

RÉSUMÉ

GARY SCOTT COLLINS

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PERSONAL

US Citizen, two children.

Languages: English (native), French, and rudimentary German, Dutch and Chinese

POSITION

2002- PROFESSOR OF PHYSICS, and MEMBER, MATERIALS SCIENCE AND ENGINEERING PROGRAM
Washington State University, Pullman, WA.

Research in solid-state physics using hyperfine interaction methods, with applications to defects, lattice locations of impurities and diffusion in intermetallic compounds. Active in instruction at all levels. Active in university faculty governance.

PREVIOUS EXPERIENCE

- 1996 VISITING SCIENTIST, Nuclear Solid-State Physics Group, University of Konstanz, Germany (6 months).
1995-96 VISITING SCIENTIST, Nuclear Solid-State Physics Group, University of Groningen, The Netherlands (6 months).
1985-02 ASSOCIATE PROFESSOR OF PHYSICS, Washington State University, Pullman, WA.
1979-85 RESEARCH ASSISTANT PROFESSOR, Physics, Clark University, Worcester, MA.
1977-79 POSTDOCTORAL RESEARCH ASSOCIATE AND INSTRUCTOR, Physics, Clark University, with Chris Hohenemser.
1976-77 INSTRUCTOR (COADJUTANT), Physics, Rutgers University, New Brunswick, NJ.
1968-76 GRADUATE ASSISTANT AND RESEARCH INTERN, Physics, Rutgers University, New Brunswick, NJ.
1966-68 PEACE CORPS, Lomé and Baguida, Togo, West Africa. Secondary school math/science teaching in French.

EDUCATION

- 1976 DOCTOR OF PHILOSOPHY, Physics, Rutgers University, 1976. Dissertation: "Temperature Dependence of the Nuclear Quadrupole Interaction in Tin Metal." Advisor: Noémie Benczer-Koller.
1966 BACHELOR OF ARTS, Physics, Rutgers College, New Brunswick, NJ, 1966.

CAREER SYNOPSIS

- Principal Investigator of eight grant awards from the National Science Foundation totaling \$2,780,000 to study metals and intermetallic compounds, including seven single-investigator awards at WSU totaling \$2,520,000. Lone Co-Principal Investigator of additional NSF grants totaling \$908,314. Associate Investigator of an additional NSF grant with an award of \$450,000. A research fund was established by former PhD student Praveen Sinha.
- Research advisor to 3 postdoctoral associates and 11 PhD, 25 MS, 22 undergraduate, and 3 high-school students.
- Over 100 publications, one edited volume, and ~180 personal presentations in conferences or seminars. Referee or reviewer for over 360 manuscripts and research proposals. Named an "APS Outstanding Referee" in 2011.

RESEARCH

RESEARCH HISTORY

I am interested in the local structure of crystalline solids, which I have studied mostly using two methods for detecting nuclear hyperfine interactions: perturbed angular correlation of gamma rays (PAC) and Mössbauer effect. Using these “nuclear probe” methods, one can study a broad range of atom-scale phenomena. Former and current interests are listed below. A detailed description of research up to 2001 is separately available at <http://defects.physics.wsu.edu/description.htm>.

- 1971-79 Quadrupole interactions in non-cubic metals. Studies of the nuclear quadrupole interaction and its temperature dependence. How electric field gradients (EFG) measured at probe nuclei depend on probe.
- 1977-79 Hyperfine field shifts near solutes in ferromagnetic alloys caused to magnetic moment disturbances.
- 1979-85 Magnetic critical phenomena. Static and dynamic critical behavior of ferromagnets. Measurements of the static order-parameter exponent β and dynamic spin-fluctuation exponent z in iron alloys, nickel alloys and gadolinium.
- 1980-93 Point defects in metals. Production of lattice vacancies and interstitials by plastic deformation. Formation of vacancy complexes in fcc metals by accretion of elementary vacancies or by trapping mobile clusters. Annihilation of trapped vacancies by mobile interstitials. Trapping of hydrogen atoms in vacancies.
- 1990-02 Point defects in intermetallic compounds. Structural, equilibrium and deformation-induced point defects. Defect annealing and recovery. Measuring defect concentrations. Determining defect formation, migration and binding enthalpies. Mechanical alloying. Nanocrystalline materials. Probe atoms in grain-boundaries.
- 1999- Lattice locations of solute atoms in intermetallic compounds determined by measuring nuclear quadrupole interactions. Changes in site preferences with composition and temperature. Application of thermodynamic models to determine enthalpies and entropies of transfer of solute atoms between lattice sites.
- 2003- Diffusion of probe atoms in solids studied via relaxation of nuclear quadrupole interactions. Relaxation occurs when jumps of hyperfine probes are accompanied by changes in magnitude or orientation of the EFG. Jump frequencies can be obtained by fitting “damping” of PAC perturbation functions using detailed relaxation models. We presented this approach in 2004 using PAC. This method is complementary to conventional measurements of diffusivities by sectioning penetration profiles of radioactive tracer atoms.
- 2008- Full-potential, all-electron, electronic structure calculations of defect and impurity site energies and EFGs in intermetallic compounds carried out using *WIEN2k* to inform our measurements using a local 8-node workstation and attempts to use a Teragrid supercomputer startup allocation.

MAJOR RESEARCH GRANTS

- 1980-83 NSF grant DMR 80-02443, Solid State Physics Program, *Hyperfine Interactions Studies in Metals, with Applications to Critical Phenomena*. (\$183,353 for three years, at Clark University: Co-Principal Investigator, with Chris Hohenemser, P.I.).
- 1981-86 NSF grant DMR 81-08307, Metals Program, *Lattice Defects in Metals Studied by Hyperfine Interactions*. (\$258,468 for five years, at Clark University: Principal Investigator, with Chris Hohenemser, Co-P.I.).
- 1983-86 NSF grant DMR 83-03611, Low Temperature Physics Program, *Hyperfine Interactions Studies of Magnetic Critical Phenomena*. (\$327,660 for 3.5 years, at Clark University: Co-Principal Investigator, with Chris Hohenemser, P.I.).
- 1987-90 NSF grant DMR 86-19688, Metals Program, *Point Defects in Metals Studied by Hyperfine Interactions*. (\$240,000 for 3 years, at Washington State University: Principal Investigator).
- 1990-93 NSF grant CTS 89-12430, *Synthesis and Physical Properties of Nanoclusters*. (\$450,000 for 3 years, at Washington State University: Associate Investigator, with Clayton Crowe and Howard Hamilton, P.I.s; John Hirth, Richard Hoagland and Jacob Chung, other Associate Investigators)
- 1990-93 NSF grant DMR 90-14163, Metals Program, *Atomic Structure and Defects in Metals and Alloys Studied by Hyperfine Interactions*. (\$275,000 for 3 years, at Washington State University: Principal Investigator).
- 1993-96 NSF grant DMR 93-13702, Metals Program, *Point Defects in Intermetallic Compounds*. (\$325,000 for 3 years, at Washington State University: Principal Investigator).

- 1996-99 NSF grant DMR 96-12306, Metals Program, *Defects and Diffusion in Intermetallic Compounds*. (\$356,320 for 3 years, at Washington State University: Principal Investigator).
- 2001-04 NSF grant DMR 00-91681, Metals Program, *Studies of Point Defects in Intermetallics using PAC* (\$419,556 for 3 years, at Washington State University: Principal Investigator).
- 2005-09 NSF grant DMR 05-04843, Metals Program, *Lattice Location of Solutes and Diffusion in Intermetallics*. (\$500,000 for 4 years, at Washington State University: Principal Investigator).
- 2009-12 NSF grant DMR 09-04096, Metals Program, *Diffusion in Rare-Earth Binary and Ternary Intermetallics Studied using PAC* (\$420,000 for 3 years, at Washington State University: Principal Investigator).
- 2010-13 NSF grant DMR 10-06772, Electronic/Photonic Materials, *Characterizing and modifying defects that trap excitons in yttrium aluminum garnets doped with rare-earth elements* (\$397,301 for 3 years, at Washington State University: Co-Principal Investigator, with Farida Selim, P.I.).

UNSOLICITED GRANT AWARD FOR OUTSTANDING PROGRESS

- 1983 Creativity Award from the National Science Foundation for grant DMR 81-08307: G. S. Collins, Principal Investigator. Cited for “*outstanding scientific/ technical progress.*” An unsolicited two-year grant extension with 25% increase in funding. Somewhat comparable to a CAREER grant in the present era.

PRAVEEN SINHA FUND FOR PHYSICS RESEARCH

- 2005- Praveen Sinha graduated from WSU in 1995 with a PhD in physics and MS in computer science. He carried out PhD research in the Collins research group. In December 2005, he founded a fund to support Collins group research through a generous, unsolicited donation. In his dissertation research at WSU, he studied point defects produced by quenching or plastic deformation of intermetallic compounds. After graduating, he took a position as NIH postdoctoral research associate in radiation oncology at the University of Wisconsin. He later earned a MBA degree in 2000. At about that time, Praveen helped found UltraVisual Medical Systems to develop software products for hospitals to manage medical images over the web. After merging with Emageon, the joint company went public in 2005 and did well. More recently, he co-founded and is C.E.O. of Novashield, Inc., a company developing products for personal computer security that identify and flag abnormal activities in real time (<http://novashield.com>). Professor Collins feels highly honored by this support.

INFORMATION ON THE WEB

- RESEARCH GROUP WEB SITE: <http://defects.physics.wsu.edu/>
- CONFERENCE AND RESEARCH PHOTOS: <http://picasaweb.google.com/garyatwsu>
- THIS RESUME: <http://www.wsu.edu/~collins/cv.pdf>

SENIOR RESEARCH ASSOCIATES

- 2003-04 Matthew O. Zacate, Research Assistant Professor, Physics, Washington State University.
- 2004- Matthew O. Zacate, Associate Professor, Physics, Northern Kentucky University; Adjunct Professor, WSU.
- 2009- Farida Selim, Research Assistant Professor, Physics, Washington State University.

RESEARCH ADVISING

Postdoctoral associate	Period	Research topic
Luke S.-J. Peng	May 98 – Feb 99	Point defects in FeAl and NiAl; phase embryos (PAC)
Matthew O. Zacate	Mar 99 - May 03	Phase embryos, site-preferences in compounds, nuclear quadrupolar relaxation caused by diffusion (PAC)
Farida Selim	Nov 05 – May 07	Site-preferences and atom movement in compounds (PAC)

PhD student	Period	Dissertation topic
Carl Allard [†]	Jul 81-May 85	Migration and annealing of point defects in Ni (PAC)
Ataur Rahman Chowdhury [†]	Jul 80-May 85	Static and dynamic critical phenomena (Mössbauer)
Reinhardt B. Schuhmann [†]	Sep 82-May 88	Point defects in fcc metals (PAC)
Steven L. Shropshire	Dec 88-Aug 91	Studies of defects and defect interactions in metals (PAC)
Jiawen Fan	May 89-May 92	Thermal defects in quenched NiAl and CoAl (PAC)
Praveen Sinha	May 90-Jul 95	Defects in quenched and mechanically milled PdIn (PAC)
Bin Bai	May 95-Sep 97	Equilibrium defects in NiAl (PAC)
Shing-Jen (Luke) Peng	May 93-May 98	Defects in annealed and milled FeAl and FeRh (Mössbauer)
John P. Bevington	Aug 08-May 11	PAC and DFT studies of Al ₃ Ni, Al ₃ Ti & Al ₃ Zr, and In ₃ R phases
Randal Newhouse	Dec 07-	Diffusion in pseudo-binary and other alloys (PAC)
Qiaoming Wang	Jan 11 -	Diffusion in intermetallic compounds (PAC)

[†] Coadvisor of record; advised jointly with Prof. Chris Hohenemser, at Clark University, Worcester, MA.

MS level student	Period	Thesis or research topic
John S. Ochab [†]	Sep 78-May 80	Critical behavior in Rh ₂ FeSn
Hwa-Jae Jang	Jan 87- Jun 88	Hydrogen decoration of vacancies in Pt
Steven L. Shropshire	Jan 87- Dec 88	Point defects in cold-worked metals
Jiawen Fan	Aug 88-May 89	Atomic defects in NiAl
Gregory McGhee	May 88-May 89	Defects in hcp Co; non-observation of hydrogen in Au and Cu
Khushairi Zainun	May 88-May 89	Laser surface-melted metals
Steven Parry	May 89-May 90	Cold-fusion calorimetry
Gil-Hong Kim	Jan 90- Jul 90	Defects in annealed and quenched TiAl
John Sy	May 91-Jun 92	Martensitic phase transformation in NiTi
Bruce H. Meeves	May 92- Dec 93	Formation of FeCo and Ni ₃ Fe by mechanical alloying
Bin Bai	May 91- May 95	Grain boundary sites in metals
Mingzhong Wei	May 95 -May 98	Point defects in FeAl studied by PAC
Harmen Thys Nieuwenhuis*	Jan 98 - May 98	Vacancy motion in PdIn
Bonner C. Walsh	Aug 01- May 02	Site selection of solutes in compounds
Denys Solodovnikov**	Mar 03 -Dec 03	Diffusion in several rare-earth indide compounds
Aurélien Favrot***	Jun 03 - Sep 03	Site preference and diffusion of solutes in compounds
Egbert Rein Nieuwenhuis*	Sep 03- Jun 04	(1) Diffusion in Ga ₇ Pd ₃ via nuclear quadrupole relaxation (2) Polymorphic phase transformation in In ₂ La
Jipeng Wang	Sep 03- May 04	Diffusion in LaSn ₃
Li Kang	Nov 03-May 04	Diffusion in CeIn ₃
Lai Wang	Jan 05- May 05	Analytic calculation of Wigner-Seitz volumes in compounds
John P. Bevington	Aug 05-Aug 08	Site preferences and dynamics in intermetallics (experiment)
Xiao Wang	Jan 06- May 07	Defects in II-VI semiconductors studied using PAC
Arriety Lowell	Jan 06- May 07	Site preferences in aluminides
Xia (Sean) Jiang	Jan 07- May 08	Jump frequencies of In/Cd probe atoms in L1 ₂ gallides
Xiangyu (Desmond) Yin	Oct 09 – May 11	PAC studies gallium and eutectic gallium alloys

[†] Coadvisor of record; advised jointly with Prof. Chris Hohenemser, at Clark University, Worcester, MA.

* Visiting graduate students from the University of Groningen, The Netherlands, carrying out research here in partial fulfillment of requirements for their MS degrees.

** Carried out MS level research with me, currently a PhD candidate working with Prof. Kelvin Lynn.

*** Visiting graduate student from Institut National des Sciences Appliquées (INSA), Rennes, France, carrying out research at WSU in partial fulfillment of her MS degree.

Undergraduate Student	Period	Thesis or research topic
Samuel W. Porter [†]	Sep 79-May 80	Splat-quenched, amorphous Fe ₈₀ B ₂₀ (Mössbauer)
Gil P. Stern [†]	Sep 80-May 81	Point defects in deformed fcc metals
Reinhardt B. Schuhmann [†]	Sep 81-May 82	Point defects in Ni in annealing stage III
Andrew Vaught	Sep 88-May 89	Embedded atom method calculations
Phillip Himmer	May 88-Aug 89	Point defects in oxides & palladium
Stacy Irwin	May 89-Dec 89	Point defects in rhodium
Kirk Burris	May 90-May 91	Defects in alloys; nanoclusters

Andrew Janssen	Sep 98-Dec 98	Point defects in FePd (Mössbauer)
Matthew Petersen (UI student)	May 99-Aug 99	Point defects in quenched and annealed FePd (Mössbauer)
Bonner C. Walsh	May 00-Dec 00	Site preferences of solutes in compounds
Slade Jokela	May 01-Aug 01	Solute in intermetallic compounds
Phillip Peterman	Jan 05- May 05	Numerical calculation of Wigner-Seitz cell volumes
Morgan Emerson	Feb 06 - May 07	Wigner Seitz cells: geometry and contact areas
Stephanie Lage *	May 06- May 07	Dynamics of tracer atoms in intermetallic phases $Al_{11}R_3$
Ben Norman *	Jan 07- May 08	Solute atoms in “mirror” phases (WSU honors thesis, Oct 07)
Ashley Dorwart †	May 07 - Aug 07	Lattice locations of indium in Gd-Al alloys
Megan Lockwood †	May 08 - Aug 08	Jump frequencies of cadmium tracer atoms in tin intermetallics
Samantha Cawthorne †	May 09 - Aug 09	Diffusion in Al_4Sr and Ga_4Sr
Kenneth Dorrance *	Jan 10 -	Wigner-Seitz cell geometry; volumes and contact areas
Justine Minish ††	Jun 10 - Aug 10	Diffusion in pseudo-binary $La(In,Sn)_3$ alloys
Lee Aspitarte ††	May 10 - Aug 11	Polymorphic and peritectic phase transformations in In_3Zr
Jesse Miller	Feb 11 -	(to be decided)

† At Clark University, Worcester, MA.

* Recipients of Undergraduate Research Grants, College of Sciences, WSU.

† Participants in Research Experience for Undergraduates (REU) Summer Schools “Extreme Matter” at WSU, supported in part by the NSF and AFOSR: Ashley is from Nebraska Wesleyan U; Megan is from New Mexico State U., married name now Harberts; Samantha is from Clemson U.,

†† Supported by REU supplements to NSF grant DMR 09-04096; Justine, from Alma College, Alma, Michigan, was supported in summer 2010; Lee, from WSU, is being supported in summer 2011.

High School Student	Period	Research topic
Kyle Slinker, Pullman HS *	Jun 05-Aug 06	Analytic calculation of properties of Wigner-Seitz cells
Justin Ahn, Pullman HS *	Jun 07-May 08	Diffusion in intermetallic compounds including In_3Nd
Prastuti Singh, Pullman HS *†	Jun 09-May 10	Diffusion in $CoGa_3$ phases

* Culminating senior projects.

† Semifinalist in *Intel Science Talent Search* 2010 based on this research, with \$1000 prizes for herself and Pullman HS.

PUBLICATIONS

A. EDITED VOLUME

Hyperfine Interactions in Nanocrystalline Materials, guest editor Gary S. Collins, *Hyperfine Interactions* **130** (1-4) (Kluwer, Dordrecht, 2000), 300 pages.

B. REFEREED JOURNAL ARTICLES AND CONFERENCE PROCEEDINGS

(All papers since 1995 and a few earlier ones can be downloaded from <http://defects.physics.wsu.edu>.)

1. *Systematics of Hyperfine Interactions at Sn and Other 5s-p Diamagnetic Impurities in Ferromagnetic MnSb*, *Phys. Rev. B* **15**, 1235-8 (1977); G. S. Collins, N. Benczer-Koller and M. Pasternak.
2. *Nuclear Quadrupole Interaction in Tin Metal*, *Phys. Rev. B* **17**, 2085-97 (1978); G. S. Collins and N. Benczer-Koller.
3. *Effects of Probe Valence on the Conduction Electron Electric-Field Gradient in Noncubic Metals*, *Hyperfine Interactions* **4**, 523-7 (1978); G. S. Collins.
4. *Applications of the Mössbauer Effect to the Characterization of an Amorphous Tin-Oxide System*, *Phys. Rev. B* **19**, 1369-73 (1979); G. S. Collins, T. Kachnowski, N. Benczer-Koller and M. Pasternak.
5. *Hyperfine Field Distributions in Nickel Alloys Measured by Time Differential Perturbed Angular Correlations*, *Phys. Lett.* **78A**, 201-4 (1980); G. S. Collins, L. Chow, T. Eschrich and C. Hohenemser.
6. *Hyperfine Field Distributions at ^{111}Cd Probes in Nickel Alloys: I. Nontransition Metals Solute Cu and Si*,

- Hyperfine Interactions 9, 465-70 (1981); G. S. Collins.
7. *Hyperfine Field Distributions at ^{111}Cd Probes in Nickel Alloys: II. Transition Metal Solutes Fe, Co, Mn and Rh*, Hyperfine Interactions 9, 471-6 (1981); G. S. Collins.
 8. *Critical Behavior of Quenched, Randomly Disordered Ni and Fe Alloys*, Hyperfine Interactions 10, 893-99 (1981); A. R. Chowdhury, C. Allard, R. M. Suter, G. S. Collins, C. Hohenemser and M. A. Kobeissi.
 9. *Vacancy Trapping in Plastically Deformed Metals Studied by Hyperfine Interactions*, Phys. Lett. 84A, 289-93 (1981); G. S. Collins, G. P. Stern and C. Hohenemser.
 10. *Comparison of Dynamical Critical Behavior in Isotropic Ferromagnets*, J. Appl. Phys. 53, 7942-44 (1982); C. Hohenemser, L. Chow, A. R. Chowdhury and G. S. Collins.
 11. *Mössbauer Measurements of Static Critical Behavior in Disordered FeAl Alloys*, Phys. Rev. B26, 4997-5008 (1982); G. S. Collins, A. R. Chowdhury, and C. Hohenemser.
 12. *Deuterium Desorption and Host Interstitial Clustering in d-irradiated Ni*, in Electronic Structure and Properties of Hydrogen in Metals, ed. P. Jena and C. B. Satterthwaite, (Plenum: N.Y., 1983) p. 589-94; C. Allard, G. S. Collins and C. Hohenemser.
 13. *Comment on the Role of Spin Nonconserving Forces in the Critical Dynamics of Fe and Ni*, Phys. Rev. Lett. 50, 1877 (1983); C. Hohenemser, R. M. Suter, L. Chow and G. S. Collins.
 14. *Defect Recovery and Trapping in Plastically Deformed Au Studied by Perturbed Angular Correlations of ^{111}In* , Phys. Rev. B28, 2940-46 (1983); G. S. Collins, C. Allard, R. B. Schuhmann and C. Hohenemser. Erratum: Phys. Rev. B31, 2528 (1985).
 15. *Comparison of Defect Recovery in Proton Irradiated, Deformed and Ion Implanted Ni as Observed by PAC of ^{111}In* , Hyperfine Interactions 15/16, 387-90 (1983); C. Allard, G. S. Collins and C. Hohenemser.
 16. *Trivacancy Recovery and Formation of a Cubic Symmetry Defect Trap on ^{111}In Impurities in Ni*, Hyperfine Interactions 15/16, 391-4 (1983); G. S. Collins and R. B. Schuhmann.
 17. *Anomalous Temperature Dependence of the Quadrupole Coupling Frequency of a Lattice Defect Trapped to ^{111}In in Pt*, Hyperfine Interactions 15/16, 395-9 (1983); G. S. Collins and R. B. Schuhmann.
 18. *Nuclear Spin Relaxation of ^{161}Dy in Gd above the Curie Temperature Observed with the Mössbauer Effect*, Hyperfine Interactions 15/16, 617-20 (1983); A. Chowdhury, G. Collins and C. Hohenemser.
 19. *Anomalous Critical Slowing Down of Spin Fluctuations in Gd Observed with ^{161}Dy Mössbauer Effect*, Phys. Rev. B30, 6277-84 (1984); A. R. Chowdhury, G. S. Collins and C. Hohenemser.
 20. *Vacancy Migration and Accretion in Ni Observed by Perturbed Gamma-Gamma Angular Correlations*, Phys. Rev. B32, 4839-48 (1985); C. Allard, G. S. Collins and C. Hohenemser.
 21. *An Fe Mössbauer Effect Study of Metastable $\text{Al}_{86}\text{Fe}_{14}$ Prepared by Rapid Solidification*, Hyperfine Interactions 26, 963-66 (1986); R. A. Dunlap, K. Dini, G. Stroink, G. S. Collins and S. Jha.
 22. *The Effect of Random Anisotropy on Critical Behavior: Search for Hysteresis and Rounding in FeV using the Mössbauer Effect*, Hyperfine Interactions 28, 673-76 (1986); X. S. Chang, G. S. Collins and C. Hohenemser.
 23. *Anomalous Critical Spin Dynamics in Gd: A Revision*, Phys. Rev. B33, 5070-2 (1986); A. R. Chowdhury, G. S. Collins and C. Hohenemser.
 24. *Static Universality Class Implied by the Critical Exponents in Gd*, Phys. Rev. B33, 6231-4 (1986); A. R. Chowdhury, G. S. Collins and C. Hohenemser.
 25. *Observation of Isotropic Critical Spin Fluctuations in Gd*, Phys. Rev. B33, 4747-51 (1986); G. S. Collins, A. R. Chowdhury and C. Hohenemser.
 26. *Hydrogen and Deuterium Decoration of a Vacancy Complex in Ni*, Phys. Rev. B34, 502-5 (1986); G. S. Collins and R. B. Schuhmann.
 27. *Point Defects in Deformed Metals Studied by Perturbed Gamma-Gamma Angular Correlations*, Materials Science Forum 15-18, 783-8 (1987); G. S. Collins.
 28. *Hydrogen-Vacancy Interactions in Ni Studied by Perturbed Angular Correlations*, Materials Science Forum 15-18, 681-4 (1987); G. S. Collins and R. B. Schuhmann.

29. *Defects in Laser Surface-Melted Metals Studied by PAC*, in Characterization of Defects in Materials, ed. R. W. Siegel, J. R. Weertman and R. Sinclair, Mat. Res. Soc. Symp. Proc. 82, 53-8; (1987) G. S. Collins, C. Allard, C. Hohenemser and C. W. Draper.
30. *Perturbed Angular Correlations Studies of Alloys*, in Electronic Structure and Lattice Defects in Alloys, eds. R. W. Siegel and F. E. Fujita (Trans Tech Publications, 1989), p. 139-49; G. S. Collins.
31. *Hydrogen Decoration of Vacancy Defects in Platinum*, in Nuclear Physics Applications on Materials Science, ed. E. Recknagel and J. C. Soares, NATO ASI Series E: Applied Science (Kluwer, Dordrecht 1988) , vol. 144, p. 415-6; G. S. Collins, H.-J. Jang and S. Shropshire.
32. *Diffusion and Trapping of Hydrogen in Vacancies in Platinum Studied by PAC*, Defect and Diffusion Forum 66-69, 335-40 (1989); G. S. Collins, S. L. Shropshire and H.-J. Jang
33. *Production and Migration of Interstitials in Deformed Metals*, Hyperfine Interactions 60, 667-70 (1990); Steven L. Shropshire and G. S. Collins.
34. *Cage Motion of a Probe Atom in a Vacancy Complex in Pt*, Hyperfine Interactions 60, 651-4 (1990); G. S. Collins, S. L. Shropshire and H.-J. Jang.
35. *Point Defects in NiAl Near the Equiatomic Composition*, Hyperfine Int. 60, 655-8 (1990); J. Fan and G. S. Collins.
36. *Stacking Fault Defects in HCP Cobalt Studied by PAC*, Hyperfine Interactions 60, 659-62 (1990); G. McGhee and G. S. Collins.
37. *Electrolytic Loading of Hydrogen in Metals Studied by PAC*, Hyperfine Interactions 60, 663-66 (1990); G. S. Collins, G. McGhee, S. L. Shropshire, H.-J. Jang, J. Fan and R. B. Schuhmann.
38. *Laser Surface-Melting of Metals Studied by PAC*, Hyperfine Interactions 61, 1339-42 (1990); G. S. Collins and K. Zainun.
39. *Perturbed gamma-gamma Angular Correlations: A Spectroscopy for Point Defects in Metals and Alloys*, Hyperfine Interactions 62, 1-34 (1990); G. S. Collins, S. L. Shropshire and J. Fan.
40. *Pressure Dependence of the Hyperfine Field of a Cd probe in a Relaxed-Trivacancy Complex in Ni*, Phys. Rev, B45, 4672-5 (1992); Lee Chow, Xin Zhao and Gary S. Collins.
41. *Application of PAC to study equilibrium point defects in intermetallic compounds*, Hyperfine Interactions 80, 1257-61 (1993); Gary S. Collins and Jiawen Fan.
42. *Equilibrium point defects in TiAl studied by PAC*, Hyperfine Interactions 79, 745-8 (1993); Jiawen Fan and Gary S. Collins.
43. *Hydrogen binding in vacancy clusters in platinum*, Hyperfine Interactions 79, 749-53 (1993); Steven L. Shropshire and Gary S. Collins.
44. *Atomic diffusion in strain fields near solutes*, Hyperfine Interactions 79, 755-60 (1993); S.L. Shropshire and G.S. Collins.
45. *Grain boundary sites in fcc metals studied by PAC*, Hyperfine Interact. 79, 761-4 (1993); Bin Bai and Gary S. Collins.
46. *The martensitic phase transition in NiTi*, Hyperfine Interactions 80, 995-8 (1993); John C. Sy and Gary S. Collins.
47. *Indium metal nanoclusters studied by PAC*, Hyperfine Interactions 80, 1117-20 (1993); P. Sinha and G.S. Collins.
48. *Indium nanocrystals studied by perturbed angular correlations*, Nanostructured Materials 3, 217-24 (1993); Praveen Sinha and Gary S. Collins.
49. *Formation of FeCo by mechanical alloying*, Scripta Metallurgica et Materialia 29, 1319-23 (1993); Gary S. Collins and Bruce H. Meeves.
50. *Mössbauer and PAC studies of nanocrystalline Fe*, Hyperfine Interactions 92, 949-53 (1994); P. Sinha and G.S. Collins.
51. *Formation of Ni₃Fe by mechanical alloying*, Hyperfine Interactions 92, 955-8 (1994); Bruce H. Meeves and Gary S. Collins.
52. *Hydrogen trapping in vacancies in metals studied by PAC*, in Local Order in Condensed-Matter Physics, eds. S.D. Mahanti and P. Jena (Nova Science Publishers, 1995), pages 85-94, ISBN 1-56072-220-7; Gary S. Collins and

Steven L. Shropshire.

53. *Properties of nanocrystalline zinc produced by gas condensation*, Nanostructured Materials **4**, 103-12 (1994); K. Recknagle, Q. Xia, J.N. Chung, C.T. Crowe, H. Hamilton and G.S. Collins
54. *A new approach to study vacancy defects in high-temperature intermetallic compounds*, by Gary S. Collins and Praveen Sinha, Materials Research Society Symposium Proceedings, vol. 364, pp. 59-64, 1995.
55. *Atomic defects and disorder in mechanically-milled intermetallic compounds*, Materials Science Forum **225-227**, 275-80 (1996); Gary S. Collins and Praveen Sinha.
56. *Point defects in B2 intermetallic compounds*, Hyperfine Interactions (C) **1**, 380-4 (1996); Gary S. Collins, Praveen Sinha and Mingzhong Wei.
57. *Point defects in FeAl*, Il Nuovo Cimento **18D**, 329-36 (1996); Gary S. Collins and Luke S.J. Peng.
58. *Disordering of FeAl by Mechanical Milling*, Materials Science Forum **235-238**, 535-41 (1997); Luke S.J. Peng and Gary S. Collins.
59. *Equilibrium point defects in NiAl and similar B2 intermetallics studied by PAC*, in *Structural Intermetallics 1997*, eds. M.V. Nathal et al. (The Minerals, Metals and Materials Society, 1997) ISBN 0-87339-375-9, pages 43-52; Gary S. Collins, Jiawen Fan and Bin Bai.
60. *Point defects and the B2 to fcc transformation in milled FeRh*, by Luke S.-J. Peng and Gary S. Collins, in *Phase Transformations and Systems Driven Far From Equilibrium*, eds. E. Ma, P. Bellon, M. Atzmon, R. Trivedi, Mat. Res. Soc. Symp. Proc. **481**, 631-6 (1998).
61. *Vacancy mobility in nickel aluminide versus composition*, by Bin Bai, Jiawen Fan and Gary S. Collins, in *Diffusion Mechanisms in Crystalline Materials*, eds. Y. Mishin, N.E.B. Cowern, C.R.A. Catlow, D. Farkas, G. Vogl, Mat. Res. Soc. Symp. Proc. **527**, 203-8 (1998).
62. *Stochastic vacancy motion in B2 intermetallics studied by PAC*, by Bin Bai, Gary S. Collins, Harmen Thys Nieuwenhuis, Mingzhong Wei and William E. Evenson, in *Diffusion Mechanisms in Crystalline Materials*, eds. Y. Mishin, N.E.B. Cowern, C.R.A. Catlow, D. Farkas, G. Vogl, Mat. Res. Soc. Symp. Proc. **527**, 210-5 (1998).
63. *Equilibrium defects and concentrations in nickel aluminide*, by Bin Bai and Gary S. Collins, in *High-temperature ordered intermetallic alloys VIII*, eds. E.P. George, M. Mills and M. Yamaguchi, Materials Research Society Symposium Proceedings **552**, KK8.7.1-6 (1999) (Page numbers are as listed.)
64. *Thermal defects in B2 iron aluminide*, by Gary S. Collins, Luke S.-J. Peng and Mingzhong Wei, in *High-temperature ordered intermetallic alloys VIII*, eds. E.P. George, M. Mills and M. Yamaguchi, Materials Research Society Symposium Proceedings **552**, KK4.2.1-6 (1999). (Page numbers are as listed.)
65. *Deformation-assisted decomposition of unstable Fe₅₀Cu₅₀ solid solution during low-energy ball milling*, by J. Xu, G.S. Collins, L.S.J. Peng and M. Atzmon, Acta Materialia **47**, 1241-53 (1999).
66. *Search for nucleation of phase embryos in binary alloys by impurity atoms*, by Gary S. Collins, Luke S.-J. Peng and Matthew O. Zacate, Z. Naturforschung **55a**, 129-133 (2000).
67. *Structural, thermal and deformation-induced point defects in PdIn*, Gary S. Collins and Praveen Sinha, in *Hyperfine Interactions in Nanocrystalline Materials*, guest ed. G.S. Collins, Hyperfine Interactions **130**, 151-79 (Kluwer 2000).
68. *Vacancy Jumps in PdIn: Reconciling Nuclear Relaxation and Diffusion Measurements*, Gary S. Collins and Harmen Thys Nieuwenhuis, Defect and Diffusion Forum **194-199**, 375-83 (2001).
69. *Vacancy-vacancy interactions in NiAl*, Matthew O. Zacate and Gary S. Collins, Defect and Diffusion Forum **194-199**, 383-88 (2001).
70. *Nucleation of a second phase by individual impurity atoms*, Matthew O. Zacate, Gary S. Collins and Luke S.-J. Peng, Materials Science and Engineering A **329-331**, 920-924 (2001).
71. *Site preference model for hyperfine impurities in compounds*, Gary S. Collins and Matthew O. Zacate, Hyperfine Interactions **136/137**, 641-646 (2001).
72. *Site preferences of hyperfine impurities in Ni₂Al₃ phases*, Matthew O. Zacate and Gary S. Collins, Hyperfine Interactions **136/137**, 647-652 (2001).
73. *Segregation of solutes in two-phase mixtures*, Matthew O. Zacate, Bonner C. Walsh, Luke S.-J. Peng and Gary S. Collins, Hyperfine Interactions **136/137**, 653-658 (2001).

74. [Stochastic model of PAC nuclear relaxation caused by defects hopping on a simple cubic lattice](#), Taylor D. Grow, Stephanie Plamondon, William E. Evenson and Gary S. Collins, *Hyperfine Interactions* 136/137, 627-632 (2001).
75. [Influences of lattice sinks and defect interactions on solutes in compounds](#), Gary S. Collins and Matthew O. Zacate, *Mat. Res. Soc. Symp. Proc.*, vol. 719, pages F8.19.1-F8.19.6 (2002).
76. [Point defects in FeAl studied by perturbed angular correlation](#), Gary S. Collins, Luke S.-J. Peng and Matthew O. Zacate, *Defect and Diffusion Forum* 213-215, 107-132 (2003).
77. [Charge transfer model for quadrupole interactions and binding energies of point defects with \$^{111}\text{In}/\text{Cd}\$ probes in cubic metals: on the occasion of the 80th birthday of Hendrik de Waard](#), Gary S. Collins and Matthew O. Zacate, *Hyperfine Interactions* 151, 77-91 (2003).
78. [Composition-driven changes in lattice sites occupied by indium solutes in \$\text{Ni}_2\text{Al}_3\$ phases](#), Matthew O. Zacate and Gary S. Collins, *Physical Review* B70, 24202(1-17) (2004).
79. [Temperature- and composition-driven changes in site occupation of solutes in \$\text{Gd}_{1+3x}\text{Al}_{2-3x}\$](#) , Matthew O. Zacate and Gary S. Collins, *Physical Review* B69, 174202(1-9) (2004).
80. [Atom Movement in \$\text{In}_3\text{La}\$ studied via Nuclear Quadrupole Relaxation](#), Matthew O. Zacate, Aurélie Favrot and Gary S. Collins, *Physical Review Letters* 92, 225901(1-4) (2004); and [Erratum](#), *Physical Review Letters* 93, 49903(1) (2004).
81. [High temperature polymorph of \$\text{In}_2\text{La}\$](#) , E. R. Nieuwenhuis, Gary S. Collins, Aurélie Favrot, Matthew O. Zacate, *Journal of Alloys and Compounds* 387, 20-23 (2005).
82. [Diffusion in intermetallic compounds studied using nuclear quadrupole relaxation](#), G. S. Collins, A. Favrot, L. Kang, D. Solodovnikov and M.O. Zacate, *Defect and Diffusion Forum* 237-240, 195-200 (2005).
83. [Jump frequency of Cd tracer atoms in \$\beta\text{-Mn}\$](#) , Matthew O. Zacate and Gary S. Collins, *Defect and Diffusion Forum* 237-240, 396-401 (2005).
84. [PAC probes as diffusion tracers in solids](#), Gary S. Collins, Aurélie Favrot, Li Kang, Egbert Rein Nieuwenhuis, Denys Solodovnikov, Jipeng Wang and Matthew O. Zacate, *Hyperfine Interactions* 159, 1-8 (2005).
85. [Polymorphic phase transformation in \$\text{In}_2\text{La}\$ and \$\text{CeIn}_2\$](#) , Egbert R. Nieuwenhuis, Aurélie Favrot, Li Kang, Matthew O. Zacate and Gary S. Collins, *Hyperfine Interactions* 158, 305-8 (2005).
86. [Nonstoichiometry in line compounds](#), Gary S. Collins, *Journal of Materials Science* 42, 1915-1919 (2007), <http://dx.doi.org/10.1007/s10853-006-0055-2>.
87. [Simultaneous measurement of tracer jump frequencies on different sublattices in \$\text{Ga}_7\text{Pd}_3\$ using PAC](#), Egbert R. Nieuwenhuis, Matthew O. Zacate and Gary S. Collins, *Defect and Diffusion Forum* 264, 27-32 (2007).
88. [Diffusion of \$^{111}\text{Cd}\$ probes in \$\text{Ga}_7\text{Pt}_3\$ studied via nuclear quadrupole relaxation](#), Farida Selim, John P. Bevington and Gary S. Collins, *Hyperfine Interactions* 178, 87-90 (2007). DOI: 10.1007/s10751-008-9663-3.
89. [Site preferences of indium impurity atoms in intermetallics having \$\text{Al}_3\text{Ti}\$ or \$\text{Al}_3\text{Zr}\$ crystal structures](#), John P. Bevington, Farida Selim and Gary S. Collins, *Hyperfine Interactions* 177, numbers 1-3, pp. 15-19 (2007). DOI: 10.1007/s10751-008-9615-y.
90. [Motion of cadmium tracer atoms in \$\text{Al}_1\text{R}_3\$ phases \(\$R = \text{La}, \text{Ce}, \text{Pr}\$ \)](#), Stephanie Lage and Gary S. Collins, *Defect and Diffusion Forum* 289-292, 755 (2009).
91. [Jump frequencies of Cd tracer atoms in \$\text{LI}_2\$ lanthanide gallides](#), Xia Jiang, Matthew O. Zacate and Gary S. Collins, *Defect and Diffusion Forum* 289-292, 725 (2009).
92. [Change of diffusion mechanism with lattice parameter in the series of lanthanide indides having \$\text{LI}_2\$ structure](#), Gary S. Collins, Xia Jiang, John P. Bevington, Farida Selim and Matthew O. Zacate, *Physical Review Letters* 102, 155901 (2009). Online April 17, 2009 at <http://link.aps.org/abstract/PRL/v102/e155901>.
93. [Relating PAC damping to EFG fluctuation rates via the PAC relaxation peak](#), Tyler Park, Jeffrey A. Hodges, Carlos Moreno, Michael Stufflebeam, William E. Evenson, P. Matheson, Matthew O. Zacate and Gary S. Collins (*Hyperfine Interactions*; DOI 10.1007/s10751-011-0332-6, published online April 15, 2011; in print later).
94. [Comparison of jump frequencies of \$^{111}\text{In}/\text{Cd}\$ tracer atoms in \$\text{Sn}_3\text{R}\$ and \$\text{In}_3\text{R}\$ phases having the \$\text{LI}_2\$ structure \(\$R = \text{rare earth}\$ \)](#), Megan Lockwood, Benjamin Norman, Randal Newhouse and Gary S. Collins, *Defect and Diffusion Forum*, vol. 311, p. 159 (2011).

95. *Fitting PAC spectra with stochastic models: PolyPacFit*, M.O. Zacate, W.E. Evenson, R. Newhouse and G.S. Collins, *Hyperfine Interactions* 197 (2010) 223-227.
96. *Diffusion in binary and pseudo-binary $L1_2$ indides, stannides, gallides and aluminides of rare-earth elements as studied using perturbed angular correlation of $^{111}\text{In}/\text{Cd}$* , Randal Newhouse, Justine Minish and Gary S. Collins (accepted for publication in *Defect and Diffusion Forum*, September 2011). <http://arxiv.org/abs/1109.2261>
97. *Diffusion in $\text{La}_n\text{CoIn}_{3n+2}$ phases studied by perturbed angular correlation*, Randal Newhouse and Gary S. Collins (accepted for publication in *Defect and Diffusion Forum*, September 2011). <http://arxiv.org/abs/1109.2262>
98. *The solubility of indium in liquid gallium supercooled to 12 K*, Xiangyu Yin and Gary S. Collins (provisionally accepted for publication in *Defect and Diffusion Forum*, September 2011). <http://arxiv.org/abs/1109.2263>

C. UNREFEREED AND OTHER PUBLICATIONS

1. Three-Year Progress Report 1976-79, Hyperfine Interactions Group, Clark University, October 1979, 138 pages; eds. G. S. Collins and C. Hohenemser.
2. Book review: Physics for Scientists and Engineers, Sheldon H. Radin and Robert T. Folk; Prentice-Hall, Englewood Cliffs, NJ 1982; *Amer. Jour. Phys.* 53, 382-3 (1985).
3. Book review: Rules of Thumb for Physical Scientists, D. J. Fisher, Trans Tech Publications, Switzerland; *Amer. Jour. Phys.* 57, 669 (1989).
4. *Deuteron Tunneling at Electron-Volt Energies*, G. S. Collins, J. W. Norbury and J. S. Walker, *Journal of Fusion Energy* 9, 409-11 (1990).
5. Preface, Hyperfine Interactions of Nanocrystalline Materials, ed. G.S. Collins, *Hyperfine Int.* 130, 1-3 (2000).

PROFESSIONAL SERVICE

Editorial boards and editorships:

Associate Editor, Hyperfine Interactions (Springer, 1998-now)

Editorial Advisory Board Member, Materials Science Foundations (Trans Tech, 1997-now)

Guest Editor, Hyperfine Interactions in Nanocrystalline Materials, *Hyperfine Interactions* 130 (Kluwer 2000)

Journal article referee: (298 reports, 1982-2012) (Named “*APS Outstanding Referee*” in 2010)

Applied Physics Letters
 Chemical Physics (Elsevier)
 Chemical Physics Letters (Elsevier)
 Computer Physics Communications
 Europhysics Letters
 Hyperfine Interactions (*many*)
 IEEE Transactions on Magnetics
 Inorganic Chemistry
 Intermetallics
 Journal of Alloys and Compounds
 Journal of Applied Physics
 Journal of Chemical Physics
 Journal of Fusion Technology
 Journal of Magnetism and Magnetic Materials (*many*)
 Journal of Materials Engineering and Performance
 Journal of Materials Research
 Journal of Materials Science
 Journal of Nuclear Materials
 Journal of Physical Chemistry
 Journal of Physical Chemistry Letters
 Journal of Physics: Condensed Matter (*many*)
 Journal of Physics D: Applied Physics
 Journal of the Physics and Chemistry of Solids

Materials Research Society Symposium Proceedings
 Materials Science and Engineering A
 Metallurgical and Materials Transactions A
 Metallurgical Transactions A
 Modeling and Simulation in Materials Science and Engineering
 Nanotechnology
 New Journal of Physics
 Nuclear Instruments and Methods B: Beam Interactions with Materials and Atoms
 Physical Review B (*very many*)
 Physical Review Letters (*very many*)
 Physics Letters A
 Scripta Metallurgica et Materialia
 Spectroscopy
 Thin Solid Films

I have refereed ten or so additional submissions while attending national and international conferences.

Proposal reviewer: (71 reviews, 1981-2012)

Czech Science Foundation
 Department of Energy (DOE) Materials Science Division (regular and SBIR)
 DOE Solid State Physics and Materials
 FOM Materials Science (The Netherlands)
 Idaho Board of Education Special Research Grant
 International Science Foundation (George Soros)
 Israel Science Foundation
 National Science Foundation (NSF) Ceramic and Electronic Materials
 NSF Chemistry (Materials Synthesis and Processing)
 NSF CAREER Program
 NSF Ceramics
 NSF Condensed Matter Physics
 NSF Electronic Materials
 NSF International Programs
 NSF Low Temperature Physics
 NSF Major Research Instrumentation
 NSF Metals
 NSF Research Experience for Undergraduates
 NSF Solid State Physics
 NSF Two and Four Year College Instrumentation
 Natural Sciences and Engineering Research Council (NSERC), Canada
 Natural Sciences and Engineering Research Council (NSERC), Canada, Discovery Grants
 Petroleum Research Fund
 Research Corporation
 Rustaveli National Science Foundation, Georgia (former SSR)
 Tata Institute for Fundamental Research, Mumbai
 US Civilian Research and Development Foundation (Cooperative grants between Eurasian and US researchers)
 US Civilian Research and Development Foundation and Russian Foundation for Basic Research
 (2008 Cooperative Grant Program--RFBR Multidisciplinary Climate Change Competition)

Book proposal review: CRC Press, Taylor and Francis Publishers, Dec. 2004.

Proposal review panelist: National Science Foundation, Condensed Matter Physics, CAREER grants, Jan. 1997.

Program review panelist: Department of Energy, Materials Science Program, Bethesda, May 1993.

Conference organization:

Member, International Advisory Committee, *10th Int. Conf. on Hyperfine Interactions*, Leuven, Aug. 1995
 Member, International Advisory Committee, *11th Int. Conf. on Hyperfine Interactions*, Johannesburg, Aug 1998
 Member, International Committee on Nuclear Quadrupole Interactions, 1999-2004 and 2007-2010; an executive committee overseeing periodic International Symposia on Nuclear Quadrupole Interactions (NQI series).

- Member, Organizing Committee, *12th Int. Conf. on Hyperfine Interactions*, Park City, Aug 2001
- Member, International Advisory Committee, *12th Int. Conf. on Hyperfine Interactions*, Park City, Aug 2001
- Principal Organizer and Chair, *17th International Symposium on Nuclear Quadrupole Interactions*, Seattle, September 2003 (meeting postponed and subsequently combined with Hyperfine Interactions conference in Bonn in August 2004 under other chairmen)
- Co-chair, Local Organizing Committee, *Northwest Section Meeting*, American Physical Society, May 20-21, 2004, University of Idaho and Washington State University, Pullman, WA and Moscow, ID
- Member, International Advisory Committee, *13th Int. Conf. on Hyperfine Interactions*, Bonn, August 23-27, 2004
- Member, International Advisory Committee, *International Workshop on 35th Anniversary of Hyperfine Interactions at La Plata*, Buenos Aires, Nov 2005.
- Member, Program Committee to select plenary, invited condensed matter physics speakers for the *Northwest Section Meeting*, American Physical Society, Victoria, BC, May 2005.
- Member, International Advisory Committee, *14th Int. Conf. on Hyperfine Interactions and 18th Internat. Symposium on Nuclear Quadrupole Interactions (HFI/NQI 2007)*, Iguassu Falls, Brazil, August 6-10, 2007.
- Member, International Advisory Committee, *15th Int. Conf. on Hyperfine Interactions and International Symposium on Nuclear Quadrupole Interactions (HFI/NQI 2010)*, Geneva, September 2010.
- Member, Advisory Committee, *International Workshop on Grain Boundary Diffusion, Stresses and Segregation (DSS-2010)*, Moscow, May 2010.
- Member, International Advisory Committee, *16th Int. Conf. on Hyperfine Interactions and International Symposium on Nuclear Quadrupole Interactions (HFI/NQI 2012)*, Beijing, September 2012.

Workshops attended:

- 15th WIEN2k FLAPW-lo Calculation Workshop*, Vienna, March 25-29, 2008; organized by Prof. Dr. Karlheinz Schwarz and Peter Blaha, Technical University of Vienna. <http://www.wien2k.at/events/ws2008/>
- ISOLDE Users' Workshop*, European Center for Nuclear Research (CERN), November 18-19, 2008, Geneva. <http://indico.cern.ch/conferenceDisplay.py?confId=36293>

Online bibliographies authored:

- Perturbed angular correlation spectroscopy (<http://www.infography.com/content/411484962986.html>)
- Defects in metals and intermetallic compounds (<http://www.infography.com/content/436883584799.html>)

Affiliations at Washington State University:

- Materials Science and Engineering Program (1987-now; previously named *Chemical Physics Program*)
- Center for Materials Research (1989- now)
- AAUP local chapter at WSU, Member-at-Large, Executive Committee, <http://www.wsu-aaup.org> (since fall 2009)

Professional society memberships:

- American Physical Society (APS), active
- American Association of University Professors (AAUP), active
- AAUP-WSU Chapter, Member-at-Large, Executive Committee; elected fall 2009 (AAUP-WSU), active
- Materials Research Society (MRS), inactive
- The Minerals, Metals & Materials Society (TMS) , inactive

Professional society committee service:

- Chemistry and Physics of Materials Committee, The Minerals, Metals and Materials Society (TMS), member elected for term 1995-98.

Consulting

- 1991-93 Consultant: *Idaho National Engineering Laboratory*.
- 1993 Consultant: *Oak Ridge National Laboratory*.

Evaluations for Promotion, Tenure, and Awards

- 1994 For promotion to associate professor of physics and tenure, Hussein Hamdeh, Physics, Wichita State Univ.
- 1998 For promotion to full professor of physics, Hussein Hamdeh, Physics, Wichita State University.
- 2000 For Killam Faculty of Science Distinguished Professorship, Richard A. Dunlap, Dalhousie University.
- 2002 For promotion to full professor of physics, Bengt Lindgren, Physics, Uppsala University.
- 2003 For promotion to associate professor and tenure, Ralf Busch, Materials, Oregon State University.
- 2005 For Distinguished Researcher Award, Lee Chow, Physics, University of Central Florida.
- 2005 For promotion to full professor of materials science, Ralf Busch, Materials, Oregon State University.
- 2006 For Distinguished Researcher Award, Lee Chow, Physics, University of Central Florida.

- 2007 For Distinguished Researcher Award, Lee Chow, Physics, University of Central Florida.
- 2007 For promotion to senior lecturer, Ilan Yaar, Ben-Gurion University of the Negev.
- 2007 For promotion to full professor of physics, Herbert Jaeger, Miami University.
- 2008 For promotion to adjunct associate professor, Ilan Yaar, Ben-Gurion University of the Negev.
- 2009 For promotion to full professor of physics, Ahmad Ali Joraid, Taibah University, Medina, Saudi Arabia.

Professional leaves

- 1995 Nuclear Solid-State Physics Group, Department of Physics, University of Groningen, The Netherlands (6 months). Research with Frits Pleiter and other members of group of ~20 staff and students.
- 1996 Nuclear Solid-State Physics Group, Department of Physics, University of Konstanz, Germany (6 months). Research with Manfred Deicher and other members of group of about 30 staff and students belonging to research groups of Professors Ekhard Recknagel and Günter Schatz.
- 2002 Visits at European universities: Univ. of the Saarlandes (Prof. Dr. Thomas Wichert), Univ. of Paderborn (Prof. Drs. Gerhard Wortmann and Wilfried Holtzapfel), Univ. of Leipzig (Prof. Drs. Tilman Butz and Wolfgang Tröger), Univ. of Göttingen (Prof. Dr. Peter Lieb), Technical Univ. of Vienna (Prof. Dr. Walter Steiner), and Univ. of Vienna (Prof. Drs. Wolfgang Pfeiler and Gero Vogl).
- 2008 Visits at European universities: Univ. of the Saarlandes (Prof. Dr. Thomas Wichert), Univ. of Leipzig (Prof. Dr. Tilman Butz), Univ. of Hannover (Prof. Dr. Paul Heitjans), Univ. of Muenster (Prof. Drs. Nicolaas Stolwijk and Christian Herzig), and the Helmholtz Zentrum Berlin (formerly Hahn Meitner Institute; Drs. Rainer Sielemann and Heinz-Eckhard Mahnke). Discussions about possible experiments with exotic PAC probes at the online isotope separator and implantation facility ISOLDE, CERN, Geneva, with Manfred Deicher and Thomas Wichert, Uni-Saarlandes. Collaboration with Matthew Zacate, Northern Kentucky University, on *ab initio* calculations of atomistic properties of solids and electric-field gradients using the *WIEN2k* full-potential, all-electron program (see <http://www.wien2k.at/>).

Research collaborations

- 1999-04 Mössbauer studies to determine local environments of Fe-cations in muscovites and illites, with Philip Rosenberg, Professor of Geology, WSU.
- 2002-03 Extended x-ray absorption fine structure (XAFS) experiments to determine lattice locations of impurities in intermetallic compounds, in collaboration with Pacific Northwest Consortium Collaborative Access Team (PNC-CAT), Advanced Photon Source, Argonne National Laboratory (principal collaborator: Dale Brewes). August, 2002, November 2002, February 2003.
- 2004-05 NMR studies to determine local environments of various cations in muscovites and illites, with Philip Rosenberg, Professor of Geology, and Dan Mitchell, Ph.D., Assistant Director, Center for NMR Spectroscopy, WSU.
- 2005-08 PAC studies of ZnS, with Philip Rosenberg, Professor of Geology, WSU, and Xiao Wang, Graduate Student in Physics.
- 2005-08 Luminescence studies of ZnS, with Philip Rosenberg, Prof. of Geology, Xiao Wang, Graduate Student in Physics, Zbigniew Dreger, Research Scientist, Shock Physics Institute, and Baozhou Sun, Postdoctoral Research Associate, Shock Physics Institute.
- 2006-07 Electron spin resonance study of unpaired spins in ZnS samples doped with impurities Cu, Ag, Na and Li., with Philip Rosenberg, Professor of Geology, Xiao Wang, Graduate Student of Physics, and Louis Scudiero, Assistant Professor of Chemistry, WSU.
- 2007-08 Magnetization measurements using a SQUID magnetometer, with You Qiang, Assistant Professor of Physics, University of Idaho.
- 2008- “Radiotracer diffusion in semiconductors and metallic compounds using short-lived isotopes”, Proposal to the ISOLDE and Neutron Time-of-Flight Experiments Committee for beam time, ISOLDE, European Organization for Nuclear Research (CERN proposal stamp CERN-INTC-2009-013 / INTC-P-261), January 18, 2009. Spokesperson: Manfred Deicher. Participants: M. Deicher, G.S. Collins, R. Gerten, J.

Kronenbert, M. Türker, F. Wagner, Th. Wichert, H. Wolf and M.O. Zacate. Beam time was awarded in February 2009, and will provide for PAC measurements of jump frequencies of ^{117}In in host probes in indide compounds to complement current studies on ^{111}Cd . Matt Zacate participated in a $^{117}\text{Cd}/\text{In}$ run in November 2010 at CERN.

- 2008- Measurement of jump frequencies of ^{115}In NMR probe atoms in rare earth indides via nuclear quadrupole resonance, with Tim Bastow, CSIRO National Laboratory, Melbourne.
- 2008- Computing properties of solids using *WIEN2k*, a full-potential, all-electron, linearized augmented-plane-wave method (<http://www.wien2k.at/>). Collaborative computations carried out here and by Professor Matthew Zacate at Northern Kentucky University, an Adjunct Professor at WSU.
- 2009- “Defect energies and diffusion mechanisms in intermetallics”, Award from the TeraGrid Project, <http://www.teragrid.org>, DMR090131. New Startup allocation of supercomputer time for *WIEN2k* computations, approved August 2009.
- 2010- “Point defects, site preferences and diffusion in intermetallics”, Award from the TeraGrid Project, <http://www.teragrid.org>, renewal of Startup grant DMR090131, for supercomputer time for *WIEN2k* computations, approved August 2010.
- 2011- “Diffusion in intermetallic compounds studied using short-lived radioisotopes”, Proposal to the ISOLDE Committee for beam time, ISOLDE, European Organization for Nuclear Research (CERN proposal stamp CERN-INTC-2011-010 / INTC-P-294), submitted January 5, 2011. Spokesperson, Matthew Zacate. Participants: M.O. Zacate, M. Deicher, K. Johnston, M. Lehnert, F. Strauss, and G.S. Collins. Beam time was awarded in February 2011, and will provide for PAC measurements of jump frequencies of $^{111\text{m}}\text{Cd}/\text{Cd}$ probe atoms in various compounds to complement current studies using $^{111}\text{In}/\text{Cd}$ probes. For both probes, measurements are made for the same 247 keV excited state of ^{111}Cd , but the parent atom differs, so that the probes might occupy different lattice sites at the time of creation of the excited state. Matt Zacate is expected to make measurements at CERN in the near future.
- 2012- Addendum to ISOLDE proposal P261, “Radiotracer diffusion in semiconductors and metallic compounds using short-lived isotopes” (see under 2008- above).

PERSONAL PRESENTATIONS

A. INVITED AND SPECIAL PRESENTATIONS AT CONFERENCES

1. *Anomalous Temperature Dependence of the Quadrupole Coupling Frequency of a Lattice Defect Trapped to ^{111}In in Pt*, Sixth International Conference on Hyperfine Interactions, Groningen, The Netherlands, 1983. Plenary talk to ~300.
2. *Point Defects in Deformed Metals Studied by Perturbed Gamma-Gamma Angular Correlations*, International Conference on Vacancies and Interstitials in Metals and Alloys, Berlin, 1986. Plenary talk to ~300.
3. *Application of Perturbed Angular Correlations to the Study of Alloys*, US/Japan Seminar on the Electronic Structure and Defects in Alloys, Honolulu, 1987. NSF sponsored workshop attended by invitation only; plenary talk to ~50.
4. *PAC Studies of Electrolytically Charged Metal Cathodes*, Workshop on Cold Fusion Phenomena, Santa Fe, May 1989. Plenary talk to ~200 and broadcast by satellite across the US.
5. *Perturbed $\gamma\gamma$ Angular Correlations: A Spectroscopy for Point Defects in Metals and Alloys*, Symposium on Hyperfine Interactions and Nuclear Probes in Chemistry, 198th Meeting, American Chemical Society, Miami Beach, September 1989. Invited talk.
6. *Defects and Diffusion in Intermetallic Compounds*, XXV School of Physics: Condensed Matter Studies with Nuclear Methods, Zakopane, Poland, May 1990. Invited talk.
7. *Equilibrium Point Defects in NiAl and CoAl*, International Conference on Diffusion and Defects in Solids (DD-91), Moscow - Perm on the Volga and Kama Rivers, USSR, June 26 - July 4, 1991 (sponsor: Institute of Metal Physics,

- Sverdlovsk). Invited talk.
8. *Local Lattice Strains and Defect Reactions in Metals*, International Conference on Diffusion and Defects in Solids (DD-91), Moscow - Perm on the Volga and Kama Rivers, USSR, June 26 - July 4, 1991 (sponsor: Institute of Metal Physics, Sverdlovsk). Plenary talk.
 9. *Atomic Diffusion in Strain Fields Near Solutes*, Ninth International Conference on Hyperfine Interactions (HFI-IX), Osaka, August 1992. Plenary talk to ~300.
 10. *New Method to Study Equilibrium Defects in Intermetallic Compounds*, Symposium on Diffusion in Ordered Alloys and Intermetallic Compounds, TMS Fall Meeting, Chicago, November 1992 (invited contributed paper talk).
 11. *Hydrogen Trapping in Vacancies in Metals Studied by PAC*, International Symposium on Local Order in Condensed Matter Physics, Jekyll Island, Georgia, June 14-17, 1993. Invitation-only symposium; plenary talk.
 12. *A new approach to study vacancy defects in high-temperature intermetallic compounds*, Symposium on High-Temperature Ordered Alloys, Materials Research Society, Annual Meeting. Boston, November 1994. Plenary talk to ~400.
 13. *Atomic defects and disorder in mechanically-milled intermetallic compounds*, International Symposium on Mechanically Alloyed and Nanocrystalline Materials (ISMANAM'95), Quebec City, Canada, July 1995. Plenary talk to ~250.
 14. *Point defects in FeAl*, International Conference on Applications of the Mossbauer Effect (ICAME'95), Rimini, Italy, September 1995. Plenary talk to ~300.
 15. *Defects in mechanically-milled FeAl*, International Symposium on Mechanically Alloyed and Nanocrystalline Materials (ISMANAM'96), Rome, May 1996. Plenary talk to ~200.
 16. *Equilibrium point defects in NiAl and similar B2 intermetallics studied by PAC*, Second International Symposium on Structural Intermetallics, Seven Springs Resort, Champion, PA, September 1997. Plenary talk to ~300. Runner-up to best paper award.
 17. *Thermal defects in B2 iron aluminide*, Materials Research Society Fall Meeting, Boston, December 1998, Symposium KK: High-temperature intermetallic alloys VIII. Plenary talk to ~200.
 18. *Hyperfine studies of solids*, Symposium on basic and applied science at the interfaces between nuclear, atomic and condensed matter physics: A celebration in honor of the 65th birthday of Noémie Benczer-Koller, Physics Department, Rutgers University, New Brunswick, NJ, May 1, 1999. Invited talk to an audience of about fifty students and colleagues of my former Ph.D. research advisor.
 19. *Can impurities in binary alloys nucleate phase embryos?*, 15th International Symposium on Nuclear Quadrupole Interactions, July 1999, Leipzig. Plenary talk to audience of about 150.
 20. *Vacancy Jumps in PdIn: Reconciling Nuclear Relaxation and Diffusion Measurements*, Fifth International Conference on Diffusion in Materials, Paris, July 2000. Plenary talk to audience of about 200.
 21. *Hyperfine studies of point defects in intermetallic compounds*, Symposium 27: Nuclear hyperfine and exotic particle techniques for studying chemical states, International Chemical Congress of Pacific Basin Societies, Pacificchem 2000, Honolulu, December 2000. Invited talk to an audience of ~40.
 22. *Atom movement in solids studied using nuclear quadrupole relaxation*, Fifth meeting of the Northwest Section of the American Physical Society, Pullman/Moscow, May 2004, Session J1.001; with Aurélie Favrot, Li Kang, Egbert Nieuwenhuis, Denys Solodovnikov, Jipeng Wang and Matthew O. Zacate. Invited talk.
 23. *Diffusion in intermetallic compounds studied using nuclear quadrupole relaxation*, International Conference on Diffusion in Materials (DIMAT 2004), 5th meeting, Krakow, Poland, July 19-23, 2004. With Aurélie Favrot, Li Kang, Denys Solidovnikov and Matthew O. Zacate. Oral presentation to an audience of ~120.
 24. *PAC probes as diffusion tracers in solids*, International Conference on Hyperfine Interactions (HFI 2004) 13th meeting, Bonn, Germany, August 23-27, 2004. With Aurélie Favrot, Li Kang, Egbert Rein Nieuwenhuis, Denys Solidovnikov, Jipeng Wang and Matthew O. Zacate. Plenary invited talk to audience of ~200. A PDF version is available at <http://defects.physics.wsu.edu/HFI-2004-tracers.pdf>.
 25. *Nonstoichiometry in line compounds*, International Conference on Nonstoichiometric Compounds, Kauai, Hawai'i, April 13-18, 2005. Plenary oral presentation to an audience of ~150. A PDF version is available at <http://defects.physics.wsu.edu/Nonstoichiometry.pdf>.

26. [Atom scale studies of solids using hyperfine interactions](#), Symposium on Point Defects in Materials, 2006 Annual Meeting of the Minerals, Metals and Materials Society (TMS), San Antonio, March 12-16, 2006. Invited talk.
27. [Simultaneous measurement of tracer jump frequencies on different sublattices in Ga₇Pd₃ using PAC](#), International Conference on Diffusion and Stresses, Lillafüred, Hungary, September 19-22, 2006 (DS2006). With Egbert Nieuwenhuis and Matthew O. Zacate. Plenary oral presentation to audience of ~40.
28. [Site preferences of ¹¹¹In probe atoms in intermetallics having the Al₃Ti or Al₃Zr crystal structures](#), 14th International Conference on Hyperfine Interactions, Iguassu Falls, Brazil, August 6-10, 2007. With John P. Bevington and Farida Selim. Plenary oral presentation to an audience of ~100.
29. *Hyperfine interaction studies of local environments of probe atoms in intermetallic compounds*, International Workshop on Research Reactor Utilization: 50 years of Safe and Sustainable Operation of the IEA-R1 Research Reactor, São Paulo, Brazil, December 3-6, 2007. Workshop link: <http://bemtevi2.ipen.br/sitio/?idc=1969>. Invited plenary presentation to about 40 attendees.
30. *Atom movement in solids studied using PAC spectroscopy*, 11th Annual Meeting of the Northwest Section of the American Physical Society, Vancouver, BC, May 14-16, 2009. Invited plenary presentation to an audience of about 30. <http://www.physics.ubc.ca/apsnw/>
31. *Diffusion in binary and pseudo-binary LI₂ indides, stannides, gallides and aluminides of rare-earth elements as studied using perturbed angular correlation of ¹¹¹In/Cd*, Eighth International Conference on Diffusion in Materials (DIMAT2011), Dijon, France, July 3-8, 2011. With Randal Newhouse and Justine Minish. Keynote speech. <http://www.dimat2011.com/>

B. INTERNATIONAL CONFERENCES

1. *Effects of Probe Valence on the Conduction-Electron Electric-Field Gradient in the Non-Cubic Metals*, [Fourth International Conference on Hyperfine Interactions](#), Drew University, Madison, NJ, July 1977. Poster paper.
2. *Hyperfine Field Distributions at ¹¹¹Cd Probes in Nickel Alloys: I. Nontransition Metal Solutes Cu and Si*, [Fifth International Conference on Hyperfine Interactions](#), Berlin, July 1980. Poster paper.
3. *Hyperfine Field Distributions at ¹¹¹Cd Probes in Nickel Alloys: II. Transition Metal Solutes Fe, Co, Mn and Rh*, [Fifth International Conference on Hyperfine Interactions](#), Berlin, July 1980. Poster paper.
4. *Critical Behavior of Quenched, Randomly Disordered Ni and Fe Alloys*, with A. R. Chowdhury, C. Allard, R. M. Suter and C. Hohenemser, [Fifth International Conference on Hyperfine Interactions](#), Berlin, July 1980. Poster paper.
5. *Deuterium Desorption and Host Interstitial Clustering in d-irradiated Ni*, with C. Allard and C. Hohenemser, [International Symposium on the Electronic Structure and Properties of Hydrogen in Metals](#), Richmond, March 1982. Poster paper.
6. *Anomalous Temperature Dependence of the Quadrupole Coupling Frequency of a Lattice Defect Trapped to ¹¹¹In in Pt*, with R. B. Schuhmann, [Sixth International Conference on Hyperfine Interactions](#), Groningen, The Netherlands, July 1983. Plenary talk to ~300.
7. *Trivacancy Recovery and Formation of a Cubic Symmetry Defect Trap on ¹¹¹In Impurities in Ni*, with R. B. Schuhmann, [Sixth International Conference on Hyperfine Interactions](#), Groningen, The Netherlands, July 1983. Poster paper.
8. *Comparison of Defect Recovery in Proton-Irradiated, Deformed and Ion Implanted Nickel as Observed by PAC of ¹¹¹In*, with C. Allard and C. Hohenemser, [Sixth International Conference on Hyperfine Interactions](#), Groningen, The Netherlands, July 1983. Poster paper.
9. *Nuclear Spin Relaxation of ¹⁶¹Dy Above the Curie Temperature Observed by the Mössbauer Effect*, with A. R. Chowdhury and C. Hohenemser, [Sixth International Conference on Hyperfine Interactions](#), Groningen, The Netherlands, July 1983. Poster paper.
10. *Observation of *in situ* Transformation Between Two Divacancy Traps During Recovery of Deformed Gold*, with C. Allard, R. B. Schuhmann and C. Hohenemser, [Sixth International Conference on Hyperfine Interactions](#), Groningen, The Netherlands, July 1983. Poster paper.

11. *Point Defects in Deformed Metals Studied by Perturbed Gamma-Gamma Angular Correlations*, International Conference on Vacancies and Interstitials in Metals and Alloys, Berlin, September 1986. Plenary talk to ~300.
12. *Hydrogen-Vacancy Interactions in Ni Studied by Perturbed Angular Correlations*, with R. B. Schuhmann, International Conference on Vacancies and Interstitials in Metals and Alloys, Berlin, September 1986. Poster paper.
13. *Perturbed Angular Correlations Studies of Alloys*, U.S.-Japan Seminar on the Electronic Structure and Lattice Defects in Alloys, Honolulu, May 1987. Plenary talk at invitation-only workshop.
14. *Hydrogen Decoration of Vacancy Complexes in Platinum*, with H.-J. Jang and S. L. Shropshire, NATO Advanced Study Institute: Nuclear Physics Applications on Materials Science, Viana do Castelo, Portugal, September 1987. Poster paper.
15. *Diffusion and Trapping of Hydrogen in Vacancies in Platinum Studied by PAC*, with S. L. Shropshire and H.-J. Jang, International Conference on Diffusion in Metals and Alloys (DIMETA-88), Balatonfured, Hungary, September 1988. Poster paper.
16. *PAC Studies of Electrolytically Charged Metal Cathodes*, with S. L. Shropshire and J. Fan, Workshop on Cold Fusion Phenomena, Santa Fe, May 1989. Plenary talk to ~400 and satellite broadcast.
17. *Deuteron Tunneling at Electron-Volt Energies*, with J. W. Norbury and J. S. Walker, Workshop on Cold Fusion Phenomena, Santa Fe, May 1989. Poster paper.
18. *Production and Migration of Interstitials in Deformed Metals*, with S. L. Shropshire, Eighth International Conference on Hyperfine Interactions, Prague, August 1989. Poster paper.
19. *Cage Motion of a Probe Atom in a Vacancy Complex in Pt*, with S. L. Shropshire and H.-J. Jang, Eighth International Conference on Hyperfine Interactions, Prague, August 1989. Poster paper.
20. *Point Defects in NiAl Near the Equiatomic Composition*, with J. Fan, Eighth International Conference on Hyperfine Interactions, Prague, August 1989. Poster paper.
21. *Stacking Fault Defects in HCP Cobalt Studied by PAC*, with G. McGhee, Eighth International Conference on Hyperfine Interactions, Prague, August 1989. Poster paper.
22. *Electrolytic Loading of Hydrogen in Metals Studied by PAC*, with G. McGhee, S. L. Shropshire, H.-J. Jang, J. Fan and R. B. Schuhmann, Eighth International Conference on Hyperfine Interactions, Prague, Aug 1989. Poster paper.
23. *Laser-Surface Melting of Metals Studied by PAC*, with K. Zainun, Eighth International Conference on Hyperfine Interactions, Prague, August 1989. Poster paper.
24. *Defects and Diffusion in Intermetallic Compounds*, with J. Fan, XXV School of Physics: Condensed Matter Studies with Nuclear Methods, Zakopane, Poland, May 1990. Invited talk.
25. *Equilibrium Point Defects in NiAl and CoAl*, with J. Fan, International Conference on Diffusion and Defects in Solids (DD-91), Moscow - Perm on the Volga and Kama Rivers, USSR, June 1991; sponsored by the Institute of Metal Physics, Sverdlovsk. Invited talk.
26. *Local Lattice Strains and Defect Reactions in Metals*, with S. L. Shropshire, International Conference on Diffusion and Defects in Solids (DD-91), held on board boat traveling from Moscow to Perm on the Volga and Kama Rivers, USSR, June 1991; sponsored by the Institute of Metal Physics, Sverdlovsk. Plenary talk to ~125.
27. *Application of PAC to study equilibrium point defects in intermetallic compounds*, Gary S. Collins and Jiawen Fan, Ninth Int'l Conference on Hyperfine Interactions, Osaka, August 1992. Poster paper.
28. *Equilibrium point defects in TiAl studied by PAC*, Jiawen Fan and Gary S. Collins, Ninth Int'l Conference on Hyperfine Interactions, Osaka, August 1992. Poster paper.
29. *Hydrogen binding in vacancy clusters in platinum*, Steven L. Shropshire and Gary S. Collins, Ninth Int'l Conference on Hyperfine Interactions, Osaka, August 1992. Poster paper.
30. *Atomic diffusion in strain fields near solutes*, Steven L. Shropshire and Gary S. Collins, Ninth Int'l Conference on Hyperfine Interactions, Osaka, August 1992. Plenary talk.
31. *Grain boundary sites in fcc metals studied by PAC*, Bin Bai and Gary S. Collins, Ninth Int'l Conference on Hyperfine Interactions, Osaka, August 1992. Poster paper.
32. *The martensitic phase transition in NiTi*, John C. Sy and Gary S. Collins, Ninth Int'l Conference on Hyperfine Interactions, Osaka, August 1992. Poster paper.

33. *Indium metal nanoclusters studied by PAC*, Praveen Sinha and Gary S. Collins, Ninth Int'l Conference on Hyperfine Interactions, Osaka, August 1992. Poster paper.
34. *New Technique for Studying Equilibrium Defects in Intermetallic Compounds*, Gary S. Collins and Jiawen Fan, Symposium on Defects in Ordered Alloys and Intermetallic Compounds, TMS Fall Meeting, Chicago, November 1992. Plenary talk to ~35.
35. *Hydrogen Trapping in Vacancies in Metals Studied by PAC*, International Symposium on Local Order in Condensed Matter Physics, Jekyll Island, Georgia, June 14-17, 1993. Invitation-only symposium; plenary talk.
36. *Formation of FeCo by Mechanical Alloying*, Bruce H. Meeves and Gary S. Collins, Int'l Conf. on Applications of the Mössbauer Effect (ICAME'93), Vancouver, BC, August 9-14, 1993. Poster paper.
37. *Formation of Ni₃Fe by Mechanical Alloying*, Gary S. Collins and Bruce H. Meeves, Int'l Conf. on Applications of the Mössbauer Effect (ICAME'93), Vancouver, BC, August 9-14, 1993. Poster paper.
38. *Development of atomic defects and disorder during mechanical-milling of intermetallic compounds*, with Praveen Sinha, International Symposium on Mechanically Alloyed and Nanocrystalline Materials (ISMANAM'95), Quebec City, Canada, July 1995. Plenary talk to ~300.
39. *Point defects in B2 intermetallic compounds*, with Praveen Sinha and Ming-Zhong Wei, 10th International Conference on Hyperfine Interactions, Leuven, August 1995. Poster paper.
40. *Point defects in FeAl*, with Luke S.J. Peng, International Conference on Applications of the Mössbauer Effect - 1995, Rimini, September 1995; Plenary talk to ~300.
41. *Defects in mechanically-milled FeAl*, with Luke S.J. Peng, International Symposium on Mechanically Alloyed and Nanocrystalline Materials (ISMANAM'96), Rome, May 1996. Plenary talk to ~200.
42. *Studies of defects in structural intermetallics at ISAC*, Workshop on Experiments and Equipment at Isotope Separators (WEEIS), TRIUMF, Vancouver, BC, April 1997. Plenary talk.
43. *Equilibrium point defects in NiAl and similar B2 intermetallics studied by PAC*, with Jiawen Fan and Bin Bai, Second International Symposium on Structural Intermetallics, Seven Springs Mountain Resort, Champion, PA, September 1997. Plenary talk to an audience of about 200. Runner-up to best paper award.
44. *Vacancy mobility at high temperature in Ni-rich NiAl*, with Bin Bai, Second International Symposium on Structural Intermetallics, Seven Springs Resort, Champion, PA, September 1997. Late news poster paper.
45. *Vacancy mobility in nickel aluminide versus composition*, with Bin Bai and Jiawen Fan, Materials Research Society Spring Meeting, April 1998, Symposium Z: Diffusion mechanisms in crystalline materials. Plenary talk to an audience of about 40.
46. *Stochastic vacancy motion in B2 intermetallics studied by PAC*, with Bin Bai, Harmen Thys Nieuwenhuis, Mingzhong Wei and William E. Evenson, Materials Research Society Spring Meeting, April 1998, Symposium Z: Diffusion mechanisms in crystalline materials. Poster paper.
47. *Equilibrium defects and concentrations in nickel aluminide*, with Bin Bai, Materials Research Society Fall Meeting, December 1998, Symposium KK: High-temperature intermetallic alloys VIII. Poster paper.
48. *Thermal defects in B2 iron aluminide*, with Luke S.-J. Peng and Mingzhong Wei, Materials Research Society Fall Meeting, December 1998, Symposium KK: High-temperature intermetallic alloys VIII. Plenary talk to an audience of about 200.
49. *Can impurities in binary alloys nucleate phase embryos?*, with Luke S.-J. Peng and Matthew O. Zacate, 15th International Symposium on Nuclear Quadrupole Interactions, July 1999, Leipzig. Plenary talk to ~150.
50. *Vacancy Jumps in PdIn: Reconciling Nuclear Relaxation and Diffusion Measurements*, with Harmen Thys Nieuwenhuis, Fifth International Conference on Diffusion in Materials (DIMAT2000), Paris. Plenary talk to ~200.
51. *Vacancy-Vacancy Interactions in NiAl*, with Matthew O. Zacate, Fifth International Conference on Diffusion in Materials (DIMAT2000), Paris. Poster paper.
52. *Hyperfine studies of point defects in intermetallic compounds*, Symposium 27: Nuclear hyperfine and exotic particle techniques for studying chemical states, International Chemical Congress of Pacific Basin Societies, Pacificchem 2000, Honolulu, December 2000. Invited talk to ~40.
53. *Site preference model for hyperfine impurities in compounds*, 12th International Conference on Hyperfine

- Interactions, Park City, Utah, August 2001. Poster paper.
54. *Stochastic model of PAC nuclear relaxation caused by defects hopping on a simple cubic lattice*, 12th International Conference on Hyperfine Interactions, Park City, Utah, August 2001. Poster paper.
 55. *Influences of lattice sinks and defect interactions on solutes in compounds*, with Matthew O. Zacate, Spring Meeting, Materials Research Society, San Francisco, April 2002, Symposium F. Poster paper.
 56. *Twenty-five years of defect studies*, in Toward a sustainable world: physics and technology assessment, a symposium in celebration of the research and teaching of Christoph Hohenemser, Clark University, Worcester, MA, April 19-20, 2002.
 57. *Diffusion in intermetallic compounds studied using nuclear quadrupole relaxation*, with Aurélie Favrot, Li Kang, Denys Solodovnikov and Matthew O. Zacate, International Conference on Diffusion in Materials (DIMAT-2004), Krakow, Poland, July 19-23 2004. Oral presentation to an audience of ~120.
 58. *Jump frequency of Cd tracer atoms in β -Mn*, with Matthew O. Zacate, International Conference on Diffusion in Materials (DIMAT-2004), Krakow, Poland, July 19-23 2004. Poster paper.
 59. *PAC probes as diffusion tracers in solids*, Joint meeting of the 13th International Conference on Hyperfine Interactions and 17th International Symposium on Nuclear Quadrupole Interactions (HFI2004), Bonn, Germany, August 23-27, 2004. Plenary invited presentation to an audience of ~200. A PDF version is available at <http://defects.physics.wsu.edu/HFI-2004-tracers.pdf>.
 60. *Polymorphic phase transformation in In_2La and CeIn_2* , Joint meeting of the 13th International Conference on Hyperfine Interactions and 17th International Symposium on Nuclear Quadrupole Interactions (HFI2004), Bonn, Germany, August 23-27, 2004. Poster paper. <http://defects.physics.wsu.edu/papers/CeIn2.pdf>
 61. *Nonstoichiometry in line compounds*, International Conference on Nonstoichiometric Compounds, Kaua'i, Hawai'i, April 3-8, 2005. Plenary oral presentation to an audience of ~150. A PDF version is available at <http://defects.physics.wsu.edu/Nonstoichiometry.pdf>.
 62. *Atom-scale studies of solids using hyperfine interactions*, Symposium on Point Defects in Materials, 2006 TMS Annual Meeting, San Antonio, March 12-16, 2006. Invited presentation.
 63. *Simultaneous measurement of tracer jump frequencies on different sublattices in Ga_7Pd_3 using PAC*, International Conference on Diffusion and Stresses, Lillafüred, Hungary, September 19-22, 2006 (DS2006). Plenary oral presentation to an audience of ~40.
 64. *Site preferences of ^{111}In probe atoms in intermetallics having the Al_3Ti or Al_3Zr crystal structures*, 14th International Conference on Hyperfine Interactions, Iguassu Falls, Brazil, August 6-10, 2007. With John P. Bevington and Farida Selim. Plenary oral presentation to an audience of ~100. <http://www.fisica.unlp.edu.ar/hfi2007/>
 65. *Diffusion of ^{111}Cd probes in Ga_7Pt_3 studied by nuclear quadrupole relaxation*, 14th International Conference on Hyperfine Interactions, Iguassu Falls, Brazil, August 6-10, 2007. With Farida Selim and John P. Bevington. Poster presentation. <http://www.fisica.unlp.edu.ar/hfi2007/>
 66. *Hyperfine interaction studies of local environments of probe atoms in intermetallic compounds*, International Workshop on Research Reactor Utilization: 50 years of Safe and Sustainable Operation of the IEA-R1 Research Reactor, Sao Paulo, Brazil, December 3-6, 2007. Workshop link: <http://bemtevi2.ipen.br/sitio/?idc=1969>. Invited presentation.
 67. *Motion of cadmium tracer atoms in Al_{11}R_3 phases*, Seventh International Conference on Diffusion in Materials, Lanzarote (DIMAT 2008), Canary Islands, October 28-31, 2008. With Stephanie Lage. Oral presentation to an audience of ~30. http://www.ucm.es/info/tuma/quimicas_superficie/dimat1.html
 68. *Jump frequencies of cadmium tracer atoms in Li_2 rare-earth gallides*, Seventh International Conference on Diffusion in Materials, Lanzarote (DIMAT 2008), Canary Islands, October 28-31, 2008. With Xia (Sean) Jiang. Oral presentation to an audience of ~30. http://www.ucm.es/info/tuma/quimicas_superficie/dimat1.html
 59. *Diffusion in binary and pseudo-binary Li_2 indides, stannides, gallides and aluminides of rare-earth elements as studied using perturbed angular correlation of $^{111}\text{In}/\text{Cd}$* , Eighth International Conference on Diffusion in Materials (DIMAT2011), Dijon, France, July 2011. With Randal Newhouse and Justine Minish. Keynote speech. <http://www.dimat2011.com/>
 60. *PAC studies of liquid gallium supercooled down to 10K and measurements of solubility of indium in supercooled liquid gallium*, Eighth International Conference on Diffusion in Materials (DIMAT2011), Dijon, France, July 2011.

With Xiangyu Yin. Poster presentation. <http://www.dimat2011.com/>

C. NATIONAL MEETINGS

1. *Temperature Dependence of the Nuclear Quadrupole Interaction in Tin Metal*, with N. Benczer-Koller, American Physical Society, Spring Meeting, Washington, April 1975; Bull. Am. Phys. Soc. 20, 609 (1975).
2. *Temperature Dependence of the Conduction Electron EFG in Tin Metal*, American Physical Society, Annual Meeting, New York, January 1976; Bull. Am. Phys. Soc. 21, 22 (1976).
3. *Valence Effect on the Conduction Electron Electric-Field Gradient in Noncubic Metals*, American Physical Society, Spring Meeting, Washington, April 1977; Bull. Am. Phys. Soc. 22, 532 (1977).
4. *Critical Behavior of Disordered FeAl Alloys*, with A. R. Chowdhury and C. Hohenemser, American Physical Society March Meeting, Dallas, 1982; Bull. Am. Phys. Soc. 27, 354 (1982).
5. *Vacancy Defects in Plastically Deformed Gold*, with C. Allard, American Physical Society March Meeting, Dallas, 1982; Bull. Am. Phys. Soc. 27, 154 (1982).
6. *Laser Annealing of Ni Plated with ^{111}In* , with C. Allard, C. Hohenemser and C. W. Draper, American Physical Society March Meeting, Dallas, 1982; Bull. Am. Phys. Soc. 27, 324 (1982).
7. *Detrapping of Hydrogen Atoms from a Multi-Vacancy Trap in Ni*, with R. B. Schuhmann, American Physical Society March Meeting, Las Vegas, 1986; Bull. Am. Phys. Soc. 31, 272 (1986).
8. *Defects in Laser Surface-Melted Metals Studied by PAC*, with C. Allard, C. Hohenemser and C. W. Draper, Materials Research Society, Annual Meeting, Boston, December 1986. Poster paper.
9. Gordon Conference: Particle-Solid Interactions, Holderness School, July 1988 (2 poster papers).
10. *Recovery of Point Defects in Platinum Studied by Perturbed $\gamma\gamma$ Angular Correlations*, with S. L. Shropshire and H.-J. Jang, Symposium on Irradiation-Enhanced Materials Science and Engineering, The Minerals, Metals and Materials Society, Fall Meeting, Chicago, September 1988. Poster paper.
11. Gordon Conference: Metal Hydrides, Tilton School, July 1989 (poster paper).
12. *PAC: a spectroscopy for point defects in metals and alloys*, with S. L. Shropshire and J. Fan, Symposium on Hyperfine Interactions and Nuclear Probes in Chemistry, 198th Meeting, American Chemical Society, Miami Beach, September 1989. Invited talk.
13. *Bottleneck to Vacancy Annealing in Ordered NiAl*, with Jiawen Fan, American Physical Society March Meeting, Cincinnati, 1991; Bull. Am. Phys. Soc. 36, 577 (1991).
14. *Vacancy defects in mechanically-milled intermetallic compounds*, with Praveen Sinha, Symposium on novel techniques in synthesis and processing of advanced materials, The Metallurgical Society, Fall Meeting, Rosemont, Illinois, October 1994. Contributed talk.
15. *A new approach to study vacancy defects in high-temperature intermetallic compounds*, with Praveen Sinha, Symposium on high-temperature ordered alloys, Materials Research Society Annual Meeting, Boston, November 1994. Plenary talk to ~400.
16. *Atomic Defects and Disorder in Mechanically-Milled Nanocrystalline Intermetallic Compounds Studied by PAC*, with Praveen Sinha, Symposium on Structure and Properties of Nanophase Materials, TMS Spring Meeting, Las Vegas, February 12-16, 1995.
17. *Hyperfine studies of solids*, Symposium on basic and applied science at the interfaces between nuclear, atomic and condensed matter physics: A celebration in honor of the 65th birthday of Noémie Benczer-Koller, Physics Department, Rutgers University, New Brunswick, NJ, May 1, 1999.
18. *Equilibrium defects and solute site preferences in intermetallics: I. Thermodynamics*, with Matthew Zacate, March Meeting, American Physical Society, Seattle, 2001.
19. *Thermally driven change in sites occupied by indium solutes in GdAl_2* , March Meeting, American Physical Society, Austin, 2003: Session S16 - Metals: Defects to Alloys [S16.009].
20. *Diffusion of Cd in REIn_3 ($\text{RE}=\text{La, Nd, Gd}$) measured using PAC*, March Meeting, American Physical Society,

Austin, 2003: Session S16 - Metals: Defects to Alloys [S16.008].

21. *Diffusivity of Cd in beta-Mn and beta-Mn(Al) studied by PAC*, March Meeting, American Physical Society, Austin, 2003: Session V35 - Metals: Synthesis and Measurement [V35.016].
22. [An interpretation of octahedral ordering and site occupancies of Fe²⁺ in muscovite and illite](#), with Philip Rosenberg, Geology, WSU, Clay Minerals Society 41st Annual Meeting, Richland, Washington, June 19-24, 2004 (Powerpoint presentation at <http://defects.physics.wsu.edu/papers/CMS-04-Illite-Symp.pdf>).

D. REGIONAL MEETINGS

1. *Electric-Field Gradient in Tin as a Function of Temperature*, Second North-East Hyperfine Interactions Conference, Rutgers, May 1976.
2. *First Measurements of Hyperfine Field Shifts in Magnetic Alloys by PAC*, Third North-East Hyperfine Interactions Conference, Rutgers, May 1979.
3. *Vacancy Trapping in Plastically Deformed Metals*, with G. P. Stern and C. Hohenemser, American Physical Society, New England Section Meeting, Worcester, April 1981; Bull. Am. Phys. Soc. 26, 795 (1981).
4. *Vacancy Trapping in Plastically Deformed Metals Studied by Perturbed Angular Correlations of ¹¹¹Cd*, with G. P. Stern and C. Hohenemser, Fourth North-East Hyperfine Interactions Conference, Boston University, May 1981.
5. *Point Defect Production and Annealing in Plastically Deformed Ni in the Range 300-450 K*, with G. Stern and R. B. Schuhmann, Fifth North-East Hyperfine Interactions Conference, SUNY, Stonybrook, June 1982.
6. *Defects Recovering in Deformed Au Observed by PAC of ¹¹¹In*, with C. Allard and R. B. Schuhmann, Fifth North-East Hyperfine Interactions Conference, SUNY, Stonybrook, June 1982.
7. *Vacancy Defects in Metals Studied by Perturbed Gamma-Gamma Angular Correlations*, Transfer Technology Symposium: Materials Environmental Interactions, Pacific Northwest Laboratories, Richland, September 1986.
8. *Hydrogen-Vacancy Interactions in Ni Studied by Perturbed Gamma-Gamma Angular Correlations*, Transfer Technology Symposium: Materials Environmental Interactions, Pacific Northwest Laboratories, Richland, September 1986.
9. *Point Defects in Metals Studied by Perturbed Angular Correlations*, Tenth Northwest Meeting on Condensed Matter Physics, University of Washington, May 1988.
10. *Point Defects in Intermetallic Compounds Studied by PAC*, Fourteenth Northwest Meeting on Condensed Matter Physics, University of Washington, October 1996.
11. [Phase embryos nucleated by impurity atoms](#), First meeting of the Northwest Section of the American Physical Society, Vancouver, BC, May 1999; with Luke S.-J. Peng.
12. [Atom movement in solids studied using nuclear quadrupole relaxation](#), Fifth meeting of the Northwest Section of the American Physical Society, Pullman/Moscow, May 2004, with Aurélie Favrot, Li Kang, Egbert Nieuwenhuis, Denys Solodovnikov, Jipeng Wang and Matthew O. Zacate. Invited paper. Session J1.001.
13. [Atom movement in solids studied using PAC spectroscopy](#), 11th Annual Meeting of the Northwest Section of the American Physical Society, Vancouver, BC, May 14-16, 2009. Invited talk. <http://meetings.aps.org/Meeting/NWS09/Event/106771>
14. [Composition dependence of jump frequencies in pseudo-binary phases](#), NWS10 Meeting of the American Physical Society, Walla Walla, Washington, October 2, 2010; with Randal Newhouse. Contributed talk abstract H3.00010.

E. SEMINARS, COLLOQUIA AND OTHER MEETINGS

1. *Temperature Dependence of the Nuclear Quadrupole Interaction in Tin Metal*: Seminar, U.S. Army Electronics Command, Red Bank, NJ, June 1977.
2. *Temperature Dependence of the Nuclear Quadrupole Interaction in Tin Metal*: Special Colloquium, Physics Department, Clark University, June 1977.
3. *Studies of Microscopic Magnetic and Chemical Interactions in Ferromagnetic Alloys by Perturbed Angular Correlations*: Physics Colloquium, Clark University, October 1979.

4. *Hyperfine-Field Distributions in Nickel Alloys Studied by Perturbed Angular Correlations*: Solid-State Seminar, Boston University, October 1979.
5. *Hyperfine Interactions Studies of Lattice Defects in Metals*: Physics Colloquium, Clark University, September 1980.
6. *Vacancy Defects in Deformed Metals Studied by Hyperfine Interactions*: Solid-State Seminar, Boston University, March 1981.
7. *An Atom's Eye View of Lattice Defects in Metals*: Colloquium, North Adams State College, North Adams, MA, December 1983.
8. *Atomic-Scale Studies of Point Defect Migration and Defect Reactions in Metals*: Colloquium, Physics Department, Florida Atlantic University, Boca Raton, January 1985.
9. *Atomic-Scale Studies of Point Defect Migration and Defect Reactions in Metals*: Colloquium, Physics Department, Virginia Commonwealth University, Richmond, January 1985.
10. *Atomic-Scale Studies of Point Defect Migration and Defect Reactions in Metals*: Colloquium, Department of Physics, Washington University, St. Louis, February 1985.
11. *Atomic-Scale Studies of Point Defect Migration and Defect Reactions in Metals*: Physics Colloquium, Clark University, February 1985.
12. *Atomic-Scale Studies of Point Defect Migration and Defect Reactions in Metals*: Colloquium, Physics Department, Southern Illinois University, Carbondale, March 1985.
13. *Atomic-Scale Studies of Point Defect Migration and Defect Reactions in Metals*: Colloquium, Physics Department, University of Missouri at Rolla, March 1985.
14. *Atomic-Scale Studies of Point Defect Migration and Defect Reactions in Metals*: Physics Colloquium, Department of Physics, Washington State University, Pullman, April 1985.
15. *Atomic-Scale Studies of Point Defect Migration and Defect Reactions in Metals*: Colloquium, Department of Physics, Oregon State University, Corvallis, April 1985.
16. *Atomic-Scale Studies of Point Defect Migration and Defect Reactions in Metals*: Colloquium, Department of Physics, Worcester Polytechnic Institute, April 1985.
17. *Defect Chemistry in Metals: Interactions between Vacancies, Interstitials and Impurity Atoms*: Physical Chemistry Seminar, WSU, December 1986.
18. *Hydrogen Trapping in Vacancies in Metals*: Colloquium, Physics Department, WSU, October 1987.
19. *Hydrogen Trapping in Lattice Vacancies in Metals*: Seminar, Department of Mechanical and Materials Engineering, WSU, February 1988.
20. *Nuclear Probe Studies of Defects in Metals*: Seminar, Idaho National Engineering Laboratory, Idaho Falls, June 1989.
21. *PAC: A Spectroscopy for Point Defects in Metals*: Seminar, Department of Physics, University of Central Florida, Orlando, September 1989.
22. *Novel Studies of Equilibrium Point Defects in Intermetallic Compounds*: Colloquium, Physics Department, WSU, January 1991.
23. *PAC Studies of Equilibrium Defects in NiAl*: Seminar, Idaho National Engineering Laboratory, April 1991.
24. *PAC studies of equilibrium point defects in NiAl and other high-temperature intermetallic compounds*: Seminar, Institute of Materials Research, Tohoku University, Sendai, Japan, August 1992.
25. *Moessbauer spectroscopy*: Seminar, Materials Characterization Series, Institute of Materials and Advanced Processing, University of Idaho, November, 1994.
26. *Possible explanation of the brittle-to-ductile transition temperature in NiAl*, Nuclear Solid-State Physics Group Seminar, University of Groningen, The Netherlands, September 1995.
27. *PAC studies of intermetallic compounds at Groningen*, Nuclear Solid-State Physics Group Seminar, University of Groningen, The Netherlands, November 1995.
28. *Defects in intermetallic compounds studied by PAC*, Research Seminar, PAC Group, University of Konstanz,

- Germany, February 1996.
29. *Point defects in intermetallic compounds studied by PAC*, Seminar, Department of Physics, Uppsala University, Sweden, April 29, 1996.
 30. *Two different regimes for equilibrium point-defects in B2 intermetallic compounds*, Sonderforschungsbereich Colloquium, Department of Physics, University of Konstanz, Germany, May 10, 1996.
 31. *PAC studies of equilibrium defects in intermetallic compounds*, Seminar, Materials Center, Hahn-Meitner Institute, Berlin, Germany, May 27, 1996.
 32. *PAC studies of equilibrium defects in intermetallic compounds* Colloquium, Physics Department, University of Leipzig, Germany, May 29, 1996.
 33. *Equilibrium defects in B2 intermetallic compounds*, Sonderforschungsbereich Colloquium, Department of Physics, University of the Saarlandes, Germany, July 24, 1996.
 34. *Point defects in intermetallic compounds (part I)*, Colloquium, Department of Physics, Washington State University, September 24, 1996.
 35. *Point defects in intermetallic compounds (part II): low-temperature mechanical properties of NiAl*, Joint Colloquium, Dept. of Physics and Program in Materials Science, Washington State University, January 14, 1997.
 36. *Studies of defects in structural intermetallics at ISAC*, WEEIS Planning Workshop for new isotope implantation facility, TRIUMF, April 27, 1997.
 37. *Point defects at high temperature under the PAC microscope*, Joint colloquium, Dept. of Physics and Program in Materials Science, Washington State University, January 20, 1998.
 38. *PAC studies of point defects in intermetallic compounds*, Colloquium, Dept Physics, Brigham Young University, March 8, 2000.
 39. *Guest atoms in solids*, Colloquium, Dept Physics, Washington State University, October 2, 2001.
 40. *Materials science studied by nuclear methods*, Guest speaker in MSE 321, April 25, 2002, David Field, instructor.
 41. *Guest atoms in solids*, Seminar, Technical Physics, University of the Saarlandes, Saarbrücken, Germany, October 10, 2002.
 42. *Guest atoms in solids*, Sonderseminar, Fachbereich Physik, Universität Paderborn, Germany, October 17, 2002.
 43. *Guest atoms in solids*, Seminar, Fakultät für Physik und Geowissenschaften, University of Leipzig, Germany, October 23, 2002.
 44. *Guest atoms in solids*, Seminar, II. Institute of Physics, University of Göttingen, Germany, October 28, 2002.
 45. *Guest atoms in solids*, Seminar, Institut für Festkörperphysik, Technische Universität Wien, Austria, Nov. 6, 2002.
 46. *Guest atoms in solids*, Seminar, Institut für Materialphysik, Universität Wien, Austria, November 7, 2002.
 47. *Atoms in motion: a new method for studying diffusion in solids*, Colloquium, Physics, Washington State University, January 27, 2004.
 48. *Atoms in motion: studying diffusion in solids using nuclear quadrupole relaxation*, Colloquium, Physics, University of Idaho, April 5, 2004.
 49. *PAC probes used as diffusion tracers*, Seminar, Sonderforschungsbereich 458, Institut für Materialphysik, Westfälische Wilhelms-Universität Münster, August 20, 2004.
 50. *Diffusion by a new route*, Mechanical and Materials Engineering Symposium Series-1, WSU, September 9, 2004.
 51. *The atomic slide puzzle*, Freshman Seminar (Physics 188), WSU, September 23, 2004.
 52. *Solids studied by nuclear probe methods at WSU*, Graduate Seminar in Physics (Physics 501), WSU, Dec. 2, 2004.
 53. *Brownian Motion*, seminar for visiting high school students from Spokane in MESA Program in connection with World Year of Physics activities of Dept. of Physics and Astronomy, WSU, February 8, 2005.
 54. *Random walks in 3d mazes*, Physics and Astronomy Colloquium, WSU, April 12, 2005.
 55. *Brownian Motion*, seminar for visiting high school students from Cheney in MESA Program in connection with World Year of Physics activities of Dept. of Physics and Astronomy, WSU, April 20, 2005.

56. *Random walks in 3d mazes*, Physics Colloquium, University of Central Florida, Orlando, June 15, 2005.
57. *The atomic slide puzzle: a model for diffusion in solids*, Freshman Seminar I (Physics 188), WSU, October 6, 2005.
58. *Atom-scale studies of materials using hyperfine interactions*, Seminar in Physical Chemistry and Materials Science (Materials Science 593), WSU, November 4, 2005.
59. *The atomic structure of solids studied using PAC*, Graduate Seminar in Physics (Physics 501), WSU, Dec. 8, 2005.
60. *Secret lives of solutes*, Physics and Astronomy Colloquium, WSU, February 14, 2006.
61. *Atom movement or diffusion in solids: the “drunken sailor’s walk” and “atomic slide puzzle”*, Undergraduate Seminar I (Physics 188), WSU, October 19, 2006.
62. *Atoms in solids*, Graduate Seminar in Physics (Physics 501), WSU, December 8, 2006.
63. *Atoms in solids*, Research Experience for Undergraduates Summer School: “Extreme Matter”, WSU, June 12, 2007.
64. *Perturbed angular correlation spectroscopy studies of solutes in compounds: Lattice locations, electric field gradients, site enthalpies and vibrational entropies*, Physics and Astronomy Colloquium, WSU, October 2, 2007.
65. *Defects and diffusion in solids: or the drunken sailor’s walk and the atomic slide puzzle*, Undergraduate Seminar I (Physics 188), WSU, November 15, 2007. A PDF version is at <http://www.wsu.edu/~collins/Drunken-Sailors-Walk-2007.pdf>.
66. *Labyrinths for atom movement: diffusion in solids*, Graduate Seminar in Physics (Physics 501), WSU, November 29, 2007.
67. *Perturbed angular correlation spectroscopy studies of solutes in compounds: Lattice locations, electric field gradients, site enthalpies and vibrational entropies*, Seminar, Department of Physics and Mechanics of Materials, Institute of Physics, University of São Paulo, December 7, 2007. Guest of Prof. Dra. Helena Petrilli.
68. *Measuring differences of site enthalpies and vibrational entropies of solute atoms in intermetallic compounds*, Seminar, Dynamics of Condensed Systems, Institute of Materials Physics, University of Vienna, March 28, 2008. Guest of Profs. Wolfgang Pfeiler and Gero Vogl.
69. *Atoms in solids*, Seminar, Research Experience for Undergraduates Summer School: “Extreme Matter”, WSU, June 17, 2008.
70. *Atoms on the move: diffusion in solids*, Undergraduate Seminar I (Physics 188), WSU, September 4, 2008.
71. *Atom movement in solids*, Graduate Seminar in Physics (Physics 501), WSU, September 25, 2008.
72. *Identifying diffusion mechanisms in compounds using PAC*, Sonderseminar, Technical Physics, University of the Saarlandes, Saarbrücken, Nov. 6, 2008; guest of Prof. Dr. Thomas Wichert.
73. *Identifying diffusion mechanisms in compounds using PAC*, Seminar, Nuclear Festkörperphysik Group, University of Leipzig, Nov. 12, 2008; guest of Prof. Dr. Tilman Butz. .
74. *Identifying diffusion mechanisms in compounds using PAC*, Seminar, Institute of Physical Chemistry, University of Hannover, Nov. 13, 2008; guest of Prof. Dr. Paul Heitjans.
75. *Identifying diffusion mechanisms in compounds using PAC*, Seminar, Institute for Materials Physics, University of Münster, Nov. 14, 2008; guest of Prof. Dr. Nicolaas Stolwijk.
76. *Identifying diffusion mechanisms in compounds using PAC*, Seminar, Helmholtz Zentrum Berlin für Materialien und Energie (HZB) (formerly Hahn Meitner Institut), Nov. 20, 2008; guest of Drs. Rainer Sielemann and Heinz-Eckhard Mahnke.
77. *Diffusion of tracer atoms on Al-sites in tetragonal Al₄Ba phases*, Academic Showcase , WSU, March 27, 2009. with Randal Newhouse, WSU, and Matthew O. Zacate, Northern Kentucky University. (poster paper).
78. *Agitated atoms in solids: the atomic slide puzzle*, Seminar, Research Experience for Undergraduates Summer School: “Extreme Matter”, WSU, July 7, 2009.
79. *New insight into diffusion mechanisms in compounds*, Physics Colloquium, WSU, September 8, 2009.
80. *The atomic step dance: diffusion in solids*, Undergraduate Seminar I (Physics 188), WSU, October 8, 2009.
81. *Site preferences of impurity atoms in compounds*, Graduate Seminar in Physics (Physics 501), WSU, Oct. 22, 2009.

82. *Site preferences of solute atoms in compounds*, Colloquium, Department of Physics, University of Idaho, November 16, 2009.
83. *Diffusion in solids: the atomic slide puzzle*, Graduate Seminar in Physics (Physics 501), WSU, October 7, 2010.
84. *Diffusion in solids: the atomic slide puzzle*, Undergraduate Seminar I (Physics 188), WSU, November 4, 2010.
85. *Liquid gallium supercooled to 12K with formation of radioactive ¹¹¹In crystals*, Colloquium, Department of Physics, WSU, December 7, 2010.
86. *All mixed up: Solubility of solutes having mole fractions of only 10 parts-per-billion*, Colloquium, Department of Physics, University of Idaho, February 28, 2011.
87. *Diffusion in solids: the atomic slide puzzle*, Undergraduate Seminar I (Physics 188), WSU, November 17, 2011.
88. *Atom scale studies of diffusion in solids*, Graduate Seminar in Physics (Physics 501), WSU, December 8, 2011.
89. *The solubility of indium in solid and liquid gallium*, Colloquium, Department of Physics and Astronomy, Washington State University, January 31, 2012.
90. *Locations of impurity atoms studied with atom-scale sensitivity using hyperfine interactions methods*, Seminar, Materials Science and Engineering Program, March 30, 2012.

Biographical listings

American Men and Women of Science (R. R. Bowker, 1982.; Gale Group, 2003)

Who's Who in Science and Engineering (Marquis, 1992..)

Who's Who in the West (Marquis, 1997..)

Who's Who in the World (Marquis, 1999..)

TEACHING

OVERVIEW OF COURSES TAUGHT

Graduate Level

Solid State Physics (Ashcroft and Mermin, Kittel)
 Diffusion and Defects in Solids (Shewmon)
 Electromagnetic Theory (Jackson)
 Quantum Physics Laboratories (Melissinos)
 Thermal and Statistical Physics (Callen, Mattis)
 Seminars in Solid-State and Condensed-Matter Physics:
 Solid State Spectroscopy
 Materials Physics
 Point Defects in Solids (Agullo-Lopez, Catlow, Townsend)
 Atom Movement in Solids (Philibert)
 Nuclear Methods in Solids (Schatz and Weidinger)

Undergraduate Level

Introductory Physics
 Modern Physics (Arya, Krane, Eisberg & Resnick, Harris)
 Electricity and Magnetism (Griffiths)
 Electronics Laboratories (Diefenderfer, Barnaal)
 Quantum Physics Laboratories (Melissinos)
 Honors Seminar in Particle Physics

GRANT FOR INSTRUMENTATION IN SUPPORT OF TEACHING

1990-92 NSF grant PHY 89-51582, Instrumentation and Laboratory Improvement Program, *Development of a Quantum Physics Laboratory*. Equipment grant for advanced undergraduate physics laboratory course. (\$18,500 plus equal university matching, for 2.5 years, at Washington State University: [Principal Investigator](#)).

COURSES TAUGHT

A. RUTGERS COLLEGE, NEW BRUNSWICK, NEW JERSEY

Year	Course	Credit	Enroll
73-74	Electronics Lab for Physics Majors 287-288 (coadjutant instructor, taught 50%)	3/3	~15
74-75	Electronics Lab for Physics Majors 287-288 (coadjutant instructor, taught 50%)	3/3	~15
76-77	Introductory Physics 225-226 (Supervisor of laboratories, including 4 lab TA's)	3/3	~250

B. CLARK UNIVERSITY, WORCESTER, MASSACHUSETTS

UNDERGRADUATE COURSES

Term	Course	Credit	Enroll
Fa 77	Quantum Physics 113	3	5
Sp 78	Nuclear Instrumentation Laboratory 129 (Melissinos)	3	5
Fa 78	Quantum Physics 113	3	13
Fa 78	Honors Seminar in Particle Physics 101 (taught jointly with Rob Goble)	3	7
Sp 79	Nuclear Instrumentation Laboratory 129	3	7
Fa 79	Electronics Laboratory 119	3	22
Sp 80	Nuclear Instrumentation Laboratory 129	3	4
Fa 80	Electronics Laboratory 119	3	23
Sp 81	Nuclear Spectroscopy Laboratory 129	3	3
Fa 81	Electronics Laboratory 119	3	25
Sp 83	Classical Physics 112	3	9
Fa 83	Quantum Physics 113	3	9
Sp 84	Classical Physics 112	3	15
Fa 84	Quantum Physics 113	3	4
Sp 85	Quantum Physics Laboratory 114	3	5

GRADUATE COURSES

Term	Course	Credit	Enroll
Fa 77	Solid State Physics 310 (Kittel)	3	2
Sp 78	Nuclear Instrumentation Laboratory 219	3	4
Sp 79	Solid State Physics 310	3	6
Sp 80	Instrumentation Laboratory 229	3	1
Sp 81	Instrumentation Laboratory 229	3	5
Fa 82	Solid State Physics 310 (Ashcroft and Mermin)	3	3
Sp 83	Solid State Physics 310	3	1
Fa 83	Solid State Spectroscopy 317 (taught jointly with Chris Landee)	1	6
Sp 85	Quantum Physics Laboratory 214 (formerly 229)	3	3

C. WASHINGTON STATE UNIVERSITY, PULLMAN, WASHINGTON

UNDERGRADUATE COURSES

Term	Course	Credit	Enroll
Fa 85	Modern Physics 303 (Eisberg and Resnick)	3	18
Sp 86	Modern Physics 304 (Eisberg and Resnick)	3	10
Sp 86	Quantum Physics Laboratory (taught as Phys 499) (Melissinos)	3	1
	Physics 415 has been the primary advanced undergraduate laboratory course for physics majors since it was formally adopted in 1989. I developed the course from scratch starting in my first year at WSU and taught it continuously until 2002, with a break of one year while on sabbatical. It was originally colisted as Phys 515 and offered to graduate students until 1994. With generous support from the Department, College, and a National Science Foundation teaching laboratory instrumentation grant, the course has prospered and won praise from students who have taken it.		
Fa 86	Modern Physics 303	3	21
Sp 87	Modern Physics 304	3	13
Sp 87	Quantum Physics Laboratory (taught as 499) (Melissinos)	2	4
Fa 87	Modern Physics 303	3	15
Sp 88	Modern Physics 304	3	13
Sp 88	Quantum Physics Laboratory (taught as 499) (Melissinos)	2	6
Sp 89	Quantum Physics Laboratory 415 (Melissinos)	3	9
Sp 90	Quantum Physics Laboratory 415 (Melissinos)	3	5
Sp 91	Quantum Physics Laboratory 415 (Melissinos)	3	16
Sp 92	Quantum Physics Laboratory 415 (Melissinos)	3	8
Fa 92	Classical Physics for Scientists and Engineers 201	4	~200
Sp 93	Quantum Physics Laboratory 415 (Melissinos)	3	11
Fa 93	Classical Physics for Scientists and Engineers 201	4	~160
Sp 94	Quantum Physics Laboratory 415 (Melissinos)	3	6
Fa 94	General Physics 102	4	~75
Sp 94	Quantum Physics Laboratory 415 (Melissinos)	3	~6
Sp 95	Quantum Physics Laboratory 415 (Melissinos)	3	5
Fa 96	General Physics 101	4	~175
Sp 97	Quantum Physics Laboratory 415 (Melissinos)	3	1
Fa 97	General Physics 101	4	~86
Sp 98	Quantum Physics Laboratory 415 (Melissinos)	3	8
Fa 98	General Physics 101	4	~130
Sp 99	Quantum Physics Laboratory 415 (Melissinos)	3	4
Fa 99	Electricity and Magnetism I: physics 341 (Griffiths)	3	8
Sp 00	Electricity and Magnetism II: physics 342 (Griffiths)	3	~7
Sp 00	Quantum Physics Laboratory 415 (Melissinos)	3	~9
Fa 00	Electricity and Magnetism I: physics 341 (Griffiths)	3	12
Sp 01	Quantum Physics Laboratory 415 (Melissinos)	3	6
Fa 01	Electricity and Magnetism I: physics 341 (Griffiths)	3	10

Sp 02	Electricity and Magnetism II: physics 342 (Griffiths)	3	9
Sp 02	Quantum Physics Laboratory 415 (Melissinos)	3	12
Fa 03	Modern Physics II: physics 304 (Eisberg and Resnick)	3	12
Fa 04	Modern Physics II: physics 304 (Eisberg and Resnick)	3	14
Fa 05	Electronics: physics 410 (Barnaal) (laboratory course using Labview)	3	8
Fa 06	Electronics: physics 410 (Barnaal) (laboratory course using Labview)	3	8
Fa 07	Electronics: physics 410 (Barnaal) (laboratory course using Labview)	3	7
Fa 09	Modern Physics II: physics 304 (Eisberg and Resnick)	3	20
Fa 10	Modern Physics II: physics 304 (Randy Harris, Addison-Wesley, 2nd ed)	3	19
Fa 11	Modern Physics II: physics 304 (Randy Harris, Addison-Wesley, 2nd ed)	3	24

GRADUATE COURSES

Term	Course	Credit	Enroll
Sp 86	Quantum Physics Laboratory (taught as 600) (Melissinos)	2	3
Sp 87	Quantum Physics Laboratory (taught as 600)	2	3
Sp 88	Quantum Physics Laboratory (taught as 600)	2	1
Sp 88	Seminar in Condensed Matter Phys 593: <i>Solid-State Spectroscopy</i>	1	7
Fa 88	Advanced Topics 581: <i>Diffusion and Defects in Solids (Paul Shewmon)</i>	3	6
Sp 89	Seminar in Condensed Matter Physics 593: <i>Topics in Materials Physics and Chemistry</i>	1	4
Sp 90	Electromagnetic Theory 541 (Jackson)	3	15
Sp 90	Quantum Physics Laboratory 515 (Melissinos)	3	4
Fa 90	Electrodynamics 542 (Jackson)	3	11
Sp 91	Electromagnetic Theory 541	3	10
Fa 91	Electrodynamics 542	3	14
Sp 92	Quantum Physics Laboratory 515	3	3
Sp 93	Quantum Physics Laboratory 515	3	1
Sp 93	Seminar in Solid-State Physics 594: <i>Point Defects in Materials (Agullo-Lopez et al.)</i>	1	5
Fa 93	Seminar 590 (Physics colloquium)	1	33
Sp 94	Seminar 590 (Physics colloquium)	1	30
Sp 95	Seminar in Solid-State Physics 594: <i>Atom Movement in Solids (J. Philibert)</i>	1	5
Sp 95	Seminar 590 (Physics colloquium)	1	28
Sp 97	Seminar in Solid-State Physics 594: <i>Nuclear Methods in Solids (Schatz and Weidinger)</i> (Instructor-of-record; taught jointly with Kelvin Lynn)	1	5
Sp 99	Seminar 590 (Physics colloquium)	1	12
Sp 03	Thermal and Statistical Physics I: Physics 533 (Callen)	3	11
Sp 04	Thermal and Statistical Physics I: Physics 533 (Callen)	3	16
Fa 04	Seminar 590 (Physics colloquium)	1	21
Sp 05	Thermal and Statistical Physics I: Physics 533 (Callen and Mattis)	3	12
Sp 05	Seminar 590 (Physics Colloquium)	1	26
Sp 06	Thermal and Statistical Physics I: Physics 533 (Callen)	3	11
Sp 07	Thermal and Statistical Physics I: Physics 533 (Callen)	3	21
Sp 08	Thermal and Statistical Physics I: Physics 533 (Callen)	3	~18
Sp 09	Thermal and Statistical Physics I: Physics 533 (Callen)	3	~12
Sp 10	Thermal and Statistical Physics I: Physics 533 (Callen)	3	13
Sp 11	Thermal and Statistical Physics I: Physics 533 (Callen)	3	18
Sp 12	Thermal and Statistical Physics I: Physics 533 (Callen)	3	

SPECIAL PROJECTS AND UNDERGRADUATE THESES (SINCE 2005)

Term	Student	Description	Course	Credit
Sp 05	Phillip Peterman:	Calculating Wigner-Seitz volumes of atoms in compounds	499	1
Fa 06	Morgan Emerson:	Imaging Wigner-Seitz cells	499	1
Sp 07	Morgan Emerson	Imaging Wigner-Seitz cells	499	1
Sp 07	Stephanie Lage	Local probes in Al ₁₁ Ce ₃ phases	499	3
Sp 07	Ben Norman	Studies of intermetallics using ¹⁸¹ Hf probes	499	2
Fa 07	Ben Norman	Site preferences of solute atoms in mirror phases	490	1
Fa 10	Lee Aspitarte	Site preference of solutes in ternary Al ₄ Ba phases: BaNiSn ₃	499	2
Sp 11	Lee Aspitarte	Phase transformations in In ₃ Zr	490	1

D. INTERNATIONAL PHD COMMITTEES

- 1994 External examiner, PhD thesis, Elias Sideras-Haddad, Physics, University of the Witwatersrand.
1994 External examiner, PhD defense, Mammo H. Yewondwossen, Physics, Dalhousie University.
1995 Faculty opponent, PhD defense, Michael Semple, Physics, Uppsala University.
1998 External examiner, PhD thesis, Eva Bezakova, Physics, Australian National University.

E. GRADUATE COMMITTEE SERVICE (NOT CHAIRED BY ME; ABOUT 10 PRIOR TO 2003 NOT LISTED)

- 1998 Bey-Bey Li, PhD, defended May 1998, Science Education, WSU (Advisor: Verna Adams)
2003 Kakali Tripathi, MS, defended May 2003, Physics, WSU (Advisor: Mark Kuzyk)
2005 Pankaj B. Trivedi, PhD, defended May 2005, Materials and Mechanical Engineering, WSU (Advisor: David Field)
2006 Xiaorong Li, MS, defended May 2006, Physics, WSU (Advisor: Mark Kuzyk)
2008 Christopher Dudley, PhD, defended April 8, 2008, Physics, WSU (Advisor: Philip Marston)
2009 Ashish Mishra, MS, defended August 5, 2009, Physics, WSU (Advisor: Yi Gu)
2009 Leiming Wang, PhD, defended December 10, 2009, Physics, WSU (Advisor: Lai-Sheng Wang)
2010 Denys Solodovnikov, PhD proposal defended Dec. 2009, Mat Sci & Eng Program, WSU (Advisor: Kelvin Lynn)
2010 Sharon John, PhD defended March 6, 2010, Physics, WSU (Advisor: Tom Dickinson).
2010 Amlan Datta, MS thesis defended June 30, 2010, Physics, WSU (Advisor: Kelvin Lynn)
2010-11 Pavlo Rudenko, PhD, Materials Science Program (Advisor: Bandyopadyay) (not official yet)
2011-12 Iman Salahenia, PhD, Materials Science Program (Advisor: David Bahr, MME)
2011 Jharana Dahl, MS, to be defended summer 2011, Physics, WSU (Advisor: Amit Bandyopadyay)
2011 Andrey Perevelov, MS, defended April 12, 2011 (Advisor: Matt CcCluskey)
2011 Drew Haven, MS, defended June 30, 2011 (Advisor: Kelvin Lynn)
2011 Amlan Datta, PhD, preinary exam, August 4, 2011, Materials Science Program (Advisor: Kelvin Lynn)
2012 Samaneh Tabatabaei, MS defense, Physics, WSU (Advisor: Matt McCluskey)

F. GRADUATE SCHOOL REPRESENTATIVE (SINCE 2003, ABOUT 10 EARLIER UNLISTED, ALSO UNLISTED ARE STUDENTS FOR WHOM I WAS ADVISOR OR COMMITTEE MEMBER)

- 2003 Preliminary exam of Xiaoming Liu, Food Science (December 2003)

UNIVERSITY SERVICE

A. CLARK UNIVERSITY, WORCESTER, MA

Advisor to Physics Majors	Sep 83 - May 85
Physics Colloquium Organizer	Sep 82 - May 83
Physics Library Supervisor	Sep 81 - May 83
University Radiation Safety Committee	Sep 83 - May 85

B. WASHINGTON STATE UNIVERSITY, PULLMAN, WA

FACULTY STATUS COMMITTEE (adjudicates disputes among members of the faculty)

Elected by faculty of the university	Aug 98 – Aug 01
Nominated to run again for 2007-10; not elected	

FACULTY SENATE UNIVERSITY COMMITTEES

Academic Policy Review Committee -- Subcommittee to Review Program in Statistics	Chair- Oct 01 - Apr 02
Committee on Committees	Feb 93 - Aug 96
Faculty Affairs Committee	Aug 92 - Aug 95
	Chair- Aug 93 - Aug 94
	Chair- Aug 94 - Aug 95
	Aug 01 - Aug 02
	Sep 06 - Aug 10
Research and Arts Committee	Aug 88 - Aug 91
	Chair- May 89 - Aug 90
Research and Arts Grant-in-Aid Evaluation Subcommittees	Chair- Nov 88 - Mar 89
	Nov 89 - Mar 90
	Nov 90 – Mar 91
Senate ad hoc Committee on Faculty Salaries (I was a principal author and editor of the <i>Report on the Status of Faculty Salaries at WSU 2007</i> , presented to the Faculty Senate in Nov. 2007; see http://www.wsu.edu/~collins/facultysalaryreport).	Co-chair-Feb 07-Nov 07
Senate ad hoc Committee on Future of the Reactor	Aug 87 – May 88
Senate ad hoc Committee on Misconduct in Research	Feb 89 – May 89
Senate ad hoc Committee to Investigate Meeting Minutes controversy (A controversy developed over the rules for succession of Senate Chairs in Fall 2011. I was appointed member of an investigating committee by vote of the Senate. I authored a chronology of events between August and October 2011 made available to senators via the Senate's maillist; see https://www.wsu.edu/~collins/Chronology.pdf , and a document archive http://www.wsu.edu/~collins/Chair_Succession_Documents.zip . The conclusion of myself and two other senators that the minutes had improperly modified can be found at http://public.wsu.edu/~collins/minutes_not_original.pdf .)	Oct 11 – Jan 12
Senate Steering Committee, <i>ex officio</i> as chair of Research and Art Committee	May 89 – Aug 90
Senate Steering Committee, <i>ex officio</i> as chair of Faculty Affairs Committee (two years)	Aug 93 – Aug 94 Aug 94 - Aug 95

PRESIDENTIAL UNIVERSITY COMMITTEES

Insurance, Annuities and Retirement Committee	Aug 94 - Aug 98
	Chair- Aug 96 - Aug 97
President's Faculty Excellence Award Selection Comm for Research	Oct 91 - Mar 92
Reactor Safeguards Committee	Aug 86 - May 89
	Chair- May 88 - May 89
	Aug 00 - May 01
Review of Radiation Safety Committee (with Boon Chew)	May 06 - May 07
Subcommittee of Academic Steering Committee for Computing & Telecommunication for VAX's	Aug 87 - May 90
	Chair- Aug 87 - May 89

OTHER UNIVERSITY COMMITTEE SERVICE

Nomination Committee for Faculty Senate Officers	Mar 94
Radiation Safety Committee Audit (with Boon Chew)	Feb 07 - Jul 07
Senate Interviewer of Provost candidates	Mar 91 - Apr 91
Senate Representative: Assessment of Information Tech. by GFA Consulting	Aug 93

COLLEGE OF SCIENCES

COS Undergraduate Research Poster Competition Judge	April 08
Faculty Council (elected by physical sciences faculty)	Oct 01 - disbanded
Research Mini-grant Evaluation Committee	Feb 93 - May 95
Technical Rater in Scientific Programmer I Search	Dec 87
Technical Services Advisory Committee	May 97 - May 00
VAX User's Committee	Aug 86 - May 87
Résumé Writing Workshops for science students	March 03, 04, 05, 06

DEPARTMENT OF PHYSICS

Learning Assessment Committee (designing procedures)	Chair- Feb 05 - Oct 05
Colloquium Coordinator (Physics 590)	Aug 93 - May 94
	Jan 95 - May 95
	Jan 99 - May 99
	Aug 04 - May 05
Computer Committee	Aug 85 - May 87
Faculty Search: Astrophysics	Aug 07 - May 08
Faculty Search: Experimental Physics	May 06 - May 07
Faculty Search: High-Pressure	Aug 88 - May 89
Faculty Search: High-Pressure	Aug 89 - May 90
Faculty Search: Instructor	Chair- Aug 00 - Apr 01
Faculty Search: Physics Education	May 97 - May 98
Faculty Search: Surface Physics	Aug 88 - May 89
Faculty Search: Theory	Aug 94 - May 95
Graduate Studies Committee	Aug 89 - Feb 90
	Aug 00 - now
Liaison to Science Library	Aug 98 - May 01
Local organizing committee: American Physical Society, Northwest Section Meeting, Pullman/Moscow, May 21-22, 2004. I had major responsibility coordinating activities with the Conference Office at the University of Idaho, program chair Larry Hall, and APS Northwest Executive Committee. Co-chaired with Professor Bernhard Stumpf, University of Idaho. Photos are available at http://www.wsu.edu/~collins/APS NW2004/ .	Co-chair- Aug 03 - Jun 04

Peace Corps Recruiter Erin Carlson visited from Seattle; I hosted visit with graduate students	Sep 07
Senator from Physics (University Faculty Senate)	Aug 88 - Aug 94 Aug 06 - Aug 09 Aug 09 - Aug 12
Space Committee	Aug 01 - disbanded
Staff Search: Lecture/Demonstrator Laboratory/Supervisor	Chair- May 90 - Mar 91
Staff Search: Director of undergraduate teaching laboratories	Chair- Aug 98 - May 99
Undergraduate Studies Committee	Aug 85 - Sep 89 May 90 - Aug 92 Chair- May 90 - Aug 92

OTHER UNIVERSITY SERVICE

Committee to Review Leon J. Radziemski, Dean of Sciences (1995-2000)	Nov 99 - May 00
Education Abroad Networking Breakfasts	Feb 05, Jan 06
Faculty Evaluation Committee (Teaching, MME, College of Engineering)	Nov 91, Nov 92
Faculty Phonathon (student recruitment)	Feb 92
Materials Science Program - Colloquium Committee	Aug 97 - May 98
Materials Science Program - Graduate Studies Committee	Aug 92 - May 93 May 98 - Dec 98 Aug 11 - now
Materials Science Research Planning Workshop	Nov 86
Nuclear Engineering Option in MME/WSU (ad hoc committee chaired by Russell V. Westphal)	Nov 07 - May 08
Nuclear Radiation Center Director Searches	Sep 89 Jan - May 91
Regents Scholars Program: rating applications, attending breakfasts, etc.	Fall 03, 05, 06, 07
Research Excellence Award Nominating Committee, Engineering	Feb 92
Washington Technology Center: Associate Director Search	Aug 87 - May 88
Wiley Graduate Research Exposition; Judge	Nov 10

UNIVERSITY RELATED SERVICE

American Association of University Professors (AAUP), WSU Chapter, Executive Committee, Member at Large	Fall 2009- now
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POSITIONS OF FORMER ASSOCIATES (WHERE KNOWN)

POSTDOCTORAL AND PH.D. STUDENTS

- Carl Allard (Ph.D. 1985, Clark University): Staff Medical Physicist, positron emission tomography, Veterans Administration Hospital, West Roxbury, MA 1986- (deceased ca. 1988).
- Ataur Rahman Chowdhury (Ph.D. 1985, Clark University): Associate Professor of Physics (with tenure), University of Alaska, Fairbanks.
- Reinhardt B. Schuhmann (Ph.D. 1988, Clark University): Managing Editor, Physical Review Letters (2001-).
- Steven L. Shropshire (Ph.D. 1991, Washington State University): Associate Professor of Physics (with tenure), Idaho State University, Pocatello.
- Jiawen (Jay) Fan (Ph.D. 1992, Washington State University): Technical Director, radioisotopes products, North American Scientific, Incorporated, Los Angeles. Opened branch office in Beijing, China, about 2005-7.
- Praveen Sinha (Ph.D. 1995, Washington State University): NIH Postdoctoral Research Associate, Department of Radiation Oncology, University Hospital, University of Wisconsin, Madison to 1997; Scientist developing radiation oncology systems, ADAC Labs, Madison, Wisconsin (1998-2000); Chief Operations Officer, UltraVisual Medical Systems (web-based radiology computing, 2000-03); Researcher, Thompson Investment Management (2004-); President and CEO, Novashield, Inc (2006- , <http://novashield.com/>).
- Bin Bai (Ph.D., 1997, Washington State University): Senior Technical Member, Micron Computers, Boise, Idaho (1997-), Located in Micron/Seoul in 2005-6. Established branch office of Micron in Xi'an, China, 2007- .
- Shing-Jen (Luke) Peng (Ph.D., 1998, Washington State University); Postdoctoral Associate, Physics, Washington State University (1998-99). Postdoctoral Associate, Gintzon Laboratory, Applied Physics, Stanford University (1999-2000). Research Scientist, Superconductor Technologies (earlier, Conductus), maker of high-T_c devices (2000-06). Process Engineer, PerkinElmer Optoelectronics, Santa Clara (2006-).
- Matthew O. Zacate (Ph.D., Oregon State University, 1997); postdoc with Robin Grimes, Imperial College, 1997-99; postdoc at WSU, 1999-2003; Research Assistant Professor, WSU, 2003-2004; Associate Professor (with tenure), Department of Geology and Physics, Northern Kentucky University, 2004- . Adjunct Professor, WSU since Oct 2008.
- Farida Selim (Ph.D., Alexandria University); doctoral research at Lawrence Berkeley Laboratory; postdoctoral research and teaching at Idaho State University, Pocatello; postdoctoral research at WSU split between research groups of Kelvin Lynn and myself, 2005-2007). Research Assistant Professor, Physics, WSU, 2007-)
- John P. Bevington (Ph.D., 2011, Washington State University); seeking a position in industry or a national laboratory.

MASTERS LEVEL, UNDERGRADUATE AND HIGH SCHOOL PARTICIPANTS

- John Ochab (M.S. 1980, Clark University): PhD, Physics, University of Maine, Orono; Staff Scientist, Raytheon Corp., Boston, ~1989.
- Samuel W. Porter (B.A., 1980, Clark University).
- Gil P. Stern (B.A., 1981, Clark University); entered graduate study at Johns Hopkins University.
- Hwa-Jae Jang (M.S. 1988, Washington State University): PhD candidate, Physics, SUNY Buffalo, 1988-
- Gregeory McGhee (M.S. 1989, Washington State University): Senior Computer Scientist, Computer Sciences Corporation, Dahlgren, VA (Aegis guidance system) 1989-2006.
- Khushairi Zainun (M.S. 1989, Washington State University): returned to Malaysia, 1989.
- Andrew Vaught (B.S., 1989, Washington State University), Ph.D. in physics, Arizona State University.
- Phillip Himmer (B.S., 1989, Washington State University); continued in graduate study at Montana State University.

Stacy Irwin (B.S., 1989, Washington State University).

Steven Parry (M.S. 1990, Washington State University): Programmer, Nuclear Physics Group, Colorado State Univ., 1990-.

Gil-Hong Kim (M.S. 1990, Washington State University): returned to Korea, 1990.

Kirk Burris (B.S., 1991, Washington State University).

John C. Sy (M.S., 1992, Washington State University): Instructor of Physics, Ateneo de Manila University, Manila, The Philippines, 1992-94. Computer scientist in Toronto and systems administrator in New Jersey (ca 1995).

Bruce Meeves (M.S., 1993, Washington State University): Instructor in Physics, Colorado School of Mines from ~2000.

Mingzhong Wei (M.S., 1998, Washington State University): Graduate student in computer science at WSU from 1998.

Andrew Janssen (B.S.?, ca 1998, Washington State University).

Matthew Petersen (B.S., 2000, chemistry, U. Idaho). Entered graduate study in chemistry at the University of Utah in ~2000; Ph.D. candidate in 2004, PhD recipient later on..

Harmen Thys Nieuwenhuis (M.S. 1998, University of Groningen): Recipient of MBA degree from Oxford University about 2002. In business in The Netherlands and Singapore.

Bonner Charles Walsh (B.S., 2001, physics, WSU): graduated from Southern Methodist University Dedman School of Law in about 2006. Employed with U.S. Citizenship and Immigration Services from about 2006.

Denys Solodovnikov (graduate participant 2001-2); Ph.D. student in materials science WSU with Kelvin Lynn since ~2003.

Slade Jokela (B.S., 2001, physics, WSU): Ph.D. Materials Science Program, WSU (2007, with Matt McCluskey). Postdoctoral associate, Department of Physics, University of Georgia (2007-8); Postdoctoral associate with Matt McCluskey at WSU (2008-)

Aurélie Favrot (Diploma in Materials Engineering, ~2004, Institute des Sciences Appliquées (INSA), Rennes, France)

Li Kang (M.S., 2004, Washington State University): Returned to China to seek employment.

Jipeng Wang (M.S., 2004, Washington State University): Graduate student in electrical engineering at Arizona State University since Fall 2004.

Egbert Rein Nieuwenhuis (M.S., Spring 2005, University of Groningen). Returned to the Netherlands and completed studies for an MS degree in physics. Now in business in Amsterdam.

Lai Wang (M.S., May 2005, Washington State University): Graduate student in physics at George Washington University since Fall 2005.

Kyle Slinker (Pullman High School, June 2006). Undergraduate study of physics at University of Washington.

Xiao Wang (M.S., May 2006, Washington State University). Graduate student in health physics at the University of Rochester since Fall 2007.

Morgan Emerson (B.S., May 2007, Washington State University). Graduate student in physics at Oregon State University starting Fall 2007; expecting to receive MS degree in Spring 2009.

Phillip Peterman (B.S. in physics, Dec 2006, Washington State University). Graduate student in physics at Pennsylvania State University since Fall 2007.

Stephanie Lage (B.S. in physics and B.S. in math, May 2007, Washington State University). Graduate study in applied math at the University of Colorado since Fall 2007.

Arriety Lowell (M.S., physics, May 2007, Washington State University.) College teaching in Wisconsin since Fall 2007.

Ashley Dorwart (REU participant, summer 2007) Graduated with degrees in Spanish and Physics from Nebraska Wesleyan University, May 2009.

Ben Norman (B.S. in physics, Dec 2007, honors thesis defended Oct 2007, Washington State University). Graduate study in physics at the University of Michigan since Fall 2008.

Xia (Sean) Jiang (M.S. in physics, May 2008). Graduate study in medical physics at the Univ. of Chicago since Fall 2008.

Justin Ahn (Pullman High School, June 2008). Business major at Northwestern University Fall 2008, graduated BS, May 2011.

Megan Lockwood Harberts (REU participant, summer 2008). Graduate student in physics at Ohio State U. since Fall 2009.

Samantha Cawthorne (REU participant, summer 2009). BS graduate of Clemson University, May 2010; planned to intern at NIST starting summer 2010; tragically died in an accident days after graduation in May 2010.

Prastuti Singh (Pullman High School, June 2010). Physics major at the California Institute of Technology.

Justine Minish (REU participant, summer 2010). Senior at Alma College, Alma, Michigan.

Xiangyu Yin (MS in Physics, August 2011). Continuing graduate study in physics at WSU in group of Doerte Blume.

Lee Aspitarte (BS in Physics, August 2011). In graduate study in physics at Oregon State University since Fall 2011.

AWARDS AND PRESENTATIONS BY STUDENTS (since 2007)

1. *Site preference of indium solutes in Al_3Ti and Al_3Zr phases*, John P. Bevington, Farida Selim and Gary S. Collins; Academic Showcase, WSU, March 23, 2007 (poster).
2. *Diffusive motion of tracer atoms in $Al_{11}R_3$ ($R = La, Ce, Pr$) phases*, Stephanie Lage and Gary S. Collins, College of Sciences Undergraduate Research Poster Presentation, WSU, March 30, 2007.
3. *Site switching of ^{111}In impurities in Al_2Gd* , Ashley Dorwart and Gary S. Collins, REU Summer School "Extreme Matter" poster exposition, Murrow Communications Center, WSU, August 2, 2007.
4. *Site preferences of ^{111}In solutes in LI_2 rare-earth stannide and plumbide mirror phases*, Benjamin Norman, Honors College Thesis Oral Defense, October 3, 2007.
5. *Impurity diffusion in LI_2 intermetallic compounds*, Xia (Sean) Jiang and Gary S. Collins, Wiley Research Exposition, Graduate and Professional Student Association, WSU, February 13, 2008 (poster). This poster by Xia won third-place prize of \$200 for best poster in the category of Engineering and Physical Sciences.
6. *Diffusion of ^{111}Cd probes in Ga_7Pt_3 studied by nuclear quadrupole relaxation*, Farida Selim, John P. Bevington and Gary S. Collins, Academic Showcase, WSU, March 28, 2008 (poster).
7. *Impurity diffusion in LI_2 intermetallic compounds*, Xia (Sean) Jiang and Gary S. Collins, Academic Showcase, WSU, March 28, 2008 (poster).
8. *Site preferences of solute atoms in mirror phases* (approximate title), Benjamin Norman and Gary S. Collins, Academic Showcase, WSU, March 28, 2008 (poster).
9. *Site preferences of solute atoms in mirror phases* (approximate title), Benjamin Norman and Gary S. Collins, College of Sciences Undergraduate Poster Competition, WSU, April 4, 2008 (poster).
10. *Jump frequencies of Cd tracer atoms in LI_2 lanthanide stannides*, Megan Lockwood and Gary S. Collins, Poster Exposition for REU Summer Schools in Physics and Engineering at WSU, CUE Atrium, August 5-6, 2008.
11. *Jump frequencies of Cd tracer atoms in LI_2 lanthanide stannides*, Megan Lockwood and Gary S. Collins, oral talk, APS Joint Meeting of the Texas and Four Corners Sections, El Paso, October 17-18, 2008. http://absimage.aps.org/image/MWS_TS4CF08-2008-000082.pdf
12. *Jump frequencies of Cd probe atoms in $In_3(La_{1-x}Pr_x)$ pseudo-binary compounds*, Randal Newhouse and Gary S. Collins, Academic Showcase, WSU, March 27, 2009. (poster paper).
13. *Calculation of formation energies of intrinsic point defects in In_3La* , John P. Bevington and Gary S. Collins, Academic Showcase, WSU, March 27, 2009. (poster paper).
15. *Jump frequencies of tracer atoms on Al-sites in Al_4Ba phases*, Randal Newhouse and Gary S. Collins, 11th Annual Meeting of the Northwest Section of the American Physical Society, Vancouver, BC, May 14-16, 2009. <http://meetings.aps.org/Meeting/NWS09/Event/106772>
16. *Calculation of formation energies of intrinsic point defects in In_3La* , John P. Bevington and Gary S. Collins, 11th Annual Meeting of the Northwest Section of the American Physical Society, Vancouver, BC, May 14-16, 2009.

<http://meetings.aps.org/Meeting/NWS09/Event/106773>

17. *Diffusion in Al_4Sr and Ga_4Sr studied using PAC spectroscopy*, [Samantha Cawthorne](#) and Gary S. Collins, Research Experience for Undergraduates (REU) public poster exposition, CUE Building, WSU, July 31, 2009.
18. *Explaining the change in diffusion mechanism in the series of $L1_2$ phases In_3R ($R = \text{rare-earth}$)*, [John P. Bevington](#), Matthew O. Zacate and Gary S. Collins, Symposium on Computational Thermodynamics and Kinetics, TMS annual meeting, February 14-18, 2010, Seattle. Oral presentation.
<http://www.programmaster.org/PM/PM.nsf/ApprovedAbstracts/4ACF0A2881B9C23B85257603006CDD22?OpenDocument>
19. *Diffusion on Al-type sites in intermetallic compounds having the tetragonal Al_4Ba structure*, Gary S. Collins, [Randal Newhouse](#) and Samantha Cawthorne, Symposium on Computational Thermodynamics and Kinetics, TMS annual meeting, February 14-18, 2010, Seattle. Poster presentation.
<http://www.programmaster.org/PM/PM.nsf/ApprovedAbstracts/1FC4AC845FF654A5852576030069BFFF?OpenDocument>
20. *Equilibria among R_nCoIn_{2+3n} phases ($R = La, Ce, Dy$) having Ho_nCoGa_{2+3n} structures*, [Randal Newhouse](#) and Gary S. Collins, Hume-Rothery Symposium: Configurational Thermodynamics of Materials, TMS annual meeting, February 14-18, 2010, Seattle. Oral presentation.
<http://www.programmaster.org/PM/PM.nsf/ApprovedAbstracts/C35C35DE829C598385257603006DF019?OpenDocument>
21. *Diffusion of Al-sublattices in phases having the tetragonal Al_4Ba structure*, [Randal Newhouse](#), Samantha Cawthorne and Gary S. Collins, Academic Showcase, WSU, March 27, 2010 (poster).
22. *Understanding a change in diffusion mechanism in rare earth indides*, [John P. Bevington](#) and Gary S. Collins, Academic Showcase, WSU, March 27, 2010 (poster).
23. *Atomic jump frequencies of probe atoms in tin compounds*, [Xiangyu Yin](#), [Randal Newhouse](#) and Gary S. Collins, Academic Showcase, WSU, March 27, 2010 (poster).
24. *Nuclear relaxation in In_3Rh , In_3Ru and In_3Ir compounds caused by diffusion of indium*, [Prastuti Singh](#), [Randal Newhouse](#) and Gary S. Collins, Undergraduate research poster competition, WSU, March 30, 2010 (poster).
25. *Dependence of diffusion on composition in pseudo-binary $La(In_{1-x}Sn_x)_3$ phases*, [Justine Minish](#), [Randal Newhouse](#) and Gary S. Collins, Research Experience for Undergraduates (REU) public poster exposition, CUE Building, WSU, August 6, 2010.
26. *Atomic ordering in ternary phases having the Al_4Ba structure*, [Lee Aspirtarte](#), [Xiangyu Yin](#), [Randal Newhouse](#), Gary S. Collins, NWS10 Meeting of the American Physical Society, Walla Walla, Washington, October 2, 2010. Contributed talk abstract C3.00004..
27. *Application of Polypacfit to obtain jump frequencies of probe atoms having collinear EFG axes in Al_4Ba phases*, [Randal Newhouse](#), Matthew Zacate, Gary S. Collins, NWS10 Meeting of the American Physical Society, Walla Walla, Washington, October 2, 2010. Contributed talk abstract C3.00005.
28. *Solubility of indium probe atoms in supercooled gallium liquid metal between 8K and 300K*, [Xiangyu Yin](#), [Randal Newhouse](#), [John Bevington](#), Gary Collins, NWS10 Meeting of the American Physical Society, Walla Walla, Washington, October 2, 2010. Contributed talk abstract H3.00003.
29. *Solubility of indium probe atoms in supercooled gallium liquid metal between 10K and 300K*, [Xiangyu Yin](#), 2010 William R. Wiley Research Exposition: Engineering and Physical Sciences, November 8, 2010, oral presentation.
30. *Solubility of indium in solid gallium*, [Xiangyu Yin](#), [Randal Newhouse](#) and Gary S. Collins, Academic Showcase, March 25, 2011 (poster).
31. *Modeling atomic jump frequencies in pseudo-binary alloys*, [Randal Newhouse](#) and Gary S. Collins, Academic Showcase, March 25, 2011 (poster).
32. *Polymorphic and peritectic phase transformations of In_3Zr studied by PAC*, [Lee Aspirtarte](#) and Gary S. Collins, Academic Showcase, March 25, 2011 (poster).

33. *Diffusion in La_nCoIn_{3n+2} phases studied by perturbed angular correlation*, Eighth International Conference on Diffusion in Materials (DIMAT2011), Dijon, France, July 2011. Randal Newhouse and Gary S. Collins. Oral presentation. <http://www.dimat2011.com/>
34. *Corrected phase diagram for In-Ni near 30 at.% Ni*, Lee Aspitarte and Gary S. Collins, Research Experience for Undergraduates (REU) public poster exposition, CUE Building, WSU, August 5, 2011.
35. *Temperature dependence of the hyperfine field in nickel metal*, Jesse Miller and Gary S. Collins, Academic Showcase, March 30, 2012 (poster).
36. *Site preferences of indium solutes in $REPd_3$ and $REAL_2$ phases*, Qiaoming Wang and Gary S. Collins, Academic Showcase, March 30, 2012 (poster).

COMPETITIVE AWARDS WON BY STUDENTS

1. College of Sciences Research Minigrant, Stephanie Lage, May 2006, for her proposal: *Unique lattice locations in Cr_3Si* . \$2500 stipend.
2. College of Sciences Research Minigrant, Benjamin Norman, May 2007, for his proposal: *Lattice locations of solute atoms in mirror phases*. \$2500 stipend.
3. Wiley Research Exposition, Graduate and Professional Student Association, Best poster in the category of Engineering and Physical Sciences, Xia (Sean) Jiang, Physics, WSU, February 13, 2008, *Impurity diffusion in LI_2 intermetallic compounds*, and Gary S. Collins. This poster also won Xia a third-place prize in all categories of \$200.
4. Intel Science Talent Search Semifinalist, Prastuti Singh, Pullman High School, announced January 13, 2010: *Nuclear relaxation in $CoGa_3$ lattice structure*. This nationally competitive award was accompanied by stipends of \$1000 for Prastuti and \$1000 for Pullman High School. The list of semifinalists can be found at <http://www.societyforscience.org/Document.Doc?id=128>. A news article and interview can be found at <http://www.wsu.edu/~collins/Prastuti-dnews-100125.pdf>.
5. College of Sciences Research Minigrant, Kenneth Dorrance, May 2010, for his proposal: *Atom movement in $La_2Co_2In_{10}$ and related phases*. \$2500 stipend.
6. Graduate and Professional Students Association travel grant to attend Dijon diffusion conference, July 2010, Randy Newhouse, \$650.

MISCELLANEOUS INTRAMURAL AND OTHER GRANTS

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| 1984 | Awarded equipment donation of 2 MeV electron van de Graaff accelerator from Union Carbide Corporation, to Clark University and University of Connecticut: estimated value ~\$500,000. |
| 1985-86 | 13 Grants of Used Equipment, DOE Energy-Related Laboratory Equipment Program: value ~\$10,000. |
| 1987-88 | Research grant-in-aid: WSU Office of Grants and Research Development: <i>Hydrogen Binding in Vacancy Defects in Metals</i> , \$9912. |
| 1989 | Research grant-in-aid to support studies of cold-fusion phenomena: WSU Office of Research, \$5000. |
| 1989 | Research Experience for Undergraduates grant supplement to NSF DMR 86-19688 for support of Philip Himmer in summer 1989: \$2625. |
| 1991 | Grant of Macintosh SE30 personal computer for preparation of figures for publications, Center for Materials Research, WSU: \$2700. |
| 1994 | College of Sciences Instructional Minigrant to attend an NSF-sponsored workshop on advanced undergraduate |

physics laboratories, California State University in Hayward.

- 1994 College of Sciences Instructional Mini-grant: *Acquisition of a laboratory computer for Physics 415*, \$2000, including \$500 departmental matching.
- 1994 College of Sciences Instructional Laboratory Development Grant: acquisition of a pulsed-NMR spectrometer for the Quantum Physics Laboratory 415: \$16,991.
- 1996 Approval of proposal for experiments at the ISAC facility (ISotope ACcelerator and Implanter On-line) under construction at TRIUMF (Tri-Universities Meson Facility), Vancouver, BC. Title: *Equilibrium defects and order in intermetallic compounds studied using isomeric probes*, PI G.S. Collins. (A commitment to beam-time once the facility comes into operation.)
- 2001 College of Sciences and Department of Physics: purchase for Quantum Physics Laboratory 415 of new laboratory computer and apparatus for electron diffraction and electron charge-to-mass experiments, ~\$7000.
- 2002 College of Sciences Instructional Laboratory Development Grant: acquisition of a scanning tunneling microscope for the Quantum Physics Laboratory, Physics 415: \$8500.
- 2002 Individual Investigator Proposal submitted Feb. 2002 approved, with two grants each of two-days beam time for XAFS experiments in August and November 2002 on beamline of Pacific Northwest Consortium — Collaborative Access Team (PNC-CAT), Advanced Photon Source, Argonne National Laboratory.
- 2002-03 General User Proposal 130 submitted Nov. 2002 approved, for experiments on beamline of Pacific Northwest Consortium—Collaborative Access Team (PNC-CAT), Advanced Photon Source, Argonne National Laboratory. One run of 3.5 days completed in Feb. 2003.
- 2010 REU grant supplement, NSF DMR 09-04096, ~\$8000, support research by Justine Minish in summer 2010.
- 2011 REU grant supplement, NSF DMR 09-04096, ~\$6500, support research by Lee Aspitarte in summer 2011.