***Curriculum Vitae***

**Takeshi Egami**

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MS-6453, Bldg. 8630, Suite B101C Phone: 865-574-5165

Oak Ridge National Laboratory Fax: 865-576-8631

Oak Ridge, TN 37831-6453 e-mail: egamit@ornl.gov

**Personal Data**

Born July 15, 1945 in Fukuoka, Japan. Married, 3 children. U.S. Citizen

**Education**

1964‑1968 University of Tokyo, B. Eng. in Applied Physics

1968‑1971 University of Pennsylvania, Ph.D. in Materials Science and Engineering

1971‑72 Postdoctoral Fellow, Univ. of Sussex, School of Applied Science, Brighton, UK

**Professional Experience**

2003- UT-ORNL Distinguished Scientist/Professor, University of Tennessee at Knoxville, Department of Materials Science and Engineering, Department of Physics and Astronomy; Oak Ridge National Laboratory, Materials Science and Technology Division; Joint Institute for Neutron Sciences, Director (2008-2015), Interim Director (2004-2008), Director Emeritus (2015-).

1997-2002 Department Chair, University of Pennsylvania, Department of Materials Science and Engineering.

1980‑2003 Professor, University of Pennsylvania, Department of Materials Science and Engineering, secondary appt in Department of Electrical Engineering (1986‑2003), Graduate Group Chairman (1988‑1993, 1996-1997), Director, Materials Characterization Facility (1999-2002).

1976‑80 Associate Professor, University of Pennsylvania. Department of Materials Science and Engineering

1973‑76 Assistant Professor, University of Pennsylvania, Department of Materials Science and Engineering

2016 Visiting Professor, Department of Physics, Georg-August-Universität, Göttingen, Germany

2009- Adjunct Professor, Tohoku University, World Premier International Research Center, Advanced Institute for Materials Research, Sendai, Japan

2003-10 Adjunct Professor, University of Pennsylvania, Department of Materials Science and Engineering

2002-03 John Wheatley Scholar, Los Alamos National Laboratory, Los Alamos, NM

1998 Guest Professor, KEK (High Energy Accelerator Research Organization),

 Tsukuba, Japan

1993 Guest Professor, Inst. for Materials Research, Tohoku University, Sendai, Japan

1988 Summer Faculty Visitor, IBM Almaden Research Lab, San Jose

1987 Guest Professor, Department of Physics, University of Tokyo, Tokyo, Japan

1979‑80 Visiting Scientist, Max‑Planck‑Institut fur Metallforschung, Institut fur Physik,

 Stuttgart, Germany

1972‑73 Visiting Scientist, Max‑Planck‑Institut fur Metallforschung, Institut fur Physik,

 Stuttgart, Germany

**Societies**

American Physical Society (Fellow), Neutron Scattering Society of America (Fellow), American Association for the Advancement of Science (Fellow), Materials Research Society, American Crystallographic Association, The Minerals, Metals, and Materials Society.

**Honors**

*J. D. Hanawalt Award*, International Center for Diffraction Data, 2010, with S. J. L. Billinge

 (Special session at 2010 Denver X-Ray Conference, Denver, CO).

*Bertram Eugene Warren Diffraction Physics Award*, Amer. Crystallographic Assoc., 2003

 (Festschrift in Z. Krstallogr. **219**, No. 3, 117-185 (2004)).

*Metal Physics Achievement Award*, Japan Institute of Metals, 1988

*Robert Lansing Hardy Gold Medal* of TMS‑AIME, 1974

*Sow-Hsin Chen Distinguished Lectureship of Neutron Science and Technology,* College of Atomic Science, National Tsing Hua University, Taiwan, 2023

*Aris Phillips Lecture Award*, Department of Mechanical Engineering and Materials Science, Yale University, 2015-2016

*Senior Researcher Prize*, International Symposium on Metastable and Nano Materials (ISMANAM), 2006

*John Wheatley Scholar* of Los Alamos National Laboratory, 2002-03

*NSF Creativity Extension Award*, 1999

*Fellow,* American Physical Society, 2000

*Fellow,* Neutron Scattering Society of America, 2018

*Fellow,* American Association for the Advancement of Science, 2023

*S. Reid Warren Distinguished Teaching Award* of Tau Beta Pi, 1997

*General Electric Professor of LRSM*, 1980‑81

Japan Society for the Promotion of Science Fellowship, 1987

Max‑Planck‑Institut Fellowship, 1979‑80, 1972‑73

University Fellowship, 1968‑71

Fulbright Scholarship, 1968

**Current Research Interests**

* Condensed matter physics of dynamic aperiodic matter.
* Modeling, theory and experiment on the structure and atomic dynamics of liquids and glasses, atomic mechanism of visco-elasticity, the glass transition, deformation mechanism of metallic glasses.
* Local atomic structure and dynamics of electronic oxides including superconducting, ferroelectric, catalytic, and magnetic oxides.
* Neutron scattering, synchrotron x-ray scattering, including dynamic and static atomic pair-distribution function analysis and Van Hove function, inelastic neutron and x-ray scattering.
* Simulation and theory on the atomic-level stresses in liquids, glasses, crystalline alloys and compounds.

**Professional Activities**

Editor - *Advances in Physics* (’11-)

Divisional Assoc. Editor in Condensed Matter Physics - *Physical Review Letters* (‘13-‘18)

Assoc. Editor – *Frontier in Physics* (’22-), *Progress in Materials Science* ('88 – ‘95), *Mater. Trans., JIM* (‘96-‘00)

Guest Editor - *Journal of Chemistry and Physics of Solids,* Special issues on ferroelectrics

 (’96, ‘99)

Advisory Editor – Science and Technology of Advanced Materials (STAM) (‘16-‘24)

Member - Editorial Board, *Mater. Trans. JIM* (‘01-)

Director - *Upgrading Project of the NPD spectrometer at the LANSCE*, supported by the

 NSF and DOE (’00-’03)

Chairman ‑ *Program Advisory Committee*, Intense Pulsed Neutron Source, Argonne National Laboratory and Los Alamos Neutron Scattering Center, Los Alamos National Laboratory ('91 – ‘93, member '90 – ‘93)

 *Special Interest Group, American Crystallographic Assoc.,* Amorphous

 Materials (‘95 – ‘96).

 *Executive Committee:* Oak Ridge National Lab. SNS/HFIR Users’ Group (‘03)

 *IMR Evaluation Committee*: Tohoku University (’08)

 *JAEA-ASRC Evaluation Committee*: Japan Atomic Energy Agency (’10-‘15)

Co‑chairman ‑ *Program Committee*, Magnetism and Magnetic Materials Conference (’84, with Kathy Levin)

 *DOE PI Meeting on Physical Properties* (’13, with Puru Jena)

Vice-Chair - *Executive Committee:* Oak Ridge National Lab. SNS/HFIR Users’ Group (‘02)

Organizer - *ONR Workshop on Fundamental Experiment in Ferroelectrics*, Williamsburg, VA (Feb., ’95, ‘99)

 *European Physical Society, Condensed Matter Division Meeting, Mini-*

 *Colloquium on Mechanical Properties of Metallic Glasses*, Prague (’04)

 *KITP Conference,* *Emerging Concepts in Physics of Glasses,* KITP, UCSB, Santa

 Barbara (’10)

 *Neutron Scattering in Quantum Condensed Matter – An online graduate course*

 (‘12)

 *Neutron Scattering in Soft Matter Science – An online graduate course* (‘13)

Co‑organizer - *Workshop on Lattice Effects in High Tc Superconductors*, Santa Fe, NM

 (Jan. ‘92)

 *Materials Research Society Spring Meeting Symposium on Magnetic Interfaces,*

 San Francisco (April, ‘93)

 *NATO Workshop on Science and Technology of Rapid Solidification and Processing,* Westpoint (NY, June, ‘94)

 *Japan-U.S. Workshop on International Collaboration: Priorities, Funding and Evaluation - The Roles of Industry, Government and Academia,* Kyoto, Japan (Dec., ‘94)

 *Materials Research Society Fall Meeting, Symposium on Fundamental Issues on*

 *Glassy State,* Boston (Nov., ‘96).

 *Ultra-High-Purity Metal-Base Materials ’97,* Philadelphia (Sept., ’97)

 *APS Focused session on ferroelectricity,* Minneapolis (March, ’00)

 *Workshop on Mesoscopic Structure in Complex Materials,* Santa Fe (Jan., ’02)

 *APS Focused session on magnetoresistive oxides*, Indinannapolis (March, ’02)

*ONR Workshop on Fundamental Physics of Ferroelectricity,* Washington, DC (Feb., ’02)

 *Materials Research Society Fall Meeting, Symposium on Bulk Metallic Glasses,*

Boston (Dec., ‘02).

 *Conference on Dynamic Energy Landscapes and Functional Systems*, Santa Fe

 (March, ’04)

 *APS Focused session on multi-ferric oxides*, Los Angeles (March, ’05)

 *International Conference on Processing & Manufacturing of Advanced Materials,*

 *session bulk metallic glasses*, Vancouver (July, ‘06)

 *Fundamental Issues in Metallic Glasses,* Kunming/Guilin (October, ‘07)

 *Internatl. Crystallography Union, Annual Meeting, Session on Total Scattering,*

Osaka (June, ‘08)

 *Internatl. School on Glasses and Glass Formers, JNCASR,* Bangalore, India (Jan., ’10)

 *Workshop on Physics of Glasses, Kavli Institute for Theoretical Physics,* UC Santa Barbara(April – July, ’10).

 *Glass Mini-Workshop, AIMR, Tohoku Univ.,* Sendai (Feb. ’12 – ‘17).

 *Materials Research Society Fall Meeting, Symposium on Liquids and Glassy Soft*

 *Materials – Theoretical and Neutron Scattering Studies,* Boston (Dec.,

‘15).

Member ‑ *International Advisory Committee*:J-PARC (’21-), Japan Atomic Energy Agency

 Research and Development (’11-‘15):

 *International Scientific Council*: Peter the Great St. Petersburg Polytechnic

 University (2019 – 2021)

 *Organizing Committee*: Major Trends in Superconductivity in the New Millenium

 (Kloster, Switzerland, March, ’00)

 *International Advisory Committee (Conf.)*: International Conferences on Liquid

 and Amorphous Metals (‘83, ’86, ’89, ’92, ‘95), Rapidly Quenched Metals ('82‑'88), Structure of Non‑Crystalline Materials ('88, '91, ‘94, ‘97), Conf. on Stripes, Lattice instabilities and High TC Superconductivity (’96, ’98, ’00, ’03, ’15, ’16), International Symposium on the Application of Ferroelectricity (’00), Conf. on Superconductors, CMR and Related Materials (Giens, France, June, ’02), CIMTEK2010 (Florence, ’10), SNS Conf. (Sendai, ’07, Beijing, ’10).

*Advisory Committee:* Magnetism and Magnetic Materials Conf. (’83, ’84, ’85, ’86), EPRI Workshop on Amorphous Metals and Semiconductors (‘85), Aspen Center for Physics Winter Workshop on Fundamental Physics of Ferroelectrics (’00), ONR Workshop on Fundamental Physics of Ferroelectricity, Williamsburg, VA (Feb., ’03), Miami Conf. On High Temperature Superconductivity, Miami, FL (Jan. ’04), Synchrotron Radiation in Materials Science 04, Grenoble, Fr (Aug. ’04), Stripes, Rome, Italy (’04, ’06, ’08, ’11, ’12, ’13), DOE-BES MST Program (’06-‘08).

 *Program Committee :* Magnetism and Magnetic Materials Conference (‘83, ‘84, '87, '92), INTERMAG, ('85, '86, '91 & '94), OELASE ('94, ‘96), Int. Conf.

 on Superconductivity, CMR and Related Materials, Giens (’02),

 Mechanism and Materials of Superconductivity-HTSC VII (M2S-Rio),

 Rio de Janeiro (’03), Mechanism and Materials of Superconductivity-

 HTSC VIII, Dresden (’06).

 *National Academy of Science, research committee:* High magnetic field, Cobalt conservation.

 *Proposal Evaluation Committee:* CHESS (‘82-’85), IDEC of NSLS (‘94-’95),

 PSP of NSLS (‘98-‘99)

 *Executive Committee:* Oak Ridge National Lab. SNS/HFIR Users’ Group (‘99-

 ‘04), Inelastic X-ray Scattering-CAT, APS (’00-08), ONR-Center for

 Piezoelectrics by Design (’00-07), NSF Int. Materials Inst. UTK (’06-10), IMI-ANSWER (’06-10), IDT for ARCS, SNS, ORNL (’03-).

 *Special Task Force:* Education sub-committee of University Materials Council

 (’99-‘00)

Member of a number of committees to review research and educational activities or proposals for federal agencies. Reviewer of a large number of papers for professional journals.

**Graduate Students**

**Ph.D. in Materials Science or Physics**

***University of Tennessee*:**

*Materials Science*:

* Leo Zella (2023) “Atomic level mechanism of fast relaxation in metallic glasses”.
* Zengquan Wang (W. Dmowski, primary advisor, 2020) “Atomic dynamics in metallic liquids”.
* Hui Wang (W. Dmowski, primary advisor, 2020) “Structural aspects of deformation mechanism of bulk metallic glasses and deformation-induced phase transition in Zirconium”.
* Eric C. Novak (co-advised by Michael Ohl and Nina Jalarvo of ORNL, 2020) “Structure and hydrogen dynamics of alkaline earth metal hydrides investigated with neutron scattering”.
* Yang Tong (W. Dmowski, primary advisor, 2015) “Deformation of metallic glasses studied by high-energy x-ray diffraction”.
* Wei Guo (2015) “Molecular Dynamics Simulation of Irradiation Damage in Multicomponent Alloys”.

*Physics*:

* Rudra Bahadur Bista (exp 2024) “Electron Dynamics in Real Space and Time”.
* Sarathchandra Yadukrishnan (2022) “Local Dynamics of Liquids and Glasses”.
* Lu Jiang (2014) “Field-effects in transition metal oxides”.
* Madhusudan Ojha (2012) “Study of local structure, stress and dynamics in disordered materials using ab-initio and molecular dynamics simulation”.
* Jennifer Niedziela (2012) “Strucuture and dynamics of high temperature superconductors”.
* Daniel E. Parshall (2010) “Spin-lattice coupling in the pnictide high-temperature superconductors”.

***University of Pennsylvania*:**

*Materials Science*:

* Zsolt Marton (2010) “Field effect and magnetically induced capacitive tuning in hole doped La1-xSrxMnO3”,
* Ferenc Stercel (2006) “Composition dependence of the in-plane Cu-O bond-stretching LO phonon mode in YBCO”,
* Hao Chen (2003) “Atomistic modeling and molecular dynamics study of binary metallic glasses”,
* Jae-Ho Chung (2003) “Investigation of high-energy phonon anomalies in HTSC cuprates with inelastic neutron scattering”,
* Eugene Mamontov (1999) “Lattice defects in cerium oxide catalyst support”,
* Shelton Fu (1997) “Field effect study of the transport properties of TiO2,
* Despina A. Louca (1997) “Lattice effects in magnetoresistive La1-xSrxMnO3 Manganites”,
* Srdjan Teslic (1997) “Atomic structure and ferroelectricity of Pb(Zr1-xTix)O3”,
* Thomas R. Sendyka (1994) “Local atomic structure of 214 and 214-type superconducting cuprates”,
* H. David Rosenfeld (1993) “A dual space refinement of short and intermediate range atomic structure in the relaxor ferroelectric Pb(Mg1/3Nb2/3)O3”,
* Daniel T. Kulp (1992) “Modeling of solid state amorphization”,
* Ruizhong Hu (1992) “The atomic structure and chemical ordering of AlRuCu quasicrystal”,
* Simon J. L. Billinge (1992) “Local structure of cuprate superconductors”,
* Wendy Spronson (Frydrych) (1988) “Atomic pair-distribution function study of sodium ,
* Daniel D. Kofalt (1987), “Local and long-range structure of quasicrystalline U-Pd-Si”,
* Joe Haimovich (1987) “Viscoelastic deformation and its structural effects in metallic glasses”,
* Yoshio Suzuki (1985) “Deformation and anelasticity of metallic glasses”,
* David J. Srolovitz (1981) “Modeling of the structure of amorphous metals”,
* John T. Prater (1978) “Magnetic studies on the dilute paired antiferromagnet RbMn1‑xMgxCl3”.

*Physics*:

* Yury Petrov (2000) “Exact-diagonalization study of electron-lattice coupling in the effective two-band t-J Model”,
* Robert J. McQueeney (1996) “Lattice Effects in HTSC Cuprates Observed by Neutron Scattering”,
* Shiao-Ping Chen (1986) “Local fluctuations and ordering in liquid and amorphous metals”,
* Shian Aur (1981) “Structure of amorphous metals determined by the energy-dispersive x-ray diffraction”.

**M.S. in Materials Science or Physics**

***University of Tennessee*:**

*Materials Science*

* Mariah Wakefield (2024) “Chemical short-range order in high-entropy alloys”,

*Physics*:

* Cinzia Metallo (2006) “Neutron diffraction study of heavy water intercalation in superconducting deuterated sodium cobaltate Na0.35CoO21.4H2O”,

***University of Pennsylvania*:**

*Materials Science*:

* Helen VanBenschoten (2000) “Surface structure of ceria: A PDF model”,
* Wojtek Kalata (1997) “Structure of ceria as oxygen storage media”,
* Paul Kosmetatos (1995) “Structural anisotropy in metallic glasses after creep”,
* Ian A. Morrison (1987) “A structural study of the icosahedral glass model”,
* Craig D. Hanson (1987) “Distribution of Cs+ ions in single and mixed alkali glasses from x-ray diffraction”,
* Tamae Maeda (1986) “Structural analysis of atactic polypropylene: A study of the glass transition by x-ray diffraction”

**Postdoctoral Fellows**

Leo Zella (2023-2024), Jaeyun Moon (2020-2023), Chae Woo Ryu (2018-2021), Bin Wu (2013-2017), Yue Fan (Wigner Fellow, 2013-2015), Madhusudan Ojha (2012-2016), Takuya Iwashita (2010-2013), Oliver Lipscombe (2009-2011), Konstantin A. Lokshin (2005-2007), Valentin Levashov (2004-2014), Boris Fine (2004-2007), Maxim Lobanov (2004-2005), Jin Nakajima (2003-2006), Ming Zhu (2002-2003), Przemek Piekarz (2001-2003), Eugene Mamontov (2000-2003), Wojciech Dmowski (1985-88, 1992-97), Xiao Yan (1990-92), Michael Hirscher (1988-90), Susumu Nanao (1985-86), Yi Wu (1984-86), Thomasz Jagielinski (1982-85), Shian Aur (1981-82), David J. Srolovitz (1981), Koji Maeda (1978-79), Shin-ichiro Hatta (1977-79), Toshio Ichikawa (1976-77)

**Research Associates**

Wojtek Dmowski (1997-2003), Brian H. Toby (1988-90)

**Research Professors**

*Research Associate Professor*:

Wojciech Dmowski (2003-), Michael Ohl (2023-),

*Research Assistant Professor*:

Chae Woo Ryu (2021-2022), Takuya Iwashita (2014-2016), Konstantin A. Lokshin (2008-2017),

**Visiting scientists**

Maxim Lobanov (2023), Chae Woo Ryu (2023), Charles Lieou (2021-2022), Woo Seok Choi (2019-2020), Yuya Shinohara (2017-19), Yoshinori Shiihara (2015), Sungkyun Park (2013-14), Weizhong Yuan (2012-13), Tetsu Ichitsubo (2010-11), Jae-Ho Chung (2010), Rinat Mamin (2005), Shin-ichiro Shamoto (2002-2003), Sergey B. Vakhrushev (2002, 2003, 2004, 2011), Ronald Fisch (2001-2003), Ming Zhu (2001-2002), Ichiro Tanaka (2000-01), Masashi Fujiwara (1999-2000), Kanji Iwata (1997-98), Harusuke Yoneyama (1996-97), Kaoru Endoh (1995-96), Sumio Ishihara (1995), Daisuke Yoshimura (1994-95), Tomosaburo Yano (1992-94), Toshio Tomida (1990-92), Nobuyuki Morito (1982-84), Yoshio Waseda (1982-83), Hideo Matsuda (1981-82)

**Current Research Grants**

NSF DMREF 1921987, *Fundamentals of short-range order-assisted alloy design: Thermodynamics, kinetics, mechanics*.

 Co-PIs: C. Tasan and J. Li (MIT)

 9/1/19 – 8/31/24

 $426,879

DOE KC020103 for FWP # ERKCM40, *Atomic Dynamics in Metallic and Other Liquids and Glasses*

 8/01/04-9/30/24

 $1,120,000 for FY2023

DOE EFRC, *Fast and Cooperative Ion Transport in Polymer-Based Electrolytes* (FaCT)

 8/01/22 – 7/31/25

 $70,000 per year (sub-award)

**Recent Research Grants**

DOE EFRC, *Fluid Interfaces, Reactions, Structures and Transport* (FIRST)

 8/01/18 – 7/31/22

 $150,000 per year (sub-award)

DOE EFRC, *Energy Dissipation to Defect Evolution* (EDDE)

 8/01/18 – 7/31/20

 $33,000 per year (sub-award)

DOE BES, ERKCSNL, *Center for Accelerating Materials Modeling from SNS Data* (CAMM)

 10/1/14 – 3/31/16

 $1,000,000 per year, $186,000 for TE.

DOE DE-FG02-08ER46528, *Neutron Scattering Research Network for EPSCoR States*

 9/01/08 – 9/30/15

 $3,715,370 for 7 years, with $1,905,885 matched by UTK.

DOE KC020103 for FWP # ERKCM43, *Atomistic Mechanisms of Metal-Assisted Hydrogen Storage in Nanostructured Carbons*

 4/01/08 – 3/31/15

 $707,000 per year, $70,000 for TE

DOE NEUP-00119262, subcontract under DE-AC07-051D14517. *Radiation Behavior of High-Entropy Alloys for Advanced Reactors*. PI: P. K. Liaw. 10/01/2011 – 09/30/2014.

$538K for three years.

NSF DMR-09-59465, MRI-R2: *Development of Electrostatic Levitation Facility for Neutron*

*Scattering Studies of Liquids to be Used in Fundamental Research and Education*

 3/1/10-9/31/13,

$1,158,677, K. Kelton, PI, Washington University.

NSF DMR-06-02876, *Materials Research Network: Structure and Dynamics of Complex Ferroelectrics*

 $ 264,000 for 5 years 07/01/06 – 06/30/11

NSF DMR-04-04781, *Local Atomic Structure of Complex Oxides*

 $ 501,950 for 4 years 07/01/04 – 06/30/08

ORNL Seed Project 3210-2171, *Lead-Free Electromechanical Transducer Materials*,

 6/25/05-6/24/06, D. Singh, PI

 $120,000

NSF-MRI DMR04-21153, *Acquisition of an Ultrahigh-Resolution Photoelectron*

*Spectrometer for Education and Research on Complex and Low-Dimensional*

*Materials*,

$ 364,000 08/01/04 – 07/31/05

Nissan Motors, C-YZ0-8-4-318, Structural Analysis of Fuel Cell Electrolyte Films

 $111,250 12/01/04 – 08/31/05

ORNL LDRD 3211‑2099, *Complex Oxides with Frustrated Orbital Ordering*,

 $ 400,000 for 2 years 10/08/03 – 9/30/05

ONR N00173-01-1-G024, *Structural Analysis of Amorphous, Nanoscale Materials,*

 W. Dmowski, PI

$ 280,000 for 4 years 09/01/01 – 08/31/05

DARPA through Univ. of Virginia, GG10347-114483, *Theory of Formation of Iron-Based Bulk*

*Metallic Glasses*, 3 year grant.

 $ 253,000 for 3 years 06/25/01 – 12/24/04

Toyota Motors, *High Temperature Phase Diagram of (Ce,Zr)-O4*

 $ 54,195 per year, 09/01/03 – 12/31/04

NSF DMR01-02565, *Local Atomic Structure of Complex Oxides*

 $ 465,351 for 3 years 07/01/01 – 06/30/04

ONR N00014-01-1-0860, *Synthesis, Properties, and Local Structure of Piezoelectric Oxides,*

 P. K. Davies, co-PI

$ 719,096 for 3 years 05/01/01 – 04/30/04

DARPA through Boeing Co., PO#Z10714, *Theory of Formation of Aluminum-Based Bulk*

*Metallic Glasses*, 3 year grant.

$ 360,000 for 3 years 6/01/01 – 05/31/04

NSF, MRSEC, MRL, *Structure and Properties of Electronic Ceramics*

 $ 60,000 for 1 year 07/01/02 – 06/30/03

W. R. Grace, *Local Structure of Catalytic Support Oxides*

 $ 50,000 per year, 09/01/97 – 08/31/03

NSF DMR00-76488, *Upgrading the neutron spectrometer at LANSCE,* A. K. Cheetham, D.

Louca, S. J. L. Billinge and J. Parise, co-PI

$ 400,000 ($1,136,000 incl. Univ. matching and DOE matching) 09/01/00 – 08/31/02

DOE DE-FG02-96ER14682, *Utilizing Metal-Oxide and Oxide-Oxide Interactions for*

*Improved Automotive Emissions Control Catalysts,* J. M. Vohs, co-PI

 $ 651,000 for 3 years 09/15/96 - 09/14/99

 $ 400,000 for 3 years 12/15/99 - 12/14/02

NSF DMR96-28134, *Local Atomic Structure of Nearly-Periodic Solids*

 $ 668,405 for 5 years with Creativity Extension 07/01/96 - 06/30/01

JRI, *Research, Development and Government Policies on High Temperature*

 *Superconductivity Technology in the U.S.A. and Japan.*

 $ 215,000 per year 04/01/92 - 03/30/98

ONR N00014-98-1-0584, *Local Structure of Ferroelectric and Piezoelectric Oxides*

 $ 235,000 for 3 years 05/01/98 – 04/30/01

NSF, DMR91-00728, *Local Atomic Structure of Non-Periodic Solids*

 $ 388,483 for three years 07/01/93 - 06/30/96.

Honda Motors America, *Interfacial study of Al-Fe*

 $ 45,000 06/01/99 – 08/31/00

Johnson Matthey, *Doctorate Studies of Ms. Helen Vanbenschoten and related research*

 $ 43,000 01/01/99 – 12/31/00

Honda Motors America, *Structure of battery materials*

 $ 45,000 06/01/00 – 08/31/01

Agencies for other contracts

 NSF, NSF‑MRL, ARO, ONR, EPRI, IBM, DOE

**Courses taught (last 30 years)**

***At Penn:***

MSE222 Profiles of Modern Materials

MSE615 Advanced Structural Analysis

MSE790 Magnetism, Ferroelectricity and Superconductivity: Technology and Science

Also taught courses on quantum theory of solids, statistical mechanics of solids.

***At Tennessee:***

MSE674 Materials Physics

MSE675 Advanced Structural Analysis

MSE676 Physics of Liquids and Glasses

MSE676 Soft-Matter Physics

MSE676 Science of Disordered Matter

**Publications**

Over 23,200 citations with *h* = 79 by Web of Science, 32,800 citations with *h* = 91 by Google Scholar. Web of Science does not include the first edition of the book, #1, which is cited over 1,800 times; only the second edition, cited over 600 times, is included.

***Book***

1. “*Underneath the Bragg Peaks: Structural Analysis of Complex Materials*”, T. Egami and S. J. L. Billinge, Pergamon Materials Series Vol. 7, ed. Robert W. Cahn (Pergamon Press, Elsevier Ltd., Oxford, 2003) ISBN: 0-08-042698-0; 2nd edition, Pergamon Materials Series Vol. 16, ed. A. L. Greer (Pergamon Press, Elsevier Ltd., Oxford, 2012) ISBN: 978-0-08-097133-9.

***Extensive Reviews and Book Chapters***

1. “Magnetic Properties of Amorphous Alloys”, C.D. Graham, Jr. and T. Egami*, Ann. Rev. Mat. Sci.,* **8**, 423 (1978).
2. “Structural Study by Energy Dispersive X‑ray Diffraction”, T. Egami, in *Glassy Metal* ed. by H.J. Gütherodt (Springer, Heidelberg 1981) **Vol. 1**, p. 25.
3. “Designing the Composition and Heat Treatment of Magnetic Amorphous Alloys”, T. Masumoto and T. Egami, *Mat. Sci. Eng*., **48**, 147 (1981).
4. “Atomic Short Range Ordering in Amorphous Metal Alloys”, T. Egami, in *“Amorphous Metallic Alloys”* ed. F.E. Luborsky (Butterworths, London 1983) p. 100.
5. “Magnetic Amorphous Materials: Physics and Technological Applications”, T. Egami, *Rep. Prog. Phys.,* **47**, 1601 (1984).
6. “Structure of Amorphous Materials”, T. Egami, in *"Science of Advanced Materials",* ed. H. Wiedersich and M. Meshii (ASM International, Materials Park, OH, 1990), p. 155.
7. "Atomic Structure of Rapidly Solidified Alloys", T. Egami, in *Rapidly Solidified Alloys*, ed. H. H. Lieberman (Marcel Dekker, New York, 1993) p. 231.
8. "Lattice Effects in High‑Temperature Superconductors", T. Egami and S.J.L. Billinge, *Progr. Mater. Sci.,* **38**, 359 (1994).
9. “Lattice Effects in High-TC Superconductors”, T. Egami and S. J. L. Billinge, in *Physical Properties of High Temperature Superconductors V,* ed. D. M. Ginsberg (World Scientific, Singapore, 1996) p. 265.
10. “Introduction and Background”, T. Egami and W. L. Johnson, in *Elements of Rapid Solidification: Fundamentals and Applications,* ed. M. A. Otooni (Springer-Verlag, Berlin, 1998) p. 1.
11. “PDF Analysis Applied to Crystalline Materials”, T. Egami, in “*Local Structure from Diffraction”*, eds. M. Thorpe and S. J. L. Billinge (Plenum, New York, 1998) p. 1.
12. “Structural Effects in Magnetoresistive Manganites and Mechanism of Metal-Insulator Transition”, T. Egami and Despina Louca, *J. of Superconductivity: Inc. Novel Magnetism*, **13**, 247 (2000).
13. “Local Atomic Structure of CMR Manganites and Related Oxides”, T. Egami, in *Structure and Bonding*, **vol. 98**, ed. J. B. Goodenough (Springer-Verlag, Berlin, 2001) p. 115.
14. “Electron-Phonon Coupling in High-TC Superconductors”, T. Egami, in *Superconductivity in Complex Systems,* in *Structure and Bonding*, **vol. 114,** eds. A. Bussmann-Holder and K. A. Müller (Springer-Verlag, Berlin, 2005) p. 267.
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66. “Structure of Pb(Zr,Ti)O3 Near the Morphotropic Phase Boundary”, W. Dmowski, T. Egami, L. Farber and P.K Davies, *AIP Conf. Proc*. **582**, 33 (2001).
67. “Medium-Range Atomic Correlation from the PDF Analysis”, T. Egami, in *From Semiconductors to Proteins: Beyond the Average Structure*, eds. S. J. L. Billinge and M. F. Thorpe (Plenum Press, New York, 2002) p. 23.
68. “Electronic States of Ferroelectric Oxides Probed by X-ray Spectroscopy and Scattering”, T. Egami, E. Mamontov, W. Dmowski, T. Gog, C. Venkataraman, P. W. Rehrig and L. E. Cross, *AIP Conf. Proc.*, **626**, 216 (2002).
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70. “Phonon Mechanism of High-Temperature Superconductivity”, T. Egami, in *Proc. Workshop on Intrinsic Multiscale Structure and Dynamics* (Worldscientific, New Jersey, 2003) p. 213.
71. “Atomistic Theory of Bulk Metallic Glass Formation”, T. Egami, *MRS Symp. Proc*., **754**, 47 (2003).
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73. “Temperature Dependence of the Local Structure in Pb Containing Relaxor Ferroelectrics”, T. Egami, E. Mamontov, W. Dmowski and S. B. Vakhrushev, *AIP Conf. Proc.*, **677**, 48 (2003).
74. "Correlations Between the Structure and Dielectric Properties of Pb(Sc2/3W1/3)O3-Pb(Ti/Zr)O3 Relaxors", P. Juhas, W. Dmowski, I. Grinberg, T. Egami, A.M. Rappe, P.K. Davies, in *Fundamental Physics of Ferroelectrics 2003*, eds. P.K. Davies, D.J. Singh, *AIP Conf. Proc.*, **677**, 108 (2003).
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77. “Pair Distribution Function Analyses of Structural Relaxation in a Zr-Based Bulk Metallic Glass”, M. L. Morrison, W. Dmowski, T. W. Wilson, P. K. Liaw, C. T. Liu, J. W. Richardson, E. R. Maxey, R. A. Buchanan, C. Fan, H. Choo, T. Egami, and W. D. Porter, *MRS Symp. Proc*., **840**, Q1.5.1 (2005).
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81. “Crystalline and Amorphous Models of Highly Damaged Fe”, M. Ojha, D. M. Nicholson, B. Radhakrishnan, R. E. Stoller and T. Egami, *MRS Symp. Proc.* **1363,** 05-32 (2011).
82. “The Use of Atomic Level Stress to Characterize the Structure of Irradiated Iron”, Madhusudan Ojha, D. M. Nicholson, Kh. Odbadrakh*,* Bala. Radhakrishnan, R. E. Stoller and T. Egami, *J. Phys.: Conf. Ser.* **402,** 012010 (2012).
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84. “What Does the Structure of Liquid Mean?”, T. Egami, Acta Cryst. A 77, C458 (2021).
85. “Dynamics Study of Polymer Electrolyte with LiTFSI via Quasi-Elastic Neutron Scattering”, Hui Wang, Naresh C. Osti, Jürgen Allgaier, Rene Halver, Eugene Mamontov, Godehard Sutmann, Yuya Doi, Nicolas Bucher, Takeshi Egami, Stephan Förster and Michael Ohl, ECNS Proceedings (2023).

***Other Publications***

1. “Atomic Structure of Liquid and Amorphous Metals ‑ Local Structural Fluctuations” (in Japanese), T. Egami, *Butsuri* **39**, 505 (1984).
2. “Structural Relaxation in Amorphous Metals”, (in Japanese), T. Egami*, Kotai‑Butsuri* (*Solid State Physics*) **20‑8**, 94 (1985).
3. “Re‑examination of the Mechanism of High Temperature Superconductivity: Implication of Lattice Anomaly (in Japanese)", T. Egami, *Parity* **8**, No. 8, 26 (1993).
4. “Universities Responding to the Changes in the Society”, (in Japanese) T. Egami, *Materia* **33**, 1217 (1994).
5. “Unraveling the True Atomic Structures of Exotic Oxides”, Th. Proffen and T. Egami, *Los Alamos Science*, **30,** 152 (2006).
6. “Water Molecules in Action, in Real Space and Time”, T. Egami, *Spring-8/SACLA Research Frontiers 2017*, 52 (2018).
7. “Atomic Dynamics in Liquids and Glasses and Potential Energy Landscape” (in Japanese), T. Iwashita and T. Egami, *Butsuri Gakkaishi* (Journal of Japanese Physical Society) **73,** 832 (2018). Cover picture.
8. “Metallic Glasses for Spintronics: Anomalous Temperature Dependence and Giant Enhancement of Inverse Spin Hall Effect”, W. Jiao, D. Z. Hou, C. Chen, H. Wang, Y. Z. Zhang, Z. Y. Qiu, S. Okamoto, T. Fujita, A. Hirata, E. Saitoh, T. Egami and M. W. Chen, *arXiv*:1808.10371.
9. “Dynamic Crystallography: Redefining the Structure of Liquid” (in Japanese), T. Egami, *J. Crustall. Soc. Japan*, **62,** 243 (2020).
10. “Dynamic Structure of Liquid Seen in Real Space” (in Japanese), Y. Shinohara, T. Iwashita and T. Egami, *Houshakou* (*Synchrotron Radiation*), *J. of Japanese Society for Synchrotron Radiation Research*, **35,** 53 (2022).

***Books and Volumes edited:***

1. “*Lattice Effects in High-TC Superconductors*”, eds. Y. Bar-Yam, T. Egami, J. Mustre-de Leon and A. R. Bishop (World Scientific, Singapore, 1992).
2. “*Magnetic Ultrathin Films: Multilayers and Surfaces, Interfaces and Characterization*”, eds. B. T. Jonker, S. A. Chambers, R. F. C. Farrow, C. Chappert, R. Clarke, W. J. M. de Jonge, T. Egami, P. Grünberg, K. M. Krishnan, E. Marinero, C. Rau, S. Tsunashima, *MRS Symposium Proc*. **313** (1993).
3. “*Proceedings of the 3rd Williamsburg Workshop on Fundamental Experiments on Ferroelectrics*”, ed. T. Egami, *J. Phys. Chem. Solids* **57**, No. 10 (1996).
4. “*Structure and Dynamics of Glasses and Glass Formers*”, eds. C. A. Angel, K. L. Ngai, J. Kieffer, T. Egami and G. U. Nienhaus, *MRS Symposium Proc*. **455** (1997).
5. “*Proceedings of the Williamsburg Workshop on Ferroelectrics ’99*”, ed. T. Egami, *J. Phys. Chem. Solids* **61**, No. 2 (2000).
6. “*Supercooled Liquids, Glass Transition, and Bulk Metallic Glasses*”, eds. T. Egami, A. L. Greer, A. Inoue, and S. Ranganathan, *MRS Symposium Proc*. **754** (2003).
7. “*Glass Physics: from Fundamentals to Applications*”, eds. M. Falk, T. Egami and S. Sastry, *European Physical J. E* **34**, 85 – 106 (2011).

**Invited Presentations at Conferences**

1. “Domain Walls in Dy”, Rare Earth Meeting, at Oxford, UK, March 1972.
2. “Block Wall Tunnelling”, Conference on Magnetic After‑Effect, at Weinheim, Germany, Nov. 1972.
3. “Magnetic Domains in the Rare Earth Metals”, Europhysics Meeting on Physics of Rare Earth Metals, at Elsinore, Denmark, August, 1973.
4. “Amorphous Alloys as Soft Magnetic Materials”, 20th Conference on Magnetism and Magnetic Materials, at San Francisco, Dec . 1974 (with P.J. Flanders and Graham, Jr.).
5. “Low‑Field Magnetic Properties of Amorphous Alloys”, 78th Annual Conference of the American Ceramic Society, at Cincinnati, May, 1976.
6. “Structural Relaxation in Amorphous Alloys”, Annual Meeting of Materials Research Society, at Boston, Nov. 1977.
7. “Ferromagnetism in Amorphous Alloys”, March Meeting of the American Physical Society, at Washington, March, 1978.
8. “Magnetic Properties of Amorphous Alloys”, The Physical Society Meeting on Transition Metals, at Sheffield, June, 1978.
9. “Atomic Short Range Order in Amorphous Alloys”, Gordon Research Conference on Quantum Solids and Liquids, at Plymouth, NH, July, 1978.
10. “Thermal Behavior of Magnetic Metallic Glasses”, Fall Meeting of the Metallurgical Society AIME, at St. Louis, October, 1978.
11. “Structure of Magnetic Amorphous Alloys Studied by Energy‑Dispersive X‑ray Diffraction”, 24th Conf. on Magnetism and Magnetic Materials, at Cleveland, November, 1978.
12. “Magnetic Properties of Metallic Glasses”, Conference on Application of Amorphous Alloys”, at CalTech, January, 1979.
13. “Magnetic Properties of Amorphous Alloy Ribbons” (given by C.D. Graham, Jr.) Joint Intermag‑3M Conf. at New York, July, 1979.
14. “Structural Study of Amorphous Alloys (by Energy Dispersive X‑ray Diffraction)”, Conf. Amer. Crystallography Assoc., Boston, August, 1979.
15. “Magnetic Proeprties of Amorphous Alloys” (given by C.D. Graham, Jr.) International Conf. on Magnetism, Munchen, September, 1979.
16. “Magnetism and Structure of Amorphous Alloys”, Int. Conf. on Physics of Magnetic Materials, Jaszowiec, Poland, April, 1980.
17. “Structural Relaxation in Metallic Glasses”, Conference on Structures and Mobility in Molecular and Atomic Glasses, New York, December, 1980.
18. “Structure and Magnetism of Amorphous Alloys”, INTERMAG Conference, Grenoble, May, 1981.
19. “Microscopic Model of Structural Relaxation in Amorphous Alloys”, Int. Conf. Rapidly Quenched Metals, 4, Sendai, August, 1981.
20. “Structural Relaxation and Magnetism in Amorphous Alloys”, Inst. Conf. Magnetism, Kyoto, August 1982.
21. “Local Structural Fluctuations and Properties of Amorphous Metals”, TMS‑AIME, St. Louis, October, 1982.
22. “Local Structural Fluctuations and Defects in Amorphous Metals”, 5th Int. Conf. on Liquid and Amorphous Metals, Los Angeles, August, 1983.
23. “Structure of Glasses by Anomalous and Energy Dispersive X‑ray Scattering Techniques”, Workshop on Structure and Properties of Amorphous Solids, Williamsburg, June, 1984.
24. “Distributed Fictive Temperatures and the Kinetics of Structural Relaxation”, 5th Int. Conf. Rapidly Quenched Metals, Wurzburg, September, 1984.
25. “Structural Relaxation Phenomena in Amorphous Alloys”, EPRI Workshop on Amorphous Metals and Semiconductors, San Diego, May, 1985.
26. “Compositional and Topological Short Range Order in Quasicrystals”, Argonne National Lab. Materials Science Conf. on Neutron Scattering, Argonne, May, 1986.
27. “Magnetic and Atomic Short Range Order in Ni‑Mn Base Amorphous Alloys”, 32nd Conf. on Magnetism and Magnetic Materials, Baltimore, November 1986.
28. “Magnetism in Icosahedral Structure” (given by M.C. McHenry) 32nd Conf. on Magnetism and Magnetic Materials, Baltimore, November 1986.
29. “Local Atomic Structure of La2‑x(Sr, Ba)xCuO4 Determined by Pulsed Neutron Scattering”, International Conference on High‑Temperature Superconductivity, Drexel Univ., Philadelphia, July, 1987.
30. “Atomic Structure in Quasicrystals”, 6th International Conf. on Rapidly Quenched Metals, Montreal, August, 1987.
31. “Structure of Amorphous Materials”, 3M Conference on Rapidly Quenched Materials, St. Paul, Aug., 1987.
32. “Atomic Structure of Quasicrystals Studied by X‑Ray and Neutron Scattering”, International Workshop on Quasicrystals, Beijing, September, 1987.
33. “View by a Non‑Crystallographer: Atomic Correlations in Quasiperiodic and Aperiodic Systems”, Workshop on X‑Ray Synchrotrons and the Development of New Materials, Argonne, December, 1987.
34. “Local Atomic Structure of Quasicrystalline and Amorphous Solids”, International Symposium on Non‑Equilibrium Solid Phase of Metals and Alloys, Kyoto, March, 1988.
35. “Local Atomic Structure of Quasicrystals”, APS March Meeting, New Orleans, March, 1988.
36. “Structure of Amorphous and Quasicrystalline Solids”, Annual Meeting of Japan Inst. Metals, Chiba, March, 1988.
37. “Local Atomic Structure of Superconducting Oxides Determined by Pulsed Neutron Scattering”, ACA Annual Meeting, Philadelphia, July, 1988.
38. “Structure of Amorphous Materials”, ASM Materials Science Seminar, Chicago, September, 1988.
39. “Recent Results on Radial Distribution Functions of High‑Tc Superconductors”, IPNS Users Meeting, Argonne, November, 1988.
40. “Radial Distribution Function Analysis of Powder Data from Crystalline Samples”, Short Course on Neutron Powder Diffraction and Rietveld Analysis, Argonne, November, 1988.
41. “Pulsed Neutron PDF Analysis of Local Structural Order in High Tc Materials”, APS March Meeting, St. Louis, March, 1989.
42. “Pulsed Neutron Studies of Oxygen Displacements”, Int. Conf. Oxygen Disorder Effects in High Tc Superconductors, Int. Centre for Theoretical Physics, Trieste, Italy, April, 1989.
43. "Observation of a Local Structural Change at Tc in Superconducting Oxides by Pulsed Neutron Scattering", Gordon Conference on Superconducting, Ventura, CA, March 1990.
44. "Structural and Magnetic Anisotropy in Amorphous Rare Earth‑Transition Metal Alloys" INTERMAG, Brighton, UK, April 1990, given by Marinero.
45. "Real‑Space Approach to the Structure of Mixed Relaxor Ferroelectrics", International Symposium on Applied Ferroelectrics, Urbana‑Champaign, IL, June, 1990.
46. "Local Structural Anomaly at Tc Studied by Neutron Scattering", Workshop on Electronic Structure and Mechanisms for High Temperature Superconductivity. Miami, January, 1991.
47. "Structure of Ferroelectric and Superconducting Oxides Determined by Pulsed Neutron Scattering", Workshop on Fundamental Experiments in Ferroelectrics, Williamsburg, VA, February, 1991.
48. "Structural Anisotropy in Magneto‑Optical Thin Films", Joint MMM‑Intermag Conf., Pittsburgh, June, 1991, given by Xiao Yan.
49. "Local Structural Anomaly Near Tc Observed by Pulsed Neutron Scattering", Int. Conf. Materials and Mechanisms of Superconductivity ‑ High Temperature Superconductors, Kanazawa, Japan, July, 1991.
50. "Local Atomic Structure of Ordered Solids without Translational Order: Superconducting Oxides and Quasicrystals", International Symposium: Frontiers of Liquid and Amorphous States, Argonne, August, 1991.

51. "Atomic Structure of Phasonless Quasicrystals", International Symposium on the Physics and Chemistry of Finite Systems: From Clusters to Crystals", Richmond, VA, October, 1991.

52. "Local Structure of Superconducting Oxides Studied by Pulsed Neutron Scattering", Workshop on Lattice Effects in High Tc Superconductors, Santa Fe, NM, January 1992, (delivered by S.J.L. Billinge).

53. "Real Structure of Mixed Ferroelectric Solids", Workshop on First‑Principle Theories on Ferroelectrics, Williamsburg, VA, February 1992.

54. "Real Space Analysis of Powder Diffraction Data", Rietveld Symposium, Brookhaven National Laboratory, NY, March, 1992.

55. "Local Structure of Aperiodic Materials Studied by X‑Ray Anomalous Scattering", American Crystallographic Association, 50th Annual Meeting, Pittsburgh, PA, August, 1992.

56. “Local Lattice Distortion and Mechanism of Superconductivity", Fifth International Symposium on Superconductivity, Kobe, Japan, November 1992.

57. "Lattice Anomalies in Superconductivity Oxides", Symposium on Phonons in High Temperature Superconductors, Tokyo, Japan, January 1993.

58. "A Model of Local Atomic Structure in the Relaxor Ferroelectrics", Williamsburg, VA February, 1993.

59. "Local Structural Distortion: Implication to the Mechanism of High Temperature Superconductivity", Erice International School of Crystallography: High Temperature Superconductivity, Erice, Italy, May, 1993.

60. "X‑Ray and Neutron Diffraction Study of Metallic Glasses", 8th International Conference on Rapidly Quenched Metals, Sendai, Japan, August, 1993.

61. "Nature of Electron‑Lattice Interaction in Superconducting Oxides", OE/LASE '94 Conf., Los Angeles, Jan. 1994.

62. "Effect of Electron Correlation on Ferroelectricity of Transition Metal Oxides", 3rd Workshop on First Principle Theories on Ferroelectrics, Williamsburg, Feb., 1994.

63. "Experimental Evidence of Local Lattice Distortion in Superconducting Oxides", International Workshop on Polarons and Bipolarons in High‑Tc Superconductors and Related Materials, Cambridge, UK, April 1994.

64. "Microscopic Criteria for Glass Formation", NATO International Workshop on Science and Technology of Rapid Solidification and Processing, West Point, NY, June, 1994.

65. "Detection of Medium Range Structural Modulation by Pulsed Neutron Scattering", American Crystallography Association Annual Meeting, Atlanta, GA, June, 1994.

66. "Local Atomic Structure of Relaxor Ferroelectric Solids Studied by Pulsed Neutron Scattering", 52nd Annual Meeting of Microscopy Society of America, New Orleans, Aug., 1994.

67. "Role of Local Lattice Deformation in High Temperature Superconductivity", International Workshop on Anharmonic Properties of High‑Tc Cuprates, Bled, Slovenia, Sept., 1994.

68. “Synchrotron Radiation Scattering Study of Lead Magnoniobate Relaxor Ferroelectric Crystals”, Williamsburg ONR Workshop on Fundamental Experiments on Ferroelectrics, Williamsburg, Feb., 1995 (given by S. Vakhrushev).

69. “Unconventional Electron-Phonon Interaction in Superconducting Cuprates”, Phonons 95 (Combined Conf. 4th Int. Conf. Phonon Physics and 8th Int. Conf. Phonon Scattering in Condensed Matter, Sapporo, July, 1995

70. “Anomalous X-Ray Scattering Technique Applied to Non-Periodic Solids”, Annual Meeting, Amer. Crystallographic Assoc., Montreal, July, 1995 (given by W. Dmowski)

71. “The Use of the Correlation Function Method to Investigate the Structure of Amorphous and Polycrystalline Materials”, Denver X-Ray Meeting 1995, Colorado Springs, Aug., 1995 (given by S. J. L. Billinge)

72. “The Atomic Structure of Aluminum Based Metallic Glasses and the Universal Criterion for Glass Formation”, 9th Int. Conf. Liquid and Amorphous Metals, Chicago, Aug., 1995

73. “Determining the Medium Range Order by Diffraction: from Glasses to Crystals”, Special Topics Workshop at Institute for Materials Research, Tohoku University, Sendai, Japan, Nov., 1995

74. “MOS and MOSFET with Transition Metal Oxides”, OE/LASE ‘96 Conf., San Jose, CA, Feb., 1996.

75. “Universal Criterion for Glass Formation”, TMS-AIME Annual Meeting, Hume-Rothery Symposium, Annaheim, CA, Feb., 1996

76. “Structural Instabilities in Pb(Zr1-xTix)O3”, Williamsburg Conf. on Ferroelectricity, Williamsburg, VA, Feb., 1996.

77. “Local Atomic Structure of Relaxor Ferroelectric Solids Determined by Pulsed Neutron and X-Ray Scattering”, International Symposium on Relaxor Ferroelectrics, Dubna, Russia, May, 1996.

78. “Phase Transitions in Complex Oxides”, Gordon Conference on Phase Transitions in Non-Metallic Solids, Honniker, NH, June, 1996.

79. “Electron-Lattice Interaction in Cuprates”, Internatl. Conf. on Physics and Chemistry of Molecular and Oxide Superconductors, Karlsruhe, Aug., 1996.

80. “Lattice Effects in HTSC Cuprates Observed by Neutron Scattering”, 21st Internatl. Conf. on Low Temperature Physics, Praha, Czech. Aug., 1996.

81. “Universal Criterion of Glass Formation”, Int. Conf., Rapidly Quenched Metals, Bratislava, Slovak, Aug., 1996.

82. “Real Space vs. Reciprocal Space in Structural Analysis : Atomic Structure of PbZrO3 and Pb(Zr1-xTix)O3 by Pulsed Neutron Scattering”, Applied Math. Conf., Penn State Univ., Oct., 1996.

83. “Inhomogeneous Metallic State in Manganites and Cuprates”, International Conf. on Stripes, Lattice Instabilities, and High-TC Superconductivity, Rome, Italy. Dec., 1996.

84. “Nature of Atomic Ordering and Mechanism of Relaxor Ferroelectric Phenomena in PMN” Williamsburg ONR Workshop on Ferroelectricity, Williamsburg, Feb., 1997.

85. “Structure of Bulk Amorphous Pd-Ni-P Alloys Determined by Synchrotron Radiation”, TMS-AIME Annual Meeting, Miami, Feb., 1997.

1. “Universal Aspects of Amorphous Structure - Local Topological Instability and Resultant Caos”, Campbell Symposium on the Dynamics of Microstructure, U. of Michigan, April, 1997.
2. “Information Stored in High-Q Space: Role of High-Energy X-ray Diffraction”, Int. Conf. on Synchrotron Radiation and Instrumentation, Ithaca, NY, June, 1997
3. “High-Resolution Powder Diffractometer H3PD”, LANSCE User Meeting, Los Alamos, NM, Aug., 1997
4. “Phase II of Phalos Chopper Spectrometer”, LANSCE User Meeting, Los Alamos, NM, Aug., 1997
5. “PDF Analysis Applied to Crystalline Materials”, Conf. on Local Structure from Diffraction, Michigan State Univ., Aug., 1997
6. “Polarons and Stripes in Manganites and Cuprates”, Workshop on Many-body physics, Los Alamos National Lab., Aug. 1997
7. “Microscopic Origin of Relaxor Ferroelectricity in PMN and PLZT”, Int. Meeting Ferroelectrics, Seoul, Korea, August, 1997.
8. “Nature of Atomic Ordering and Mechanism of Relaxor Ferroelectric Phenomena in PMN”, ONR Williamsburg Conf. On Ferroelectricity, Feb., 1998
9. “Atomic Pair-Density Function Analysis of Crystalline Materials”, American Chemical Society, Dallas, March, 1998.
10. “Microscopic Model of Relaxor phenomena in Pb Containing Mixed Oxides”, Penn State Workshop on Domains and Domain Walls, University Park, April 1998
11. “Structure refinement in partially ordered systems”, DOE Workshop on Partially Ordered Systems, Santa Fe, May, 1998
12. “Low Temperature Phonon Anomalies in Cuprates”, Int. Conf. on Stripes and Superconductivity, Rome, June 1998
13. “Electron-Lattice Coupling in Manganites and Cuprates”, Erice Euroconf. on Polarons, June 1998
14. “Local Structure of CMR Manganites: Atomic Scale Inhomogeneities both in Semiconducting and Metallic Phases”, Telluride Workshop on Magnetic Oxides, July 1998
15. “PDF Analaysis Applied to Crystalline Materials”, SNS Workshop on Liquid and Amorphous Materials, Argonne, Oct., 1998
16. “Electronic Excitation in Catalytic Support Oxide, CeO2”, International Workshop on Inelastic X-ray Scattering, Montauk, Oct., 1998
17. “PDF Analaysis Applied to Crystalline Materials: Accuracy, Modeling and Examples”, LANSCE Workshop on Traditional and New Techniques for Studying Short Range Atomic Order in Crystalline Solids, Los Alamos, Nov., 1998
18. “Local Structure and Mechanism of Relaxor Ferroelectrics”, Pittsburgh X-ray Conference, Pittsburgh, Nov., 1998
19. “Low Temperature Anomaly of LO Phonons in La1.85Sr0.15CuO4 and YBa2Cu3O7”, ’99 Miami Conf. on High Temperature Superconductivity, Jan., 1999
20. “Charge States and Lattice Effects in CMR Manganites Probed by Pulsed Neutrons”, APS March Meeting, Atlanta, Mar., 1999
21. “Local Crystallography: Real Structure of Oxides Seen by Neutrons” Carnegie Institute Symposium, “Mineralogy at the Millenium”, Washington, DC, April, 1999.
22. “The Real Space PDF Analysis Applied to Crystalline Solids with Disorder”, ACA Annual Meeting, Buffalo, May, 1999.
23. “CMR Oxides: Opportunities and Challenges”, NSF Workshop on Spintronics, Washington, DC, December, 1999.
24. “Competing Interactions in Complex Ferroelectric Systems”, Aspen Center for Physics Winter Workshop on Fundamental Physics of Ferroelectrics, Aspen, Feb. 2000
25. “Charge-Inhomogeneity in Cuprates Detected by Neutron Scattering”, ONR Workshop on Stripes and Antiferromagnetism in HTS Electronics, Cape Cod, MA , Mar. 2000.
26. “Lattice Effects on Charge Localization in Cuprates”, Symposium on Itinerant and Localized States in HTSC, Klosters (Davos), Switzerland, April 6th-10th, 2000
27. “Competing Interactions in Complex Ferroelectrics”, International Symposium on Relaxor Ferroelectrics, Dubna, Russia, June, 2000.
28. “Charge Localization and Ionic Size Factor in CMR Manganites”, Telluride Workshop on Magnetic Oxides, July 2000
29. “Polaron stability in Manganites and Cuprates”, International Symposium on Physics in Local Lattice Distortions, Tsukuba, July, 2000
30. “Local Atomic Structure and Large Piezoelectric Response”, International Meeting on Applied Ferroelectrics, Honolulu, August, 2000
31. “Stability of Jahn-Teller Polarons in CMR Manganites and Superconducting Cuprates”, International Symposium on Jahn-Teller Effect, Boston, August, 2000
32. “LO Phonon Signature of Charge Inhomogeneity in Cuprates Observed by Inelastic Neutron Scattering”, International Conference on Stripes and Superconductivity, Rome, September, 2000
33. “Inhomogeneous Charge State in HTSC Cuprates and CMR Manganites”, The Third International Conference on New Theories, Discoveries and Applications of Superconductors and Related Materials, Honolulu, January, 2001
34. “Phonon Signature of Charge Inhomogeneity in Cuprates”, Workshop on Novel Quantum Phenomena, Sendai, May, 2001 (given by M. Arai).
35. “Neutron Scattering and Charge State in Cuprate Superconductors”, Canadian Association of Physics 2001 Congress, Victoria, June, 2001.
36. “Nano-scale correlation detected by the PDF method”, From Semiconductors to Proteins: Beyond the Average Structure, Traverse City, July, 2001.
37. “Electron-Phonon Interactions in HTSC Cuprates”, Phonons 2001, Hanover, NH, August 2001.
38. “Lattice Effects in High-Temperature Superconductivity” Banff Workshop on Networks and Nanoscale Coherence in 2D Metals and HTSC, Banff, August, 2001.
39. “Atomistic Mechanism of Relaxor Ferroelectricity”, 10th International Meeting on Ferroelectricity, Madrid, September, 2001.
40. “Lattice and Charge Effects in High-Temperature Superconductors”, Int. Conf. Neutron Scattering, München, September, 2001.
41. “Local Disorder and Neutron Scattering: From Catalysts to High-Temperature Superconductors”, DOE-JINS Workshop on Application of Neutron Scattering in Materials Science, Oak Ridge, October, 2001.
42. “Polaron Stability and Size-Effect on CMR Manganites”, APS South-East Division Meeting, Charlottesville, November, 2001.
43. “Local Dynamics of Charge, Spin and Lattice in HTSC Cuprates”, LNSCS2001, Santa Fe, NM, January, 2002.
44. “Local Atomic Structure and the MPB”, American Ceramic Society Annual Meeting, St. Louis, April, 2002.
45. “Atomistic Theory of Bulk Metallic Glass Formation”, DARPA SAM Workshop, Dayton, OH, May, 2002.
46. “Local Structure in Solid Solution Piezoelectrics”, CPD Kick-off Meeting, Washington, DC, May, 2002.
47. “Why is Ceria Effective for Oxygen Storage?”, Philadelphia Catalyst Club, Univ. of Delaware, May, 2002.
48. “Local Atomic Structure and Electronic Properties of Complex Oxides”, American Crystallographic Association Annual Meeting, San Antonio, May, 2002.
49. “Local Structure of Nanoscale Materials by Neutron Scattering”, Workshop on Nanoscale Science and Neutron Scattering, Oak Ridge National Laboratory, June, 2002.
50. “Overscreened Phonon Mechanism of High Temperature Superconductivity”, Intrinsic Multiscale Structure and Dynamics in Complex Electronic Oxides, Trieste, July, 2002.
51. “Phonon Mechanism of High-Temperature Superconductivity”, Telluride Workshop on Magnetic Oxides, July, 2002.
52. “Electron-Phonon Interaction in Superconducting Cuprates”, Novel Quantum Phenomena in Transition Metal Compounds, Sendai, August, 2002.
53. “Relevance of Phonons in the Mechanism of High-Temperature Superconductivity”, The Forth International Conference on New Theories, Discoveries and Applications of Superconductors and Related Materials, San Diego, January, 2003.
54. “Electron-Phonon Interaction in the Cuprates”, Inelastic X-ray Scattering Workshop, APS, Argonne National Lab., January, 2003.
55. “Phonons in High-TC Cuprates”, International Symposium on Inhomogeneous and Strongly Correlated Materials with Novel Electronic Properties (ISCM), Miami, March, 2003.
56. “Novelties in Phonon Assisted Pairing”, Mechanism and Materials of Superconductivity – High-Temperature Superconductivity VII, Rio de Janeiro, May, 2003.
57. “Lattice Effects in CMR Manganites and Cuprates”, ICTP Summer School, Trieste, Italy, June, 2003.
58. “Synergetic Spin-Charge-Phonon Effect in High-TC Cuprates”, Dynamic Inhomogeneites in Complex Oxides, Bled, Slovenia, June, 2003.
59. “Democracy in the Imperfect World: Local Crystallography of Crystals with Disorder”, Annual Meeting of the Amer. Crystallographic Soc., Session for the Warren Award, Cincinnati, July, 2003.
60. “Electron-Lattice Coupling in the Cuprates”, Workshop on Symmetry and Heterogeneity in High Temperature Superconductors, Erice, Italy, October, 2003.
61. “Working with Industrial Users”, LANSCE Users Meeting, Los Alamos, October, 2003.
62. “Local Atomic Structure of Catalytic Particles”, Workshop on Catalysis, Oak Ridge, October, 2003.
63. “Electron-Lattice Interaction and Neutron Scattering”, Int. Symp. on Pulsed Neutron Science and Instruments (IPN2003), Tsukuba, Japan, October, 2003.
64. “Spin-Phonon Mechanism for High Temperature Superconductivity”, Symp. Fermi Surface and Lattice Effect on High Temp. Superconductivity, Tsukuba, Japan, October 2003.
65. “Atomic Structure of Bulk Metallic Glasses”, ANSWER Workshop, Knoxville, November, 2003.
66. “Electron-Phonon Interaction in HTSC Cuprates and Watery Cobaltates”, Miami Conf. on High-Temperature Superconductivity, January, 2004.
67. “Local Structure of Complex Oxides”, International Workshop on Complex Phenomena, Barcelona, Spain, February, 2004.
68. “Why Certain Metallic Alloys Form Bulk Glasses”, TMS Annual Meeting, Charlotte, March, 2004.
69. “Charge Localization in Manganites and Cuprates from Neutron Scattering”, APS March Meeting, Montreal, March, 2004.
70. “Charge Localization and Vibronic States in the Cuprates”, Dynamic Energy Landscapes and Functional Systems (DELFS04), Santa Fe, March, 2004.
71. “Phonon Mechanism of High Temperature Superconductivity”, New3SC-5 Conf., Chongqing, China, June, 2004.
72. “Devil in the Metal-Insulator Transition in CMR Oxides”, Telluride Workshop on Magnetoresistive Oxides, Telluride, June, 2004.
73. “Electronic Inhomogeneity in the Cuprates and Phonon Mechanism of High Temperature Superconductivity”, Spectroscopies in Novel Superconductors, Sitges, Spain, July, 2004.
74. “Icosahedral Order in Multi-Component Liquids”, Liquid-Amorphous-Metals Conf., Metz, France, July, 2004.
75. “Mechanical Properties of Metallic Glasses”, Europhysics Meeting of Condensed Matter Division, Prague, Czech, July, 2004.
76. “Lattice Dynamics of Relaxor Ferroelectrics”, Europhysics Meeting of Condensed Matter Division, Prague, Czech, July, 2004.
77. “Phonon-Induced Electronic Bound State and Its Role in High Temperature Supeconductivity”, Conf. on Nanoscale Properties of Condensed Matter Probed by Resonance Phenomena, Kazan, Russia, August, 2004.
78. “Probing Medium-Range Order with Diffraction”, Conference on Synchrotron Radiation in Materials Science (SRMS-4), Grenoble, France, August, 2004.
79. “Phonon Mechanism of High-Temperature Superconductivity”, Nanoscale Heterogeneity and Quantum Phenomena in Complex Matter, (Stripes 2004), Rome, September, 2004.
80. “Local Structure of Crystalline Materials with Disorder”, Workshop on Local Structure in Materials and Disorder in Crystalline Materials, Oak Ridge, November, 2004.
81. “Atomistic Mechanism of Plastic Deformation in Metallic Glasses”, TMS Annual Meeting, San Francisco, Feb., 2005.
82. “Formability of Bulk Metallic Glasses”, TMS Annual Meeting, San Francisco, Feb., 2005.
83. “Medium-Range Atomic Order Studied by Neutron Scattering”, TMS Annual Meeting, San Francisco, Feb., 2005.
84. “Nano-Scale Structural Complexity in the Cuprates”, International Symposium on Inhomogeneous and Strongly Correlated Materials with Novel Electronic Properties, Miami, April, 2005.
85. “Formation and Deformation of Metallic Glasses: Atomistic Theory”, Conf. on Bulk Metallic Glasses, Gatlinsburg, TN, May, 2005.
86. “Polarons in CMR Manganites and HTSC Cuprates”, International School of Physics “Enrico Fermi”, Varenna, Italy, June 2005.
87. “Glass Transition and Viscosity in Metallic Glasses and Liquids”, International Symposium on Metastable and Nano Materials, Paris, July, 2005.
88. “Structure and Relaxation in Simple Glasses”, 5th International Discussion meeting on Relaxations in Complex Systems, Lille, France, July, 2005.
89. “Recent Advances in the Neutron PDF Method: Issues that can now be addressed”, Workshop at Kavli Institute on Theoretical Physics, Santa Barbara, July, 2005.
90. “Nano-Scale Structural Complexity in the Cuprates”, Telluride Workshop on Novel Oxides, Telluride, Co, August, 2005.
91. “Static and Dynamic Pair Correlation Functions Determined by Neutron Scattering and Inelastic Correction to Total Scattering”, 20th Congress of International Union of Crystallography, Florence, Italy, August, 2005.
92. “Local Lattice Dynamics and Origin of Relaxor Behavior”, 11th International Meeting on Ferroelectrics, Cataratas del Iguazu, Argentina, September, 2005.
93. “Atomistic of Glass Transition and Relaxation in Metallic Glasses”, 6th International Workshop on Advanced Intermetallics and Metallic Materials, Nanjin, October, 2005.
94. “Relaxor Ferroelectrics Studied by Dynamic PDF Method”, International Conference on Neutron Scattering 2005, Sidney, Australia, November, 2005.
95. “Topological Fluctuation Theory of Liquid and Glass”, IFCAM Symposium, Sendai, Japan, December, 2005.
96. “PDF Analysis and Instrumental Requirements”, Workshop on Total Scattering, KEK, Tsukuba, January, 2006.
97. “Atomistic Mechanism of Atomic Transport in Metallic Glasses”, TMS Annual Meeting, San Antonio, March, 2006.
98. “Role of the Lattice in the Mechanism of High-Temperature Superconductivity”, 20th Anniversary for the Discovery of High-Temperature Superconductivity, Zürich, March, 2006.
99. “Electron-Phonon Coupling in the Cuprates”, Santa-Fe Conf. on Electron-Phonon Coupling, Santa-Fe, April, 2006.
100. “Topological Fluctuation Theory of Liquids and Glasses”, 1st Intl. Conf. for Mechanics and Mechanical Mater. of Non-crystal. Mater. I: Amorphous Metals, Beijing, China, April, 2006
101. “Vibronic Theory of High-Temperature Superconductivity”, CIMTEC, Acireale, Italy, June, 2006.
102. “Spin-Charge-Phonon Coupling in the Cuprates”, Mechanism and Materials of Superconductivity – High-Temperature Superconductivity VIII, Dresden, July, 2006.
103. “Nanometer range local atomic structure probed by the PDF method”, ACA Annual Meeting, Honolulu, July, 2006.
104. “Taking Advantage of Atomic Frustration”, ISMANAM06, Warsaw, Poland, Aug. 2006.
105. “Atomic Dynamics in Supercooled Liquid”, Int. Conf. Bulk Metallic Glasses V, Awaji, Japan, Oct. 2006.
106. “Intermediate-Range Order in the Cuprates”, Stripe2006, Rome, Italy, Dec, 2006.
107. “Introduction to the atomistic theory of metallic glasses”, BMG2007, Bangalore, India, Jan., 2007.
108. “Frustrating business of glass formation”, TMS Annual Meeting, Orlando, Feb. 2007.
109. “Phase Stability of Metallic Glasses”, Symp. on Phase Stability and Defect Structures, in Honor of Prof. Austin Chang, Orlando, February, 2007
110. “Lattice Effects in High-Temperature Superconductors”, Jpn. Phys. Soc. March Meeting, Kagoshima, Japan, March 2007.
111. “Intermediate-Range Order in the Cuprates”, SMEC2007, Miami, April 2007.
112. “Lattice Effects in the Cuprates”, DELFS III, Port Jefferson, NY, May 2007.
113. “Elasticity in Metallic Glasses”, Acoustic Soc. Amer., Salt Lake City, June, 2007.
114. “Intermediate-Range Order in the Cuprates”, SNS2007, Sendai, Japan, Aug. 2007.
115. “Intermediate State in the Cuprates”, Kavli Inst. Theoretical Physics workshop on Moments and Multiplets in Mott Materials, Santa Barbara, September 2007.
116. “Dark Matter in the Cuprate Physics?”, Computational Materials Science Network Workshop, UC Davis, September 2007.
117. “Re-Examining the Role of Spins in the Cuprates”, Int. Conf. on High Temperature Superconductivity in Cuprates, Tbilisi, Georgia, October 2007.
118. “Glass Transition in Metallic Glasses”, Workshop on Fundamental Issues in Metallic Glasses, Guilin, China, October 2007.
119. “Electronic Phase Separation in Superconducting Cuprates”, Int. Symp. on Lattice Effects in Cuprate High Temperature Superconductors, Tsukuba, October 2007.
120. “Structure and Thermodynamics of Metallic Glasses”, MRS-2007, Boston, Nov. 2007.
121. “Local Lattice Dynamics and the Origin of Relaxor Ferroelectricity”, MRS-2007, Boston, Nov. 2007.
122. “Structure, Dynamics and Glass Formation of Metallic Glasses”, BMGEurope-2007, Paris, December, 2007.
123. “Taming the Structural Complexity: Increasing Relevance of Non-Crystallography”, SABAC2008, Tokai, Japan, January, 2008.
124. “Local View and Democracy”, Workshop on the Total Scattering Method and Nano-structure, Gaithersburg, February, 2008.
125. “Atomistic Mechanism of Relaxation and Deformation in Metallic Glasses”, TMS Annual Meeting, New Orleans, March, 2008.
126. “Dynamic PDF Method: A Novel Technique to Study Local Dynamics”, TMS Annual Meeting, New Orleans, March, 2008.
127. “Glass Transition and Glass Formability”, BMG VI Conf., Xi’an, China, May, 2008.
128. “Mechanical Properties of BMG”, AIMM, Harbin, China, May, 2008
129. “Local Atomic Structure of Catalytic Nano-Particles”, Amer. Crystallogr. Assoc. Annual Meeting, Knoxville, May, 2008.
130. “Intermediate State of the Cuprate Superconductors”, Erice International School, Erice, Italy, July, 2008.
131. “Local Fluctuations in the Cuprates and Iron Pnictides”, CoMePhS Workshop, Controlling Phase Separation in Electronic Systems, Napflion, Greece, September, 2008.
132. “Dynamic Pair-Density Function Studies of Local Lattice Dynamics: Application to Relaxor Ferroelectrics”, Russian Neutron Scattering Society Meeting, Gatchna, Russia, October, 2008.
133. “Local Structure and Dynamics in Metallic Glasses”, MRS Fall Meeting, Boston, November, 2008.
134. “Statistical Mechanics of Glasses and Liquids”, TMS Annual Meeting, San Francisco, Feb., 2009.
135. “Characterization of Structure and Dynamics in Metallic Glasses by Scattering”, TMS Annual Meeting, San Francisco, Feb., 2009.
136. “Dynamic Pair-Density Function Method for Neutron Scattering”, TMS Annual Meeting, San Francisco, Feb., 2009.
137. “Anomalous X-Ray Scattering to Probe the Glass Structure”, Workshop on Appl. Synchrotron Radiation on Glasses, Brookhaven, April, 2009.
138. “Atomic Structure of Nano-Particles”, MRS Spring Meeting, San Francisco, April, 2009.
139. “Materials Issues with Novel Superconductors and Neutron Scattering”, ASM Educational Symposium, Oak Ridge, April, 2009.
140. “Science of Metallic Liquids and Glasses”, ISMANAM, Beijing, July, 2009.
141. “Local Dynamics of Metallic Liquids and Glasses”, Relaxation in Complex Systems, Rome, August, 2009.
142. “Nature of the Glassy State”, Bulk Metallic Glasses VII, Busan, Korea, November, 2009.
143. “Structural Changes in Glasses”, International School on Glasses, Tata Institute for Fundamental Sciences, Bangalore, India, Jan., 2010.
144. “Mechanical Failure and Glass Transition”, BMG-VII, TMS Annual Meeting, Seattle, Feb., 2010.
145. “Atomic Level Stresses”, V. Vitek Symposium, TMS Annual Meeting, Seattle, Feb., 2010.
146. “Why metallic glasses form and why they fail?”, WPI-AIMR Annual Meeting, Sendai, Japan, March, 2010.
147. “Universal Aspects of the Structure and Dynamics of Metallic Glasses: Critical Local Strains” Conference at the Kavli Institute for Theoretical Physics Workshop on Fundamental Physics of Glasses, Santa Barbara, June, 2010.
148. “Science of Metallic Liquids and Glasses”, ISMANAM, Zülich, July, 2010.
149. “Recent Development of the PDF Technique”, Denver X-Ray Conf., Denver, Aug., 2010.
150. “Atomic level stresses”, V. Vitek Symposium, University of Pennsylvania, Philadelphia, Sept., 2010.
151. “Statistical Mechanics of Metallic Glasses and Liquids”, Sino-German Collaboration Workshop, Beijing, October, 2010.
152. “Lattice Effects in Pnictide Superconductors”, S-PIRE Meeting, Knoxville, October, 2010.
153. “Atomic Dynamics in Metallic Liquids and Glasses”, Workshop on Dynamic Crossover, Florence, Italy, November, 2010.
154. “Glass Transition, Anelasticity and Mechanical Failure in Metallic Glasses”, MRS Fall Meeting, Boston, Dec., 2010.
155. “Mechanical Properties of Metallic Glasses: An Atomistic View”, (presented by J. Morris due to illness) TMS Annual Meeting, San Diego, March, 2011.
156. “Atomistic Mechanism of Deformation in Metallic Glasses”, (Presented by W. Dmowski due to illness) BMG-VIII, Hong-Kong, May, 2011.
157. “Origin of Complexity in Relaxor Ferroelectrics: Local Atomic Structure of Lead Magnesium-Niobate and Sodium Niobate”, Int. Workshop on Structure-Property Relationship in Relaxor Ferroelectrics, Xi’an, China, November, 2011.
158. “Structure and Dynamics of Relaxor Ferroelectrics”, Forum on Inelastic Neutron Scattering (FINS 2011), Oak Ridge, November, 2011.
159. “Future of the Total Scattering at LANSCE”, Workshop on total scattering, Lujan Center, Los Alamos, January, 2012.
160. “Why Metallic Glasses are Strong?”, WPI Annual Meeting, Sendai, February, 2012.
161. “Atomic Level Flow Dynamics in Metallic Glasses”, TMS Annual Meeting, Orlando, March, 2012.
162. “Real Space Atomic Correlation and Elastic/Inelastic Scattering from Disordered Systems”, TMS Annual Meeting, Orlando, March, 2012.
163. “Future of Nano-Science”, NOVA Opening, Western Kentucky Univ., March, 2012.
164. “Lattice Effects in Fe Pnictides and Cuprates”, Int. Conf. Superconductivity and Magnetism, Istanbul, April, 2012.
165. “Structure and Dynamics of Liquids and Glasses”, WPI Workshop on Fusion of Mathematics and Materials Sciences, Sendai, June, 2012.
166. “Local Structure of Fe Pnictides”, Superstripes 2012, Erice, Italy, July, 2012.
167. “Neutron Scattering Studies of Strongly Correlated Systems”, DOE PI Meeting, Gaithersburg, July, 2012.
168. “Glass Transition and Mechanical Deformation in Metallic Glasses”, workshop on "Micro-structure, setting and aging of cement: from soft matter physics to sustainable materials." Monte Verità, Ascona, Switzerland, August, 2012.
169. “Irradiation Resistance of High-Entropy Alloys”, TMS Fall Meeting, Pittsburgh, Oct., 2012.
170. “Advances in Static and Dynamic PDF Methods”, Advanced Simulation Techniques for Total Scattering Data, Santa Fe, October, 2012.
171. “Characterizing the Structure and Dynamics of Highly Disorderd Materials”, MRS Fall Meeting, Boston, Dec., 2012.
172. “Topological Excitations in Liquids and Glasses”, MRS Fall Meeting, Boston, Dec., 2012.
173. “Atomic Dynamics in Liquids and Glasses”, BMG-9, Xiamen, China, Dec., 2012.
174. “Topological Excitations in Liquids and Glasses”, WPI Workshop on Fusion of Mathematics and Materials Sciences II, Sendai, Feb., 2013.
175. “Structural Analysis of Complex Materials”, TMS Annual Meeting, San Antonio, March, 2013.
176. “Mechanical Behavior of Metallic Glasses and Liquid”, TMS Annual Meeting, San Antonio, March, 2013.
177. “Properties of High-Entropy Alloys under Irradiation”, TMS Annual Meeting, San Antonio, March, 2013.
178. “Structural Analysis of Complex Materials”, TMS Annual Meeting, San Antonio, March, 2013.
179. “Elementary Excitations and Flow in the Liquid”, APS March Meeting, Baltimore, March, 2013.
180. “Atomic and Mesoscopic Study of Metallic Glasses”, DOE PI Meeting, Potomac, MD, April, 2013.
181. “Local Lattice Distortion Fe Pnictides”, Stripe Conf., Ischia, May, 2013.
182. “Atomic Dynamics in Liquids”, Amer. Cer. Soc., San Diego, June, 2013.
183. “Local Structure of Sodium Niobate and Lead-Free Ferroelectrics”, Conf. Relaxor Ferroelectrics, St. Petersburg, July, 2013.
184. “Local Energy Landscape of Metallic Glass”, IDMRCS, Barcelona, July, 2013.
185. “Neutron Scattering and the van Hove Function”, SESAPS Meeting, Bowling Green, Ky., November, 2013.
186. “Atomistic Origin of Viscosity in the Liquid”, MRS Fall Meeting, Boston, Dec., 2013.
187. “Angell Dynamics of Liquids”, Symposium on Fragility, Bangalore, India, Jan., 2014.
188. “Elementary Excitation and Energy Landscape in Simple Liquids”, AIMR Mini-Symposium on Bulk Metallic Glasses, Sendai, Japan, Feb., 2014.
189. “Atomistic Mechanism of Metallic Glass Formation”, TMS Annual Meeting, San Diego, Feb., 2014.
190. “Atomic Dynamics and Viscosity in the Liquid”, TMS Annual Meeting, San Diego, Feb., 2014.
191. “Atomic Dynamics of Liquids seen by Neutrons”, Taiwan-Japan Meeting on Neutron Scattering, Taipei, March, 2014.
192. “Local Lattice Distortion in Cuprates and Fe Pnictides”, ICSM, Anatolia, Turkey, April, 2014.
193. “Local Structure of Sodium Niobate: Parent Compound for Lead-Free Ferroelecttrics”, Workshop on Complex oxides – Santorini 3 in Cyprus, Protaras, Cyprus, May, 2014.
194. “What We Can Learn about the Glassy State from the Liquids”, BMG-X, Shanghai, June, 2014.
195. “Atomic Origin of Viscosity in Liquids”, Workshop on Confined Fluid, Oak Ridge, July, 2014.
196. “Local Lattice Distortion in Fe-Pnictides” E-MRS, Warsaw, September, 2014.
197. “Spin Glass, Relaxor Ferroelectrics and Real Glass”, Conf. Relaxor Ferroelectrics, Prague, October, 2014.
198. “Medium-Range Order and Viscosity in Metallic Liquids and Glasses”, MRS Fall Meeting, Boston, December, 2014.
199. “Mechanical Deformation in Metallic Liquids and Glasses: From Atomic Bond-Breaking to Avalanches”, Workshop on Avalanches, Cambridge, December, 2014.
200. “Flow Mechanism in Simple Liquids and Glasses”, Advanced Workshop on Out-of-Equilibrium Matter, San Luis Potosi, Mexico, December, 2014.
201. “Mechanical Deformation in Metallic Glasses”, WPI-AIME Mini-Workshop, Sendai, Feb. 2015.
202. “Liquid-State-Physics”, WPI-AIME Annual Meeting, Sendai, Feb. 2015.
203. “Structure and Properties of Shear-Transformation-Zone”, TMS Annual Meeting, Orlando, Mar. 2015.
204. “Irradiation Resistance of High-Entropy Alloys”, TMS Annual Meeting, Orlando, Mar. 2015.
205. “Relaxor Ferroelectrics, Spin-Glass and Real Glass”, TMS Annual Meeting, Orlando, Mar. 2015.
206. “Real Space View from Atoms”, Workshop on Diffuse Scattering, ORNL, Oak Ridge, May, 2015.
207. “How to Characterize Disorder”, European-MRS, Lille, France, May, 2015.
208. “Relaxor Ferroelectrics and Implications to Real Glasses”, Superstripes2015, Ischia, Italy, June, 2015.
209. “Real Space Analysis of Elastic and Inelastic Neutron Scattering Data”, Gordon Conference on Neutron Scattering, Hong Kong, June, 2015.
210. “Dynamics and Statistical Physics of Simple Liquids and Glasses”, International Workshop on the Structure and Dynamics of Supercooled Water and Other Glassy Materials, Parelmo, Oct. 2015.
211. “Local Topological Fluctuations in Liquids and Glasses”, Langer Symposium, “Frontiers in Pattern Formation and Complex Materials Far from Equilibrium”, Washington, DC, Oct., 2015.
212. “Atomistic Origin of Viscosity and Shear Thinning”, Workshop on Topics in Soft Condensed Matter, MIT, Cambridge, MA, Nov., 2015.
213. “How to Characterize Disorder”, RMCProfile Workshop, Oak Ridge, Feb., 2016.
214. “Absence of Microscopic Elasticity in BMG and Its Implications”, TMS Annual Meeting, Nashville, Feb., 2016.
215. “Electronic Effects in High-Entropy Alloys”, TMS Annual Meeting, Nashville, Feb., 2016.
216. “Colloids Deform just like Metallic Glasses”, Glass Mini-Workshop, WPI-AIMR, Tohoku Univ.,Sendai, Feb. 2016.
217. “Quantum Effects on Local Dynamics of Superfluid 4He”, Int. Conf. Superconiductivity and Magnetism, Fethiye, Turkey, April, 2016.
218. “Topological Excitations in Liquids and Glasses”, Conf. on Bulk Metallic Glasses XI, St. Louis, June, 2016.
219. “Topological Excitations in Liquids and Glasses”, Glass Meeting in Göttingen, Göttingen, Germany, June, 2016.
220. “Quantum Effects on Atomic Dynamics of Superfluid 4He”, Superstripes Conference, Ischia, Itlay, June, 2016.
221. **“**Real Space Analysis of Dynamics in Liquid and Glass”, American Conf. Neutron Scattering, Los Angeles, July, 2016.
222. “Atomic Level Stresses in Metallic Glasses and High-Entropy Alloys”, Pacific Rim International Conference on Advanced Materials and Processing (PRICM), Kyoto, August, 2016.
223. “Structure of Materials”, Croucher Summer School on Neutron Scattering, Hong Kong, August, 2016.
224. “Cooperativity Crossover and the Glass Transition”, Liquid and Amorphous Metals Conference, Bonn, Germany, September, 2016.
225. “Collective Local Dynamics in Liquids, Colloids and Polymers”, Materials Science & Technology 2016, Salt Lake City, October, 2016.
226. “Atomic Level Stresses in High-Entropy Alloys”, Intern. Conf. on High Entropy Alloys, Taipei, Nov, 2016.
227. “Mechanical Deformation in Metallic Glasses”, WPI-AIME Mini-Workshop, Sendai, Japan, Feb. 2017.
228. “Origin of Viscosity in Liquid”, WPI-AIME Annual Meeting, Sendai, Japan, Feb. 2017.
229. “Navigating in Energy Landscape: Structural Relaxation/Rejuvenation in Metallic Glasses”, FRIS Annual Meeting, Sendai, Japan, Feb. 2017.
230. “Dynamic Atomic Cooperativity in Liquids and Glasses”, TMS Annual Meeting, San Diego, Feb., 2017.
231. “Electronic and Lattice Heterogeneity in High-Entropy Alloys”, TMS Annual Meeting, San Diego, Feb., 2017.
232. “Development of D-PDF and Beyond”, SWC Workshop, Advanced Fourier Methods: Dynamic PDF and Beyond, Oak Ridge, May, 2017.
233. “Characterizing Disorder in Highly Complex Materials”, ACA Conf. New Orleans, May 2017.
234. “d9 Nickelates under Pressure”, Stripes Conf. Ischia, Italy, June, 2017.
235. “How Glass Navigates in Complex Energy Landscape”, FiMPART, Bordeaux, France, July, 2017.
236. “Atomic-Level Stresses in High Entropy Alloys”, FiMPART, Bordeaux, France, July, 2017.
237. “Nature of Potential Energy Landscape” 8th IDMRCS, Wisla, Poland, July, 2017.
238. “Electronic and Structural Heterogeneity in High-Entropy Alloys”, 26th IMRC, Cancun, Mexico, August, 2017.
239. “Evolution of the Glassy State in the Potential Energy Landscape”, RQ16, Leoben, Austria, August-September, 2017.
240. “Atomic Dynamics in Liquid in Real Space and Time: Toward the Liquid-State-Physics”, Condensed Matter Physics 2017, New York, October, 2017.
241. “Characterizing local atomic dynamics in space and time”, ACerS Conf. Electronic and Advanced Materials, Orlando, January, 2018.
242. “Atomic mechanism of mechanical deformation in metallic glasses”, WPI-AIME Mini-Workshop, Sendai, Japan, Feb. 2018.
243. “Ductility of metallic glasses”, TMS Annual Meeting, Phoenix, Mar., 2018.
244. “Anelasticity, plasticity and energy landscape in metallic glasses”, MACH Workshop, Annapolis, MD, April, 2018.
245. “John B. Goodenough: Immense impact of his science”, Franklin Award Goodenough Symposium, Philadelphia, PA, April, 2018.
246. “Real space molecular dynamics in water and aquesous salt solution”, A 21st Century View of Disordered Matter, workshop, Abingdon, Oxford UK, May, 2018.
247. “Local dynamics in relaxor ferroelectrics and its relation to supercooled liquid”, Russia/CIS/Baltic/Japan Symposium on Ferroelectricity, St. Petersburg, Russia, May, 2018.
248. “Local dynamics observed by real-space inelastic scattering”, Young Scientists School on Spectroscopic Studies of Critical Dynamics at Structural Phase Transitions, St. Petersburg, Russia, May, 2018.
249. “Emergent nature of energy landscape and mechanical deformation”, BMGXII, Seoul, Korea, May, 2018.
250. “Ductility and anelasticity in metallic glasses”, TERMEC2018, Paris, France, July, 2018.
251. “Local dynamics in relaxor ferroelectrics and their relation to supercooled liquid”, Int. Workshop on Relaxor Ferroelectrics - 6, Vancouver, Canada, July, 2018.
252. “Structure and dynamics of BMG forming liquid”, MST2018, Columbus, OH, October, 2018.
253. “Ductility and residual liquidity in metallic glasses”, MRS Fall, Boston, MA, November, 2018.
254. “Electronic effects on the strength of metallic alloys”, ICHEM 2018, Jeju island, Korea, December, 2018.
255. “Local dynamics in relaxor ferroelectrics and their relation to supercooled liquid”, Fundamental Physics of Ferroelectrics and Related Materials, Tampa, FL, Jan. 2019.
256. “Why liquid becomes glass?”, TMS Annual Meeting, San Antonio, March, 2019.
257. “Structure and dynamics of liquid and glass in real space and time”, DOE PI Meeting on Physuical Behavior, Gaithersburg, March, 2019.
258. “Metallic glasses for spintronics”, Superstripes Conf. Ischia, Italy, June, 2019.
259. “Deformation properties of metqallic glasses”, Materials Structure & Micromechanics of Fracture, Brno, Czech, June, 2019.
260. “Ideal metallic glass and potential energy landscape”, SES2019, St. Louis, Oct., 2019.
261. “Ideal metallic glass”, MS&T 19, Portland, Oct., 2019.
262. “Curie-Weiss Law of Liquid Structure and Ideal Glass State”, NCM14, Kobe, Japan, Nov., 2019.
263. “Local atomic dynamics in liquid in real space and time”, MRS Fall Meeting, Boston, Dec., 2019.
264. “Rejuvenation by fatigue”, TMS Annual Meeting, San Diego, Feb., 2020.
265. “Probing Local Dynamics in Disordered Systems”, SSRL-LCLS Users Meeting Wprkshop on Characterization of Static and Dynamic Disorder in Condensed Phase Materials, Palo Alto, Oct., 2020 (on-line).
266. “Correlated atomic dynamics in liquid seen in real space and time”, Annual Meeting of the Japanese Society for Neutron Science, Sendai, Japan, Nov., 2020 (on-line).
267. “Concept of defects in liquid and glass”, MRS Fall Meeting, Boston, Dec., 2020 (on-line).
268. “Electronic effects on the mechanical properties of HEA”, TMS Annual Meeting, Orlando, Mar., 2021 (on-line).
269. “What does the structure of liquid mean?”, Int. Union of Crystallogr., Prague, Czec Republic, August, 2021 (om-line).
270. “What does the structure of liquid mean?”, PacifiChem 2021, Honolulu, Hawai, December, 2021 (on-line).
271. “Atomic cooperativity in metallic glass”, TMS Annual Meeting, Anaheim, March, 2022.
272. “Effective atomic size in multi-principal element alloys”, TMS Annual Meeting, Anaheim, March, 2022.
273. “World beyond the nearest neighbors: Medium-range order and cooperativity”, Lorentz Center Workshop on Disorder's Role in Glass Formation and Deformation, Leiden, Netherland, July, 2022.
274. “Seeing correlated atomic dynamics in liquid in real space and time”, T. Egami, Goodenough 100th Birthday Symposium, University of Texas, Austin, July, 2022.
275. “How the Liquid Structure is Formed; Bottom-up, Top-down, or Both?”, Liquid and Amorphous Metals Conference (LAM-18), Hiroshima, Japan, September, 2022.
276. “Elucidating the structure of glass: Bottom-up or Top-down?”, TMS Annual Meeting, San Diego, March, 2023.
277. “Chemical short-range order in multi-principal element alloys”, TMS Annual Meeting, San Diego, March, 2023.
278. “Legacy of Alex Mueller”, K. A. Mueller Memorial Session, Internat. Meeting on Ferroelectrics, Tel-Aviv, Israel, March, 2023.
279. “Atomic Pair Correlations: Anisotropy and Atomic Dynamics”, Workshop on Structural analysis of highly disordered materials using total scattering, NSLS-II, CFN & LBMS Users’ Meeting, Brookhaven National Lab., Brookhavem, April, 2023.
280. “Density wave instability in liquid: From real liquid to electrons”, Superstripes Conf. Ischia, Italy, June, 2023.
281. “Dialectical Approach to the Structure of Metallic Glass”, RQ-ISMANAM, Warsaw, Poland, August, 2023.
282. “Local structure and dynamics of dynamic aperiodic matter (DAM)”, Annual User Meeting of the National Synchrotron Radiation Research Center, Taipei, Taiwan, October, 2023.
283. “Strong electron correlation and superconductivity”, Incheon National University Workshop, Incheon, Korea, October, 2023.
284. “Seeing correlated atomic dynamics in real space and time”, Workshop on Scientific Benefits and Applications of Resonant Spin Echo, ORNL, Feb., 2024.
285. “Role of medium-range order in atomic dynamics of liquid and glass”, TMS Annual Meeting, Orlando, March, 2024.
286. “Local Lattice Distortion and Chemical Short-Range Order in High-Entropy Alloys”, Microscopy Microanalysis 2024, Cleveland, August, 2024.
287. “**Vasek Vitek and Disordered Materials**”, Int. Conf. Multiscale Materials Modeling, Prague, September, 2024.
288. “Atomic cooperativity in metallic glasses and liquids”, MRS Fall Meeting, Boston, December, 2024.
289. “Atomic cooperativity in metallic glass”, TMS Annual Meeting, Las Vegas, March, 2025.
290. “Complex structure of liquid and machine-learning”, TMS Annual Meeting, Las Vegas, March, 2025.

**Recent Invited Seminars**

* Brookhaven National Laboratory, Upton, Feb., 2024.
* National Tsing Hua University, Hsinchu, Taiwan, Oct., 2023.
* National Sun Yat-sen University, Kaohsiung, Taiwan, Oct., 2023.
* Physics Colloquium, University of Tennessee, Sept. 2023.
* Spallation Neutron Source, Oak Ridge National Lab., July, 2023.
* Navier Institute, Paris, France, June, 2022.
* Summer School on Disorder, Pascal Institute, University of Paris, Saclay, France, June, 2022.
* Louisiana State University, Boca Raton, Jan., 2020.
* Seoul National University, Materials Science, Seoul, Dec., 2018
* Korean Institute for Science and Technology, Seoul, Dec., 2018
* National Institute for Materials Science, Tsukuba, Nov., 2018.
* Skoltech, Energy Colloquium, Moscow, May, 2018.
* Ohio State University, Materials Science, Feb., 2018.
* Laboratory for Air and Space (DLR), Köln, Germany, May, 2016.
* University of Stockholm, Stockholm, Sweden, May, 2016.
* University of Konstanz, Konstanz, Germany, May, 2016.
* University of Texas, Austin, March, 2016.
* Yale University, Mechanical Engineering, Feb., 2016, Aris Phillips Lecture.
* University of Delaware, Physics, Nov., 2015.
* Wayne State University, Physics, Sept., 2015.
* University of Tennessee, Science Forum, Feb., 2015.
* Laboratory for Electro-magnetism, Sendai, Feb., 2015.
* University of Pennsylvania, Philadelphia, Feb., 2015.
* University of Tennessee, Physics and Astronomy, Nov., 2014.
* University of Tokyo, Institute for Advanced Studies, Tokyo, Feb., 2014.
* Washington University, St. Louis, November, 2013.
* Georgia Institute of Technology, Atlanta, November, 2012.
* Shibaura Institute of Technology, Tokyo, Japan, June, 2012
* University of Tennessee, Materials Science and Engineering, Nov. 2011
* University of Michigan, Ann Arbor, MI, October, 2011
* Western Kentucky University, Bowling Green, Ky, February, 2010
* University of Tennessee, Physics, Feb. 2010
* WPI-AIMR, Tohoku University, Sendai, Japan, July 2009
* Osaka University, Osaka, Japan, July, 2009
* Yale University, New Haven, October, 2008
* University of Kentucky, Lexington, October, 2008
* Stanford University, Stanford, February, 2008
* IMR, Tohoku University, Sendai, Japan, January, 2008
* University of Virginia, Charlottesville, December, 2007
* National Synchrotron Light Source, Brookhaven National Laboratory, May 2007
* J-PARC, Japan Atomic Energy Authority, Tokai, March 2007
* Theory Division, Los Alamos National Laboratory, June, 2006
* Advanced Photon Source, Argonne National Laboratory, Feb. 2006
* Universität zu Köln, Physics Seminar, Köln, Gernamy, June 2005
* Brigham Young University, Physics Colloquium, Salt Lake City, November, 2004
* Leipnitz Institute, Dresden, Germany, August, 2004
* Johns Hopkins University, Physics Seminar, May, 2003
* North Carolina State University, Physics Colloquium, March, 2003
* Max-Planck-Institut für Festkörper Forschung, Stuttgart, September, 2002
* Hahn-Meitner-Institut, Berlin, September, 2002
* Los Alamos National Laboratory, Los Alamos, July, 2002
* Joseph Stephan Institute, Ljubljana, Slovenia, July, 2002
* University of Tennessee, Knoxville, May, 2002
* Princeton University, Princeton, February, 2002
* Lehigh University, Bethlehem, November, 2001
* Japan Atomic Energy Research Institue, Tokai, July, 2001.
* Toyota Central Research and Development Laboratory, Nagoya, July, 2001.
* International Superconductivity Technology Center, Tokyo, July, 2001.
* W. R. Grace, Columbia, MD, March, 2001
* Oxford University, Oxford, December, 2000
* Argonne National Laboratory, Argonne, November, 2000
* Laboratoire-Louis-Brillouin, Saclay, France, June, 2000
* Swiss Federation Technical University, Lousanne, Switzerland, June, 2000
* University of Zürich, Zürich, Switzerland, June, 2000
* Max-Planck-Institut für Festkörper Physik, Stuttgart, June, 2000
* University of California at River Side, River Side, CA, May, 2000
* California Institute of Technology, Pasadena, CA, May 2000
* University of Virginia, Charlottesville, VA, Feb., 2000
* Johnson-Matthey, Radnor, PA, Jan., 2000

In addition, numerous (well over a hundred) invited seminars at universities, national laboratories and industries.

**Patents Granted**

*U. S. Patent*

#4,053,331 (1977), “Method of making amorphous metallic alloys having enhanced magnetic

 properties by using tensile stress”,

#4,053,332 (1977), “Enhancing magnetic properties of amorphous alloys by rolling”,

#4,053,333 (1977), “Enhancing magnetic properties of amorphous alloys by annealing under

 stress”,

#4,226,619 (1980), “Amorphous alloy with high magnetic induction at room temperature”,

#6,528,451 (2003), “Catalyst support material having high oxygen storage capacity and method

 of preparation thereof”.

**Consulting**

E. I. duPont de Nemours & Co. (1987‑89)

 Technical consulting on the use of amorphous metals in magnetic thin films for

 the production of magneto‑optical disks.

Xi Magnetics (1988)

 Technical evaluation of amorphous materials produced by electroplating thin films.

Allied‑Signal, Inc. (1989‑97)

 Consulting in connection with patent litigation cases, on amorphous materials for use in electronic article surveillance markers and on amorphous metal alloys for use in power transformers.

TMC Co. (1990‑1991)

 Technical consulting on choice of materials for production of ink jet printers.

Grippo & Elden (1993-1995)

 Japanese translation in patent litigation case on corrosion of electrical steel sheets.

W. R. Grace (1995-2005)

 Surface and bulk structure of catalytic support oxides.

E. I. duPont de Nemours & Co. (1995)

 Use of pair distribution function analysis in local structural determination.

TL Venture (1998)

 Technical assessment of a product by a small venture company.

Toyota Motor Co. (2001-2005)

 Local structure of catalyst support oxides.

DOAR (2018)

Consulting in connection with a case at the International Trade Comission, on amorphous metal alloys for use in power transformers by Chinese producers.

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