ako, Japan, July 27-31, 2000).

“XAFS and Reflectivity Studies of Buried Interfaces,” at the **International Symposium on X-ray Absorption Spectroscopy**, SRRC, Hsinchu, Taiwan, and Tamkang University, Tamsui, Taiwan, , August 9-10, 1997.

“New Generation Synchrotron Sources and Condensed Matter Physics,” **March Meeting of the American Physical Society**, Kansas City, MO, March 17-21, 1997.

“XAFS and Reflectivity Studies of Buried Interfaces,” **First International Conference on Synchrotron Radiation and Materials Science (ICSRMS)**, Chicago, July 28-Aug. 1, 1996.

“The International XAFS Society Database: The Need and the Realization,” **XAFS VIII - The Eighth International X-Ray Absorption Fine Structure Conference**, Berlin, Germany, Aug. 29-Sep. 2, 1994.

“Glancing Angle XAFS and X-Ray Reflectivity Study of Cu Thermal Vibration Amplitude at the Cu-Al₂O₃ Interface,” with R. A. Mayanovic, Q. Lu, A. J. Kropf, J. R. Buschert., **XAFS VIII - The Eighth International X-Ray Absorption Fine Structure Conference**, Berlin, Germany, Aug. 29-Sep. 2, 1994.

“X-ray Studies of Off-Center Ions and Ferroelectricity in IV-VI and II-VI Semiconductors,” with Zhihai Wang, and Quazi Islam, **International Workshop on Fundamental Experiments in Ferroelectrics**, Williamsburg, VA, February 14-16, 1993.

“XAFS Studies of Atomic Reordering at ZnTe/CdSe Interfaces,” with M. Kemner, H. Luo, N. Samarth, J. K. Furdyna, M. R. Weidmann, and K. E. Newman, **XAFS VII - The Seventh International X-Ray Absorption Fine Structure Conference**, Kobe, Japan, August 24-28, 1992.

“XAFS Investigations of Ferroelectric Semiconductors,” **International Workshop on Fundamental Experiments in Ferroelectrics**, Feb. 4-5, 1990; Williamsburg, VA.

“XAFS Data Analysis: Techniques, Misconceptions, and Recommendations: Report of the ICSC,” **XAFS VI: The Sixth International Conference on X-ray Absorption Fine Structure**, August 6-10, 1990; York, England.

“Proposal for an International XAFS Database,” **XAFS VI: The Sixth International Conference on X-ray Absorption Fine Structure**, August 6-10, 1990; York, England.

“EXAFS Studies of Semiconductor Alloys,” **NATO Advanced Study Institute on Alloy Phase Stability**, Maleme, Crete, Greece, June 23, 1987.

“The Ferroelectric Transition in IV-VI Semiconductor Alloys,” **XAFS V: The Fifth International Conference on X-Ray Absorption Spectroscopy**, Seattle, WA, August 22-26, 1988.

“Current Trends in EXAFS Data Analysis,” presented at the **Workshop on Computational Methods in X-ray Absorption Fine Structure**, Brookhaven, NY, May 16, 1990.

“Proposal for Establishment of an International Database,” presented at the **Second International Workshop on XAS Standards and Criteria**, Brookhaven, NY, May 19-20, 1990.

“EXAFS Studies of Semiconductor Microstructure,” **Third International Superlattice Conference**, Chicago, IL, August 17-20, 1987.

“EXAFS Studies of Metastable Semiconductors,” **Materials Research Society**, Boston, MA, December 2-6, 1986.

“X-Ray Absorption Studies of Metal-Semiconductor Interfaces,” **Workshop on III-V Metal: Semiconductor Interfacial Chemistry and Its Effect on Electrical Properties**, Stanford, CA, November 3-5, 1986.

“EXAFS Studies of Ternary and Multinary Semiconductor Alloys,” **The 1986 U.S. Workshop on Mercury Cadmium Telluride**, Dallas TX, October 7-9, 1986.

1985-2005 Talks at Universities and Institutions

“Environmental Science on the Molecular Scale: How can a Physicist help?” *Physics Colloquium, Western Michigan University, Kalamazoo, MI, November 20, 2006.*

“X-ray Studies of Nanoscale Structure and Function,” *Physics Colloquium, University of Washington, Seattle, WA, September 27, 2004.*

“Probing Buried Interfaces With X-rays,” *Condensed Matter Seminar, Indiana University, Bloomington, Sep. 22, 2000.*

“The Use of Synchrotron Radiation in Condensed Matter Studies,” *Interdisciplinary Seminar, University of Florida, Jan. 30, 1995.*

“Exploring the Microstructure of Semiconductor Alloys and Interfaces with X-Ray Absorption Spectroscopy,” *Physics Colloquium, Northwestern University, Evanston, Illinois, Jan. 29, 1992.*

“EXAFS Studies of Alloys, Interfaces, and Phase Transitions,” *Physics Colloquium, Illinois Institute of Technology, Chicago, IL, Aug. 28, 1991.*

“Probing Semiconductor Alloys and Interfaces With X-Ray Absorption Spectroscopy,” *Physics Colloquium, Marquette University, Milwaukee, WI, Nov. 9, 1990.*

“EXAFS Investigations of Semiconductor Alloys and Ferroelectrics,” *Condensed-Matter Physics Seminar, Michigan State University, East Lansing, MI, Oct. 29, 1990.*

“EXAFS Studies of Semiconductor Alloy Microstructure,” *Condensed-Matter Seminar, Purdue University, West Lafayette, IN, Sep. 8, 1989.*

“X-Ray Absorption Studies of Semiconductors,” *Solid-State Seminar, Institute of Physics, Chinese Academy of Sciences, Beijing, China, May 22, 1987.*

“Recent Applications of X-Ray Spectroscopy,” *Solid-State Seminar, University of Science and Technology of China, Hefei, China, May 26, 1987.*

“EXAFS Studies of Semiconductor Microstructure,” *Colloquium, University of Notre Dame, Notre Dame IN, Sep. 2, 1987.*

“EXAFS Studies of Semiconductor Microstructure,” *Condensed-matter seminar, Illinois Institute of Technology, Chicago, April 4, 1988.*

“X-Ray Absorption Spectroscopy,” *Colloquium, Goshen College, Goshen, IN, April 6, 1988.*

“The Atomic Scale Structure of II-VI Semiconductor Alloys and Metal-Semiconductor Interfaces,” *Solid State Seminar, North Carolina State University, Raleigh, NC, May 27, 1988.*

“The Atomic-Scale Structure of Semiconductor Alloys: Diluted Magnetic Semiconductors and Ferroelectrics,” *Turner Hall Colloquium, Goshen College, Nov. 15, 1988.*

“X-Ray Absorption and Electron Energy-Loss Spectroscopy,” *series of five lectures on at Tsinghua University, Beijing, China, May 13-20, 1987.*

“EXAFS Studies of Semiconductors,” *Solid-State Seminar, Tsinghua University, Beijing, China, May 21, 1987.*

“Semiconductor Structure as Probed With EXAFS and XANES,” *Solid-State Seminar, Kodak Research Laboratories, Rochester NY, April, 20 1987.*

“EXAFS Studies of Semiconductor Systems: Recent Results,” *Condensed-Matter Seminar, University of Illinois, Oct. 31, 1986.*

“Non-Randomness in Alloys: Site Correlations in III-V Quaternaries,” *Solid State Seminar, North Carolina State University, Oct. 12, 1985.*

REFEREED PUBLICATIONS

- B. A. Bunker and E. A. Stern, "The iron-sulfur environment in rubredoxin," *Biophysical Journal* **19**, 334 (1977).
- E. A. Stern, D. E. Sayers, J. G. Dash, H. Schectter, and B. A. Bunker, "Adsorbate and substrate characterization using EXAFS," *Phys. Rev. Lett.* **38**, 767 (1977).
- E. A. Stern, S. Rinaldi, E. Callen, B. A. Bunker, and S. Heald, "Structure of amorphous RFe₃ compounds using EXAFS," *Journal of Magnetism and Magnetic Materials* **7**, 188 (1978).
- S. M. Heald, E. A. Stern, B. A. Bunker, E. M. Holt, and S. L. Holt, "Structure of the iron-containing core in ferritin by the extended x-ray absorption fine structure technique," *J. Amer. Chem. Soc.* **101**, 67 (1979).
- E. A. Stern, S. M. Heald, and B. A. Bunker, "The amplitude of the extended x-ray absorption fine structure in bromine molecules," *Phys. Rev. Lett.* **42**, 1372 (1979).
- E. A. Stern, B. A. Bunker, and S. M. Heald, "Many-body effects on EXAFS amplitudes," *Phys. Rev. B* **21**, 5521 (1980).
- P. Georgopolous, D. E. Sayers, B. A. Bunker, W. T. Elam, and W. A. Grote, "Automating an EXAFS facility: hardware and software considerations," Chapter 11 in *Laboratory EXAFS Facilities - 1980*, ed. by E. A. Stern, *AIP Conference Proceedings* (1980).
- E. A. Stern, B. A. Bunker, and S. M. Heald, "Understanding the causes of non-transferability of EXAFS amplitudes," in *EXAFS and Synchrotron Radiation in Materials Research*, edited by B. K. Teo and D. C. Joy, Plenum Press (1981).
- E. A. Stern, W. T. Elam, B. A. Bunker, K.-q. Lu, and S. M. Heald, "Ion chambers for fluorescence and laboratory EXAFS detection," *Nuc. Inst. and Meth.* **195**, 345 (1982).
- B. A. Bunker and E. A. Stern, "The phase factor in extended x-ray absorption fine structure," *Phys. Rev. B* **27**, 1017 (1983).
- J. P. Stott, S. L. Hulbert, F. C. Brown, B. A. Bunker, T. C. Chiang, and T. Miller, "Core excitons at the K edge of LiF," *Phys. Rev. B* **30**, 2163 (1984).
- S. L. Hulbert, B. A. Bunker, J. P. Stott, and F. C. Brown, "Copper L_{2,3} near-edge in Cu₂O," *Phys. Rev. B* **30**, 2120 (1984).
- B. A. Bunker, S. M. Heald, and J. Tranquada, "EXAFS investigations of Fe-implanted Si using a grazing-incidence x-ray beam and fluorescence detection," *EXAFS and Near-Edge Structure III*, ed. by K. O. Hodgson, B. Hedman, and J. E. Penner-Hahn (Springer-Verlag, 1984), 482-483.
- B. A. Bunker, S. L. Hulbert, and F. C. Brown, "Core excitons at the Si L_{2,3} edge in Si_xGe_{1-x} alloys," *Proceedings of the 17th International Conference on the Physics of Semiconductors*, San Francisco, CA, 1984, ed. by J. D. Chadi and W. A. Harrison (Springer-Verlag).

- B. A. Bunker, S. L. Hulbert, J. P. Stott, and F. C. Brown, "Shallow-deep core-exciton instability at the Si $L_{2,3}$ edge in $\text{Si}_x\text{Ge}_{1-x}$ alloys," *Phys. Rev. Lett.* 53, 2157 (1984).
- F. C. Brown, B. A. Bunker, D. M. Ginsberg, T. J. Miller, W. M. Miller, and E. A. Stern, "X-Ray edge studies of $\text{Mn}_x\text{Sn}_{1-x}\text{Mo}_6\text{S}_8$," *Phys. Rev. B* 34, 11 (1986).
- D. E. Sayers and B. A. Bunker, "EXAFS data analysis," Chapter 6 in *Extended X-Ray Absorption Fine Structure*, edited by R. Prins and D. Koningsberger (Wiley), (1987).
- B. A. Bunker, "EXAFS studies of metastable semiconductors," pgs. 99-110, in *Interfaces, Superlattices, and Thin Films*, Vol. 77 of the Materials Research Society (1987).
- B. A. Bunker, "EXAFS studies of semiconductor structure," *J. Vac. Sci. Tech.*, A5, 3003 (1987).
- B. A. Bunker, W.-F. Pong, U. Debska, D. R. Yoder-Short, and J. K. Furdyna, "EXAFS studies of metastable semiconductors," pgs. 231-235 in *Diluted Magnetic Semiconductors*, Vol. 89 of the Materials Research Society (1987).
- Q. Islam and B. A. Bunker, "The ferroelectric transition in $\text{Pb}_{1-x}\text{Ge}_x\text{Te}$: Extended x-ray absorption fine-structure investigation of the Ge and Pb sites," *Phys. Rev. Lett.* 59, 2701 (1987).
- B. A. Bunker, "EXAFS studies of semiconductor microstructure," *Materials Science Bulletin* 13, 36 (1988).
- K. E. Newman, J. D. Dow, B. A. Bunker, L. L. Abels, P. M. Racciah, S. Ugur, D. Z. Xue, and A. Kobayashi, "Effects of a zincblende-diamond order-disorder transition on the crystal, electronic, and vibrational structures of metastable $(\text{GaAs})_{1-x}\text{Ge}_{2x}$ alloys," *Phys. Rev. B* 39, 657 (1988).
- W. F. Pong, R. M. Mayanovic, and B. A. Bunker, "Bond lengths in $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$ and II-VI diluted magnetic semiconductors," *Physica B* 158, 617 (1989).
- B. A. Bunker, Q. T. Islam, and W.-F. Pong, "The ferroelectric transition in IV-VI semiconductor alloys," *Physica B* 158, 578 (1989).
- P. Bandyopadhyay and B. A. Bunker, "Reflection EXAFS studies of metal-semiconductor interfaces," *Physica B* 158, 653 (1989).
- S. I. Islam and B. A. Bunker, "Study of the local structure of $\text{Ga}_x\text{In}_{1-x}\text{As}_y\text{Sb}_{1-y}$, a quaternary III-V semiconductor alloy, using the EXAFS technique," *Physica B* 158, 606 (1989).
- Terrence W. Rettig, Bruce A. Bunker, and Randal C. Ruchti, "How One REU Program Got Its Start," *Journal of College Science Teaching* XIX 219 (1990).
- W.-F. Pong, R. M. Mayanovic, B. A. Bunker, U. Debska and J. K. Furdyna, "Extended X-ray Absorption Fine-Structure Studies of $\text{Z}_{1-x}\text{Mn}_x\text{Se}$ Alloy Structure," *Phys. Rev. B* 41, 8440 (1990).
- R. M. Mayanovic, W.-F. Pong, and B. A. Bunker, "EXAFS Studies of $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$ and $\text{Hg}_{1-x}\text{Mn}_x\text{Te}$ Bond lengths: Bond Relaxation and Structural Stability of Ternary Alloys," *Phys. Rev. B* 42, 11174 (1990).

- B. A. Bunker, Z. Wang, and Q. Islam, "The Local Structure of IV-VI Semiconductor Alloys: Lattice Distortion and Ferroelectric Phase Transitions," in *X-Ray Absorption Fine Structure*, ed. by S. Hasnain (Ellis Horwood, New York, 1989), pgs. 343-345.
- S. I. Islam and B. A. Bunker, "Studies of atomic correlations in quaternary semiconductor alloys using the Extended X-ray Absorption Fine Structure technique," *Physics Letters* 156, 247 (1991).
- B. A. Bunker, Z. Wang, Quazi Islam, "XAFS Investigations of Ferroelectric Semiconductors," *Ferroelectrics* 120, 23 (1991).
- K. M. Kemner, B. A. Bunker, H. Luo, N. Samarth, J. K. Furdyna, M. R. Weidmann, and K. E. Newman, "EXAFS studies of interfaces in ZnTe/CdSe superlattices," *Phys. Rev. B - Rapid Comm.* 46, 7272 (1992).
- Kenneth Kemner, Zhihai Wang, Robert A. Mayanovic, and Bruce A. Bunker, "A low temperature gas-flow total electron yield detector for XAFS measurements," *Nucl Instruments and Methods* B71, 345 (1992).
- Z. Wang, B. A. Bunker, R. A. Mayanovic, U. Debska, J. K. Furdyna, and Q. T. Islam, "EXAFS Studies of the Ferroelectric Phase Transitions Induced By Off-center Ions in $\text{PbS}_x\text{Te}_{1-x}$ and $\text{Zn}_x\text{Cd}_{1-x}\text{Te}$ Alloys," invited review paper, *Modern Physics Letters*, Vol 6, 1413 (1992).
- Z. Wang and B. A. Bunker, "X-ray absorption fine-structure studies of $\text{PbS}_x\text{Te}_{1-x}$ alloys: ferroelectric phase transitions induced by off-center ions," *Phys. Rev. B* 46, 11277 (1992).
- Zhihai Wang, Bruce A. Bunker, Robert A. Mayanovic, Ursula Debska, and Jacek K. Furdyna, "Lattice Distortion and Ferroelectricity in IV-VI and II-VI Semiconductor Alloys," *Jpn. J. of Appl. Phys.* 32-2, 673 (1993).
- K.M. Kemner, B.A. Bunker, H. Luo, N. Samarth, J.K. Furdyna, M.R. Weidmann, K.E. Newman, "EXAFS studies of interfaces in ZnTe/CdSe superlattices," *Jpn. J. of Appl. Phys.* 32-2, 399 (1993).
- A. E. Tabor-Morris, K. M. Kemner, Bruce A. Bunker, K. A. Bertness, "Polarization-dependent XAFS measurements of spontaneous ordering in MOCVD-grown $\text{Ga}_{0.5}\text{In}_{0.5}\text{P}$ on GaAs substrates," *Jpn. J. of Appl. Phys.* 32-2, 404 (1993).
- W. F. Pong, R. A. Mayanovic, K. T. Wu, P. K. Tseng, B. A. Bunker, A. Hiraya, and M. Watanabe, "X-ray Absorption Near Edge Structure (XANES) Studies of Diluted Magnetic Semiconductors (DMS) $\text{Zn}_{1-x}\text{Y}_x\text{S}$ (Y=Mn, Fe, Co) Systems," *Jpn. J. of Appl. Phys.* 32-2, 722 (1993).
- K.M. Kemner, B. A. Bunker, H. Luo, N. Samarth, J. K. Furdyna, M. R. Weidmann, and K. E. Newman, "X-ray Absorption Spectroscopy Investigations of Atomic Reordering at ZnTe/CdSe Interfaces," in *Statics and Dynamics of Alloy Phase Transitions*, ed. by P.E.A. Turchi and A. Gonis, (Plenum, New York, 1993), pg. 203-206.
- B.A. Bunker, Z. Wang, Q. Islam, "X-ray Studies of Off-Center Ions and Ferroelectricity in $\text{PbS}_x\text{Te}_{1-x}$ and $\text{Zn}_x\text{Cd}_{1-x}\text{Te}$ Alloys," *Ferroelectrics* 150, 171 (1993).

- W. F. Pong, R. A. Mayanovic, K. T. Wu, P. K. Tseng, B. A. Bunker, A. Hiraya, and M. Watanabe, "Influence of transition metal type and content on local order properties of $Zn_{1-x}Y_xS$ (Y=Mn, Fe, Co) alloys studied using XANES Spectroscopy," *Phys. Rev. B* 50, 7371 (1994).
- K.M. Kemner, B.A. Bunker, H. Luo, N. Samarth, J.K. Furdyna, M.R. Weidmann, K.E. Newman, "Atomic rearrangement at interfaces in ZnTe/CdSe superlattices," *Phys. Rev. B* 50, 4327 (1994).
- K.M. Kemner, A. J. Kropf, and B.A. Bunker, "Gas-amplified electron-yield x-ray detection at low temperatures," *Rev. Sci. Instr.*, 65, 3667 (1994).
- R. A. Mayanovic, Q. Lu, B. A. Bunker, A. J. Kropf, J. R. Buschert, "Glancing Angle XAFS and X-Ray Reflectivity Study of Cu Thermal Vibration Amplitude at the Cu- Al_2O_3 Interface," *Physica B* 208, 405 (1995).
- R. A. Mayanovic and B.A. Bunker, "Observation of anisotropic vibrational amplitudes due to thermal motion at a Cu/ Al_2O_3 interface," *Physics Letters A* 202 225-229 (1995).
- Q. Lu, B. A. Bunker, H. Luo, A. J. Kropf, K. M. Kemner, J. K. Furdyna, "X-ray Study of Atomic Correlations in ZnCdSeTe Epitaxial Thin Films," *Phys. Rev. B*, 55, 9910 (1997).
- B. A. Bunker, A. J. Kropf, K. M. Kemner, R. A. Mayanovic, and Q. Lu, "XAFS and X-ray Reflectivity Studies of Buried Interfaces," *Nuc. Inst. Meth. Phys. Res. B* 133, 102-108 (1997).
- A. J. Kropf, B. A. Bunker, M. Eisner, S. C. Moss, L. Zecca, A. Stroppolo, and P. R. Crippa, "XAFS Studies of Fe Sites in Synthetic and Natural Neuromelanins," *Biophys J.* 75, 3135-3142 (1998).
- A. J. Kropf, B. A. Bunker, J. K. Furdyna, "XAFS Studies of Interfaces in MnSe/ZnTe Superlattices," *J. Synch. Rad.* 6, 212-214 (1999).
- Z. Zhong, D. Chapman, B.A. Bunker, G. B. Bunker, R. Fischetti, and C. Segre, "A bent Laue analyzer for fluorescence XAFS detection," *J. Synch. Rad.* 6, 370-372 (1999).
- C.U. Segre, N.E. Leyarovska, L.D. Chapman, W.M.Lavender, P.W. Plag, A.S. King, A.J. Kropf, B.A. Bunker, K.M. Kemner, P. Dutta, R.S. Duran and J. Kaduk, "The MRCAT Insertion Device Beamline at the Advanced Photon Source," CP521, *Synchrotron Radiation Instrumentation: Eleventh U.S. National Conference*, ed. P. Pianetta, et al., p419-422, (American Institute of Physics, New York, 2000).
- Seong-kyun Cheong, Bruce A. Bunker, D. C. Hall, G. L. Snider, P. J. Barrios, "Reflectivity and Reflection-mode XAFS study of III-V compound native oxide/GaAs Interface," Proceedings of the 11th International Conference on X-ray Absorption Fine Structure (XAFS XI), July 27-31, 2000 in Ako city, Japan, *J. Synch. Rad.* 8, 824-826 (2001).
- Tomohiro Shibata, Holger Tostmann, Bruce Bunker, Arnim Henglein, and Dan Meisel, "XAFS Studies of Gold and Silver-Gold Clusters in Aqueous Solutions," Proceedings of the 11th International Conference on X-ray Absorption Fine Structure (XAFS XI), July 27-31, 2000 in Ako city, Japan, *J. Synch. Radiation* 8, 545-547 (2001).

- S. D. Kelly, M. B. Boyanov, B. A. Bunker, J. B. Fein, D. A. Fowle, N. Yee, and K. M. Kemner, "XAFS determination of the bacterial cell wall functional groups responsible for complexation of Cd and U as a function of pH," Proceedings of the 11th International Conference on X-ray Absorption Fine Structure (XAFS XI), July 27-31, 2000 in Aiko city, Japan, *J. Synch. Radiation* **8**, 946-948 (2001).
- Seong-kyun Cheong, Bruce A. Bunker, D. C. Hall, G. L. Snider, C. B. DeMelo, G. Kramer, "The Arsenic site in oxidized $\text{Al}_x\text{Ga}_{1-x}\text{As}$ ($x=0.98$)," *Applied Physics Letters*, **78**, 2458-2460 (2001).
- T. Shibata, B.A. Bunker, J. Mitchell, and Peter Schiffer, "Intrinsic chemical and structural inhomogeneity in lightly doped $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$," *Phys. Rev. Lett.* **88**, 207205 (2002).
- T. Shibata, B. A. Bunker, Z. Zhang, D. Meisel, C. F. Vardeman, and J. D. Gezelter, "Size Dependent Spontaneous Alloying of Au-Ag Nanoparticles," *J. Am. Chem. Soc.* **124**, 11989-11996 (2002).
- S. D. Kelly, K. M. Kemner, J. B. Fein, D. A. Fowle, M. I. Boyanov, B. A. Bunker, and N. Yee, "X-ray absorption fine structure determination of pH-dependent U-bacterial cell wall interactions," *Geochimica et Cosmochimica Acta* **66**, 3855-3871 (2002).
- Jeremy B. Fein, Ken Kemner, David A. Fowle, Joshua Cahill, Maxim Boyanov, and Bruce Bunker, "Non-metabolic Reduction of Cr(VI) by Bacterial Surfaces Under Nutrient-Absent Conditions," *Geomicrobiology Journal* **19**(3), 369-382 (2002).
- D.L.Dey, V.Subramanian, T.Shibata, E.E.Wolf, B.A.Bunker, P.V.Kamat, "Photoinduced Transformation at Semiconductor/metal interfaces: XAFS investigation of ultra violet irradiated TiO_2/Au films," *J. Appl. Phys.* **93**, 2575-81 (2003).
- T. Shibata, B.A. Bunker, J. Mitchell, "Local Distortion of MnO_6 clusters in the Metallic Phase of $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$," *Phys. Rev. B* **68**, 024103 (2003).
- M.I. Boyanov, S.D. Kelly, K.M. Kemner, B.A. Bunker, J.B. Fein, D.A. Fowle, "Adsorption of Cadmium to *B. subtilis* Bacterial Cell Walls — a pH-Dependent XAFS Spectroscopy Study," *Geochimica et Cosmochimica Acta* **67**, 3299-3311 (2003).
- M. I. Boyanov, Jan Kmetko, T. Shibata, Alokmay Datta, Pulak Dutta, and B. A. Bunker, "Mechanism of Pb adsorption to fatty acid Langmuir monolayers studied by XAFS spectroscopy," *J. Phys. Chem. B* **107**, 9780-9788 (2003).
- M. Boyanov, K.E. Kemner, T. Shibata, and B. Bunker, "Local Structure Around Chromium Ions in Aqueous Acetate Solutions," highlight in *Advanced Photon Source Annual Report* (2004).
- Boyanov M., Shibata T., Kelly S. D., Kemner K., and Bunker B. (2003) "Local structure around Cr (III) in dilute acetate and perchlorate aqueous solutions," *Journal of Physical Chemistry A* **108**, 5131-5138 (2004).
- S. Chattopadhyay, D. Lahiri, B.A. Bunker, C.M. Doudna, M.F. Bertino, F. Blum, A. Tokuhira and J. Terry, "EXAFS studies of bimetallic Ag-Pt and Ag-Pd nanoparticles," *Physica Scripta*. (Refereed conference proceedings of XAFS 12, Malmö, Sweden, June 2003) (2004).

- D. Lahiri, B.A. Bunker, B. Mishra, Z. Zhang, D. Meisel, C.M. Doudna, M.F. Bertino, F.D. Blum, A.T. Tokuhira, S. Chattopadhyay, T. Shibata, J. Terry, “Bimetallic Pt-Ag and Pd-Ag nanoparticles,” *J. Applied Phys* 97, 094304 (2005).
- Robel, I., Bunker, B. and Kamat, P. V., “SWCNT-CdS nanocomposite as light harvesting assembly: Photoinduced charge transfer interactions,” *Adv. Mater.*, 17, 2458-2463 (2005).
- D. Lahiri, S. Chattopadhyay, B. A. Bunker, C.M. Doudna, M. F. Bertino, F. Blum, A. Tokuhira, J. Terry, “EXAFS Studies of Bimetallic AgPt and AgPd Nanorods,” *Physica Scripta T15*, 776-780 (2005).
- B. Mishra, S.D. Kelly, J.B. Fein, M. Boyanov, K.M. Kemner and B.A. Bunker, “Cd adsorption onto *Bacillus subtilis* bacterial cell walls: Integrating isotherm and EXAFS studies,” *Geochimica Et Cosmochimica Acta* 69, A675-a675 (2005).
- P. Maurice, B. Mishra, E. Haack and B. Bunker, “Effects of siderophores on Pb adsorption to kaolinite,” *Geochimica Et Cosmochimica Acta* 69(10): A363-a363 (2005).
- B.A. Bunker, M. Mishra, E.A. Haack and P.A. Maurice, “Pb speciation in the presence of siderophores and clay surfaces – XAFS study,” *Geochimica Et Cosmochimica Acta* 69(10): A364-a364 (2005).
- I. Robel, G. Girishkumar, B. A. Bunker, P. V. Kamat, K. Vinodgopal, “Structural changes and catalytic activity of platinum nanoparticles supported on C60 and carbon nanotube films during the operation of direct methanol fuel cells,” *App. Phys. Lett.* 88, 073113-1-3 (2006).
- Debdutta Lahiri, V. Subramanian, Bruce A. Bunker, Prashant V. Kamat, “Probing photochemical transformations at TiO₂/Pt and TiO₂/ Ir interfaces using x-ray absorption spectroscopy,” *J. Chem. Phys.* 124 (20), 204720-1-204720-7 (2006).
- I. Robel, B.A. Bunker, P.V. Kamat and M. Kuno, “Exciton recombination dynamics in CdSe nanowires: Bimolecular to three-carrier Auger kinetics,” *Nano Letters* 6(7): 1344-1349 (2006).
- Bhoopesh Mishra, Jeremy B. Fein, Maxim Boyanov, Shelly D. Kelly, Kenneth M. Kemner, Bruce A. Bunker, “Comparison of Cd Binding Mechanisms by Gram-Positive, Gram-Negative and Consortia of Bacteria Using XAFS,” XAFS13: 13th International X-Ray Absorption Fine Structure Conference, Stanford, California (USA), 9-14 July 2006 AIP Conf. Proc., 882, 1, 343-345, AIP (refereed) (2007).
- Bhoopesh Mishra, Elizabeth A. Haack, Igor F. Vasconcelos, Patricia A. Maurice, Bruce A. Bunker, “XAFS Determination of Pb and Cd Speciation with Siderophores and the Metal/Siderophore/Kaolinite System,” XAFS13: 13th International X-Ray Absorption Fine Structure Conference, AIP Conf. Proc., 2007, 882, 1, 196-198, AIP (refereed) (2007).
- Igor F. Vasconcelos, Bruce A. Bunker, and Randall T. Cygan, “Molecular Dynamics Modeling of Ion Adsorption to the Basal Surfaces of Kaolinite,” *J. Phys. Chem. C* 111(18) 6753-6762 (2007).

- Igor F. Vasconcelos, Elizabeth A. Haack, Patricia A. Maurice, Bruce A. Bunker, “EXAFS Analysis of Cadmium(II) Adsorption to Kaolinite,” *Chem. Geol.* 249/3-4, pp. 236-250 (2008).
- Mishra, B., Boyanov, M.I., Bunker, B.A., Kelly, S.D., Kemner, K.M., Nerenberg, R., Read-Daily, B.L., Fein, J.B., “An X-ray Absorption Spectroscopy Study of Cd Binding Onto Bacterial Consortia,” *Geochimica et Cosmochimica Acta* (2008), doi:10.1016/j.gca.2008.11.032
- Bhoopesh Mishra, Elizabeth A. Haack, Patricia A. Maurice, and Bruce A. Bunker “Effects of the Microbial Siderophore DFO-B on Pb and Cd Speciation in Aqueous Solution,” *Environ. Sci. Technol.*, 43 (1), pp. 94-100, DOI: 10.1021/es071011w (2009).

In press:

Submitted:

- Boyanov M., Shibata T., Kelly S. D., Kemner K., and Bunker B. (2003) “Spectral features in the XAFS of aqueous metal-acetate complexes,” *Physica Scripta*, submitted. (Refereed conference proceedings of XAFS 12, Malmö, Sweden, June.)