

RÉSUMÉ OF ANIL MISRA, Ph.D., P.E.
Fellow ASCE, Fellow EMI, Fellow AIMBE
(January 30, 2020)
(Website - <http://people.ku.edu/~amisra/>)

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A. BACKGROUND INFORMATION.

Home Address

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Mailing Address

Civil, Environmental and Architectural Engineering Department
The University of Kansas
1530 W. 15th Street, Lawrence, KS 66045-7609
Ph: (785) 864-1750; Fax: (785) 864-5631

Citizenship: United States of America

Personal: Married, 1 son.

EDUCATION

- **Ph.D. Civil Engineering**, University of Massachusetts, Amherst February 1991
Thesis Title: Constitutive Relationships for Granular Solids with Particle Slidings and Fabric Changes
- **M.S. Civil Engineering**, University of Massachusetts, Amherst February 1988
Thesis Title: Stress-Strain Relationships for Simple Models of Sands
- **B.S. Civil Engineering**, Indian Institute of Technology, Kanpur May 1985
Project Title: Geotechnical Aspects of Industrial Waste Disposal and Mined Land Reclamation

PROFESSIONAL REGISTRATION

- State: Missouri Registration Number: E-26963

EXPERIENCE

- January 2008 – present, *Professor of Civil Engineering*, University of Kansas, Lawrence.
- January 2008 – present, *Professor of Mechanical Engineering (by Courtesy)*, University of Kansas, Lawrence.
- September 2002 – December 2007, *Professor of Civil Engineering*, University of Missouri-Kansas City (UMKC).
- September 1996 – August 2002, *Associate Professor of Civil Engineering*, University of Missouri-Kansas City.
- January 1997 – July 1997, *Consultant (on sabbatical)*, Grace Construction Products, W.R. Grace, Cambridge, MA.
- September 1990 – August 1996, *Assistant Professor of Civil Engineering*, University of Missouri-Kansas City.
- September 1985 – August 1990, *Graduate Assistant*, Civil Engineering Department, University of Massachusetts at Amherst.
- May 1984 – August 1984, *Civil Engineer*, Hindustan Construction Company, Bombay, India.

Key Administrative Responsibilities

- February 2003 – August 2004, *Civil Engineering Program Director*, University of Missouri-Kansas City.
- September 2002 – December 2007, *Graduate Program Coordinator*, Civil and Mechanical Engineering Department, UMKC.
- September 2002 – December 2007, *Coordinator, Engineering Discipline*, Interdisciplinary Ph.D. Program, UMKC.
- September 2004 – December 2007, *Co-Director*, UMKC-Center for Research on Interfacial Structure & Properties (UMKC-CRISP).
- January 2008 – present, *Associate-Director*, University of Kansas Bioengineering Research Center (KU-BERC).

Other Appointments (Honorary)

- January 2011 – present, *Visiting Professor*, International Research Center for Mathematics & Mechanics of Complex Systems (M&MoCS), Università dell'Aquila, Italy
- October 2013 – October 2016, *Chair Professor*, South China University of Technology, Guangzhou, China.
- May 2015 – May 2018, *Chair Professor*, Shanghai Jiao Tong University, China.
- November 2017 – October 2020, *Member*, Scientific and Teaching Board of the PhD course in Civil, Construction-Architectural and Environmental Engineering, Università dell'Aquila, Italy

HONORS AND AWARDS

- National Talent Search Scholarship sponsored by the Government of India (1979--1985).

- Research Assistantship throughout graduate studies (1985-1990), from grants to University of Massachusetts sponsored by the National Science Foundation and the Air Force Office of Scientific Research.
- Listings: Who's Who Among America's Teachers (1996); Marquis Who's Who in Science and Engineering (1997).
- Honor societies: Tau Beta Pi.
- Special **Recognition for Dedicated Teaching**, UMKC Student Chapter of American Society of Civil Engineers (1996).
- **Faculty Research Award**, College of Engineering, University of Missouri (1996).
- Alumni Association Good Teaching Faculty Award, UMKC School of Interdisciplinary Computing and Engineering (2001).
- **Kauffman Entrepreneurial Scholar**, UMKC and Ewing Marion Kauffman Foundation (2003-05).
- **Coal Combustion Products Partnership (C²P²) 1st prize award** for Jackson County demonstration project on cold-in-place recycling of asphalt pavements with fly ash, U.S. Environmental Protection Agency (2005).
- **UMKC Trustees' Faculty Fellowship** award (2005-6).
- **N.T. Veatch Award** for distinguished research and creativity, UMKC (2005-6).
- Interdisciplinary Doctoral Student Council's **Outstanding Faculty Award**, UMKC (2006).
- **Fellow**, American Institute for Medical and Biological Engineering (AIMBE) (2013).
- **Leading Light Award**, University of Kansas (2013).
- **Miller Scholars Award**, School of Engineering, University of Kansas (2014).
- **Fellow**, American Society of Civil Engineers (ASCE) (2017).
- **Bellows Scholars Award**, School of Engineering, University of Kansas (2017, 2018).
- **Fulbright Specialist** award Warsaw University Technology (May 2018)
- **Eugenio Beltrami Senior Scientist Prize (2017)**, International Research Center on Mathematics & Mechanics of Complex Systems (M&MoCS), Università dell'Aquila, Italy, (<http://memocscenter.univaq.it/memocs/en/>).
- **Fellow**, Engineering Mechanics Institute (EMI) (2018).

RESEARCH INTERESTS

Geomechanics/Geomaterials, Biomechanics/Biomaterials, Micromechanics, Metamaterials

- Metamaterials – Theory, design, 3D printing based upon granular and pantographic motifs.
- Micromechanics of granular and cementitious materials (Granular Micromechanics); Higher-order continuum theories; Particle methods - Discrete element and Meshfree methods; *Ab initio* atomistic modeling.
- Stress-deformation and wave propagation behavior of rough interfaces (rock joints and imperfect interfaces).
- Micromechanical experimental characterization using: scanning acoustic microscopy and ultrasonic testing, micro-XCT, AFM and nanoindentation, micro-Raman spectroscopy, FTIR, and scanning electron microscopy.
- Nano-micro-macro mechanics of dental and craniofacial tissues and materials used in restorative dentistry.
- Geotechnical engineering: deep foundations with applications of probabilistic and reliability (LRF) methods; coal combustion products (CCP) as construction material – fly ash soil stabilization; synthetic aggregates and cold-in-place recycling of asphalt pavements.
- Thermal and diffusion properties of polymers and granular materials.

PROFESSIONAL DEVELOPMENT AND CONTINUING EDUCATION (selected)

- NATO Advanced Study Institute on Physics of Dry Granular Media, Cargese, France, September 1997.
- Campus Writing Program Faculty Workshop, University of Missouri-Columbia, January 1998.
- Provost's Excellence in Teaching Retreat, University of Missouri-Columbia, May 1999.
- Roundtable of Engineering Entrepreneurship Education (REEE), Stanford University, CA, October 23-25, 2002.
- Network of Earthquake Engineering Simulation (NEES) Workshop, Park City, UT, May 2003.
- Midwest Civil Engineering Department Chairs and Heads Meeting, University of Missouri – Rolla, March 2004.
- Engineering Projects in Community Service Conference, West Lafayette, IN, May 2004.
- National Civil Engineering Department Chairs and Heads Meeting, Salt Lake City, May 2005.

B. TEACHING.

COURSES TAUGHT

University of Missouri (1990-2007)

- CE 085 - Statics
- CE 195 - Strength of Materials
- CE 232 - Civil Engineering Materials (Writing Intensive)¹
- CE 255 - Soil Mechanics
- CE 372 - Foundation Engineering¹
- CE 375 - Matrix Methods of Structural Analysis¹
- CE 401 - Environmental Geotechnology¹
- CE 436 - Advanced Soil Mechanics¹
- CE 401 - Computer Methods in Geotechnical Engineering¹
- CE 475 - Introduction to Earthquake Engineering¹
- CE 407 - Numerical Methods in Engineering¹
- CE 501 - Advanced Dynamics¹
- CE 601 - Advanced Foundation Engineering¹
- CE 601 - Advanced Matrix Methods of Structural Analysis¹
- CE 601 - Retaining Walls and Soil Slopes¹
- CE 621 - Continuum Mechanics¹
- CE 676 - Finite Element Method¹

University of Kansas (2008-)

- ENGR 600 - Engineering Applications in India: Technical, Business, and Implementation Issues¹
- CE 801 - Energy Methods¹
- CE 895 - Geotechnical Earthquake Engineering¹
- CE 895 - Computer Methods in Geotechnical Engineering¹
- CE 861 - Finite Element Method for Solid Mechanics
- CE 895 - Micromechanics¹
- CE 588 - Foundation Engineering¹

(¹Developed)

OTHER TEACHING ACTIVITIES

- IEEE Fundamentals of Engineering Exam Reviews, 1991-95.
- Fundamentals of Engineering Exam Reviews, 2008-.

GRADUATE AND POST-DOCTORAL STUDENTS DIRECTED

Post Doctoral Students and Visiting Scholars

1. Sungwon Park, Post-Doc, Korea, June 2008-May 2010
2. Yang Yang, Visiting Scholar (Ph.D.), China University of Geosciences, Wuhan, September 2008 -September 2010
3. Yu Zhou, Visiting Scholar (Ph.D.), University of Science and Technology, Beijing, September 2011 August 2012
4. Zhengfa Chen, Visiting Scholar, Assoc. Prof. Shandong University of Technology, July 2013-July 2014
5. Guifeng Liu, Visiting Scholar, Assoc. Prof. Shandong University of Technology, July 2013-July 2014
6. Haipeng Jia, Visiting Scholar, Prof. Hebei University of Technology, April 2014-April 2015, July 2017
7. Yuanwu Zhou, Visiting Scholar, Prof. Guangxi University of Science and Technology, January 2016-January 2017
8. Changwen Ye, Visiting Scholar, Assoc. Prof. Chengdu University Technology, October 2016- October 2017.
9. Haipeng Jia, Visiting Scholar, Prof. Hebei University of Technology, July 2017-July 2018.
10. Shiping Huang, Visiting Scholar, Asst. Prof. South China University of Technology, October 2017-January 2018.
11. Ruohong Zhao, Visiting Scholar, Assoc. Prof. Guangzhou University, September 2018-September 2019.
12. An Xu, Visiting Scholar, Assoc. Prof. Guangzhou University, September 2018-September 2019.

Doctor of Philosophy:

1. Lance Roberts, "Reliability-Based Design and Analysis of Deep Foundations at the Service Limit State," May 2006.
2. Anry Arzuman, "Fate and Aqueous Transport of Mercury from Coal Fly Ash," August 2006.

3. Mark Johnson, "The Effect of Normal and Shear Stresses on Wave Propagation Through a Fracture," December 2007.
4. Fred Reynolds, "Seismic Analysis of Buried Water Collection System," May 2008.
5. Orestes Marangos, "Scanning Acoustic Microscopy Modeling for Micromechanical Measurements of Complex Substrates," May 2010.
6. Shiping Huang, "Micromechanical modeling of rough interface behavior" August 2011.
7. Miriam Lusk, "Micromechanics based constitutive model for granular solids and its implementation into meshfree numerical method" December 2011.
8. Ranganathan Parthasarathy, "Chemo-mechanical characterization of phase-separated dentin adhesives" August 2013.
9. Viraj Singh, "Non-linear rate-dependent material model with damage and plasticity from granular micromechanics approach" May 2014.
10. Payam Poorsolhjoui, "Continuum modeling using granular micromechanics approach: method development and applications" August 2016. (*Outstanding Doctoral Student Award, School of Engineering, University of Kansas*)
11. Rizacan Sarikaya, in progress.
12. Nima NejadSadeghi, in progress.
13. Michele de Angelo, in progress.

Master of Science:

1. Zuheir Salti, "Micro-crack toughening and crack propagation in particulate composites," May 1992.
2. Clay Haynes, "Foam cellular concrete back fill in tunneling applications," May 1994.
3. Yi-Hereng Lee, "Application of the triaxial test to evaluate the tire rubber in asphalt," August 1994.
4. M. Arab, "Settlement of footings on sand," August 1994.
5. Hui-Da Dai, "Elastic properties of random consolidated sediments," May 1995.
6. Xiaoli Chen, "Inter-particle potential functions and elastic constants of nano-particle aggregates," May 1995.
7. Mahesh Sharma, "Study of Bentonite and Kaolinite mixture for clay liner materials," May 1995.
8. Ibrahim Saifan, "Effect of soil plasticity on stabilization with Class C fly ash," August 1996.
9. A. Thirunavukkarasu, "Computer simulation and microscopy of nano-particle aggregates," August 1996.
10. Nassi Fallahian, "Consolidation properties of bentonite-kaolinite mixtures," December 1996.
11. Jinshi Liu, "Alkali-silica reactions in Class C fly ash modified cement," December 1996.
12. Robert Gunn, "Electrokinetics of contaminated soils," December 1996.
13. Hong-Jun Jiang, "Utilization of Western coal fly ash in highway construction," December 1996.
14. Jun Du, "Evaluation of micromechanical behavior of regularly arranged rod assemblies," December 1997.
15. Shawn Cessna, "Mechanism and strength development in fly-ash clay composites," May 1998.
16. Kehao Wei, "Effect of retardant on behavior of fly ash treated clay," August 1999.
17. J. Kent Higgins, "Utilization of stiffness gage for fly ash treated subgrade evaluation," August 2000.
18. Elena Wang, "Computer model for micropiles," December 2000.
19. Roger Nelson, "Side friction coefficient for drilled shaft design," December 2000.
20. Chih-Hung Chen, "Analytical model for micropile axial behavior", August 2001.
21. Cervente Sudduth, "St. Monica's Catholic Cathedral Church," May 2002.
22. Steve Petracek, "Design, Sequencing, and Construction of the Redevelopment of Lambeau Field," May 2002.
23. William Kalt, "Degradation of Our Nation's Infrastructure and Innovative Methods to Proactively Perform Asset Management," August 2002.
24. Karolina Kiwerska, "Extruded aggregates from Class C fly ash", August 2002.
25. Prapon Somboonyanon, "Model for Behavior of Granular Material with Pseudo Particle-Potentials", August 2003.
26. Orestes Marangos, "Multiasperity Contact Model for Seismic Wave Propagation Through Single Rock Joint", May 2004.
27. Sushant Upadhyaya, "Cold in Place Recycling of Asphalt Pavement with Self Cementing Fly Ash", August 2004.
28. Debabrata Biswas, "Application of Modal Analysis Approach for 2D Regular Imperfect Granular Packing", August 2004.
29. Pavan Lakku, "Anisotropic Granular Model for Cohesive Materials," December 2005.
30. Murali Balan, "Behavior of Granular Particles in Rolling Cylinder," December 2005.
31. Sachin Patel, "Cold in-place recycling of Asphalt Pavement with self cementing fly ash," December 2006.
32. Rohini Dharmala, "Finite Element Analysis of Dentin/adhesive Interface Accounting for Micro-Scale Geometrical and Mechanical Properties," December 2006.

33. Richa Bhatnagar, "Probabilistic Analysis of Laterally Loaded Piles Using p-y Method," December 2007.
34. Naveen Santhapur, "Properties of Sand-Self Cementing Fly Ash Mixtures," December 2007
35. Kapil Agnihotri, "Micromechanical Model for Bounds on Effective Elastic and Visco-elastic Stiffness of Mating Rough Surfaces," May 2008.
36. Sunil Kumar, "Performance evaluation of a fly ash stabilized asphalt pavement," August 2008.
37. Viraj Singh, "Viscoelastic and fatigue properties of dental adhesives and their impact on dentin-adhesive interface durability", December 2009.
38. Rizacan Sarikaya, "Application of diametral compression test to evaluation of dentin-adhesive interface bond strength", August 2017.

UNDERGRADUATE RESEARCH:

1. Joel Miller, "Soil thermal property database," December 1991.
2. Kelly Sage, "Helen Kramer landfill cap clay layer statistical evaluation and reliability prediction," December 1992.
3. Kent Higgins, "Studies on rubberized asphalt concrete," December 1993.
4. Jon Voss, "Experimental studies on clay permeability under various permeants," December 1993.
5. Anthony Moore, "Design and use of biaxial load testing apparatus," December 1994.
6. Sylvia Chacon, "Recycled materials used in asphalt highway construction," December 1994.
7. Robert Gunn, "Stabilization of water treatment sludge by Class C fly ash," January 1996.
8. Steve Usnick, "Compaction behavior of clay-fly ash mixtures," May 1996.
9. Scot Ward, "Compressive strength of Class C fly ash and cement blends," May 1996.
10. Shawn Cessna, "Electrokinetic soil decontamination," August 1996.
11. See Mun Yip, "Unconfined strength of ideal clays treated with Class C fly ash," December 1996.
12. Leong Huat Lim, "Laboratory study of effect of curing method in fly ash treated soils," May 1998.
13. Yau Loong Ng, "Laboratory study of effect of curing method in fly ash treated soils," May 1998.
14. Yu Boon Tan, "Energy dissipation in particle filled cylinders rolling down a ramp," December 1998.
15. Woei Heng Chong, "Strength and penetration resistance of fly-ash sand mortar," May 1999.
16. John Calcara, "Effect of retardant on flowability and strength of fly ash grout," May 1999.
17. Travis Hoover, "Effect of retardant on strength of fly ash treated clay," December 1999.
18. Kregan Liang, "CBR tests on fly ash treated soils," December 1999.
19. Michael Chirpich, "Investigation into flowable fill design mixes," December 2000.
20. Brandon Cracraft, "Cold-in-Place Recycling of Asphalt Pavements," May 2005.
21. Andrew Meyerkord, "Ultrasonic Studies Through Imperfect Interfaces," May 2006.
22. Moriah Bakare "Mechanical properties of Calcium Silicate Hydrates", December 2015.
23. Aaron Brooks "Granular structures with 3D printing", 2017
24. Jacob Hammill "Metamaterials", 2018-2020

C. RESEARCH.

PUBLICATIONS (Google Scholar Citation h-index = 45)

Books and Journals Special Issues Edited/Authoried

1. Misra, A. and Chang, C.S., Eds. (1995), Mechanics of Materials with Discontinuities and Inhomogeneities, ASME Press, New York, 181 pp.
2. Misra, A. and Chang, C.S., Guest Eds. (1997), “Theoretical and Experimental Methods for Particulate Materials,” Special Issue(s) of Journal of Computer and Geotechnics, Vol. 20, No. 3 and 4, Elsevier Science, The Netherlands.
3. Misra, A., Ed. (1997), Recent Advances in Mechanics of Geomaterials, Uma, Leawood, Kansas, 80 pp.
4. Chang, C.S., Misra, A., Liang, R.Y. and Babic, M., Eds. (1997), Mechanics of Deformation and Flow of Particulate Materials, ASCE Specialty Publication, ASCE, New York, 462pp.
5. Misra, A., Chang, C.S. and Chau, K.T., Guest Eds. (2002) “Mechanics of Fracture and Failure in Geomaterials,” Special Issue(s) of Engineering Fracture Mechanics, Vol. 69, No. 17, Elsevier Science, The Netherlands.
6. Hicher, P.-Y., Misra, A. and Ng, T.-T. Guest Eds. (2014) “Micromechanics of Granular Materials – A Tribute to Ching S. Chang,” Special Issue(s) of Comptes Rendus Mecanique, Vol.342, No. 3, Elsevier Science, The Netherlands.
7. Daoudji, A. Kuhn, M., Matsushima, T., and Misra, A. Guest Eds. (2017) “Horizons in granular mechanics: The legacy of Dr. Masao Satake,” Special Issue(s) of Journal of Engineering Mechanics, 143(1), ASCE.
8. Spencer, P., Misra, A. Eds. (2016) Material-tissue interfacial phenomena Contributions from reconstruction of oral tissues, Elsevier Science, The Netherlands.
9. Misra, A., Matsushima, T. and Placidi, L. Guest Eds. (2019) “Granular Material Models Across Scales,” Virtual Special Issue of Mechanics Research Communications, Elsevier Science, The Netherlands.

Refereed Articles in Journals, Edited Books, Proceedings

10. Chang, C.S., and Misra, A. (1989), “Theoretical and Experimental Study of Regular Packings of Granules,” Journal of Engineering Mechanics, ASCE, Vol. 115, No. 4, 704-720.
11. Chang, C.S., Weeraratne, S.P. and Misra, A. (1989), “A Slip Mechanism Based Constitutive Model for Granular Soils,” Journal of Engineering Mechanics, ASCE, Vol. 115, No. 4, 790-808.
12. Chang, C.S., Misra, A. and Xue, J.H. (1989), “Incremental Stress-Strain Relationships for Regular Packings Made of Multi-sized Particles,” International Journal of Solids and Structures, Vol. 25, No. 6, 665-681.
13. Chang, C.S., and Misra, A. (1989), “Computer Simulation and Modelling of Mechanical Properties of Particulates,” Journal of Computer and Geotechnics, Vol. 7, No. 4, 262-287.
14. Chang, C.S., Misra, A., and Weeraratne, S.P. (1989), “Deformation Behavior of Sands in Cubical and Hollow Cylinder Devices,” International Journal of Numerical and Analytical Methods in Geomechanics, Vol.. 13, No. 5, 493-510.
15. Chang, C.S., Sundaram, S.S., and Misra, A. (1989), “Initial Moduli of Particulated Mass with Frictional Contacts,” International Journal of Numerical and Analytical Methods in Geomechanics, Vol. 13, No. 6, 629-644.

16. Chang, C.S., and Misra, A. (1990), "Packing Structure and Mechanical Properties of Granulates," Journal of Engineering Mechanics, ASCE, Vol. 116, No. 5, 1077-1093.
17. Chang, C.S., Misra, A. and Sundaram, S.S. (1990), "Micro-mechanical Modeling of Cemented Sands Under Low Amplitude Oscillations," Geotechnique, Vol. 40, No. 2, 251-264.
18. Chang, C.S., and Misra, A. (1990), "Application of Uniform Strain Theory to Heterogeneous Granular Solids," Journal of Engineering Mechanics, ASCE, Vol. 116, No. 10, 2310-2328.
19. Misra, A., and Chang, C.S. (1991), "Mechanical Properties of Cemented Sands Based on Inter-Particle Contact Behavior," Volume I, Proceedings, Second International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, Ed. S. Prakash, St. Louis, MO, March 1991, 93-96.
20. Chang, C.S., Misra, A. and Sundaram, S.S. (1991), "Properties of Granular Packings Under Low Amplitude Cyclic Loading," International Journal of Soil Dynamics and Earthquake Engineering, Vol. 10, No. 4, 201-211.
21. Misra, A. and Chang, C.S. (1991), "Constitutive Relations for Granular Solids Accounting for Heterogeneous Deformation Fields," in Mechanics Computing in 1990s and Beyond, ASCE, Eds. H. Adeli and R.L. Sierakowski, Columbus, OH, May 1991, 1209-1214.
22. Chang, C.S. and Misra, A. (1991), "Influence of Finite Deformations in the Stress-Strain Modelling of Granular Media," in Mechanics Computing in 1990s and Beyond, ASCE, Eds. H. Adeli and R.L. Sierakowski, Columbus, OH, May 1991, 1164-1169.
23. Misra, A. and Chang, C.S. (1991), "Micro-Mechanism of Induced Anisotropy in the Stress-Strain Behavior of Granular Materials," Constitutive Laws for Engineering Materials: Recent Advances and Industrial and Infrastructure Applications, Eds. C.S. Desai, E. Krempl, G. Frantziskonis, H. Saadatmanesh, ASME Press, New York, 531-535.
24. Chang, C.S. and Misra, A. (1991), "Stress-Strain Modeling of Heterogeneous Granular Solids Based on Micro-Mechanics," Constitutive Laws for Engineering Materials: Recent Advances and Industrial and Infrastructure Applications, Eds. C.S. Desai, E. Krempl, G. Frantziskonis, H. Saadatmanesh, ASME Press, New York, 501-505.
25. Misra, A. and Sukere, A.A. (1991), "Micro Crack Toughening in Particulate Composites," International Journal of Fracture, Vol. 52, R37-R44.
26. Becker, B.R., Misra, A. and Fricke, B.A. (1992), "Development of Correlations for Soil Thermal Conductivity," International Communications in Heat and Mass Transfer, Vol. 19, No. 1, 59-68.
27. Misra, A. (1992), "Relationship of Porosity and Elastic Properties for Consolidated Granular Aggregates," Microstructural Characterization in Constitutive Modelling of Metals and Granular Media, Ed. G. Voyiadjis, MD-Vol. 32, ASME Press, New York, 81-94.
28. Chang, C.S., Misra, A. and Acheampong, K. (1992), "Elasto-plastic Deformation for Particulates with Frictional Contacts," Journal of Engineering Mechanics, ASCE, Vol. 118, No. 8, 1692-1707.
29. Misra, A. (1993), "A Micromechanics Based Constitutive Model for Consolidated Granular Solids," Powders and Grains, Ed. C. Thornton, A.A. Balkema, Rotterdam, The Netherlands, 123-128.
30. Misra, A. and Chang, C.S. (1993), "A Homogenization Method for Effective Moduli of Randomly Packed Grains," Homogenization and Constitutive Modelling for Heterogeneous Materials, Eds. C.S. Chang and J.W. Ju, ASME Press, New York, 63-74.
31. Misra, A. (1993), "Influence of Microstructure on Properties of Random Porous Solids," Recent Advances in

Mechanics of Structured Continua, Eds. M.Massoudi and K.R. Rajagopal, ASME, New York, 73-80.

32. Misra, A. and Chang, C.S. (1993), "Effective Elastic Moduli of Heterogeneous Granular Solids," International Journal of Solids and Structures, Vol. 30, No. 18, 2547-2566.
33. Misra, A. (1994), "Microstructure and Mechanical Properties of Drained Sands," Proceedings, 13th International Conference on Soil Mechanics and Foundation Engineering, New Delhi, India, January 1994, 9-12.
34. Misra, A., Becker, B.R. and Fricke, B.A., (1995), "A Theoretical Model of Thermal Conductivity of Idealized Soil," International Journal of Heating, Ventilating, Air Conditioning and Refrigerating Research, Vol. 1, No. 1, 81-96.
35. Misra, A. (1995), "Interfaces in Particulate Materials," Mechanics of Geomaterial Interfaces, Eds. A.P.S. Selvadurai and M. Boulon, Elsevier Science, The Netherlands, 513-536.
36. Misra, A. and Chen, X. (1995), "Effect of Particle Potentials and Elasticity Upon the Behavior of Ultra-fine Particulate Materials," Mechanics of Materials with Discontinuities and Inhomogeneities, Eds. A. Misra and C.S. Chang, ASME Press, New York, 117-131.
37. Misra, A. (1995), "A Mechanistic Model for Multi-Asperity Contact Between Surfaces," Numerical Models in Geomechanics, Eds. G. Pande and S. Pietruszczak, A.A. Balkema, Rotterdam, The Netherlands, 95-100.
38. Becker, B.R., Misra, A. and Fricke, B.A. (1996), "Bulk Refrigeration of Fruits and Vegetables. Part I: Theoretical Considerations of Heat and Mass Transfer." International Journal of Heating, Ventilating, Air Conditioning and Refrigerating Research, Vol. 2, No. 2, 122-134.
39. Becker, B.R., Misra, A. and Fricke, B.A. (1996), "Bulk Refrigeration of Fruits and Vegetables. Part II: Computer Algorithm for Heat Loads and Moisture Loss" International Journal of Heating, Ventilating, Air Conditioning and Refrigerating Research, Vol. 2, No. 3, 215-230.
40. Misra, A. (1996), "Particle Dynamics Simulations of Structures in Nano Powders," Materials and Manufacturing Processes, Vol. 11, No. 6, 925-934.
41. Misra, A. (1997), "Micromechanical Parameters of Particle Assemblies: Experiments and Numerical Simulations," Mechanics of Deformation and Flow of Particulate Materials, Eds. C.S. Chang, A. Misra, R.Y. Liang, and M. Babic, ASCE Specialty Publication, New York, 174-188.
42. Misra, A. (1997), "Effect of Heterogeneity Upon Stress-Strain Behavior of Particle Assemblies," Numerical Models in Geomechanics, Eds. S. Pietruszczak and G. Pande, A.A. Balkema, Rotterdam, The Netherlands, 15-20.
43. Misra, A. (1997), "Mechanistic Model for Contact between Rough Surfaces," Journal of Engineering Mechanics, ASCE, Vol. 123, No. 5, 475-484.
44. Misra, A. and Jiang, H. (1997), "Measured Kinematic Fields in the Biaxial Shear of Granular Materials," Journal of Computer and Geotechnics, Vol. 20, No. 3 /4, 267-285.
45. Misra, A. (1998), "Stabilization Characteristics of Clays using Class C Fly Ash," Transportation Research Record, No. 1611, 46-54.
46. Misra, A. (1998), "Particle Kinematics in Rod Assemblies: Experimental Observations," Physics of Dry Granular Media, Eds. H. Herrmann et al., Kluwer Publication, The Netherlands, 261-266.
47. Harrington, S., Zhu, D.-M., Thirunavukkarasu, A. and Misra, A. (1999), "Atomic Force Microscopy Study of Silica Nanopowder Compacts," Journal of Material Science, Vol. 34, 2075-2079.

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310. Sarikaya, R., Misra, A. and Poorsolhjouy, P. (2018) "Failure Prediction using Gibbs Formulation of Granular Micromechanics" International Mechanical Engineering Conference & Exposition, November 2018, Pittsburgh, PA.
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315. Nejadi Sadeghi, N. and Misra, A. (2019) "Tunable Band Gaps in Materials with Granular Microstructure" 2019 Society of Engineering Sciences Conference, October 13-15, 2019, Washington University, St. Louis, MO.
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318. De Angelo, M., NejadSadeghi, N., and Misra, A. (2019) “FE verification of chiral metamaterial designed using granular micromechanics” 2019 Society of Engineering Sciences Conference, October 13-15, 2019, Washington University, St. Louis, MO.
319. De Angelo, M., NejadSadeghi, N., Turco, E., dell’Isola, F. and Misra, A. (2019) “Parameter identification for minipantographs” 2019 Society of Engineering Sciences Conference, October 13-15, 2019, Washington University, St. Louis, MO.

Reports

320. Chang, C.S., Weeraratne, S.P., and Misra, A., (1985) “Stress-Strain Modeling of Sands Under Rotational Stress Path,” Report to National Science Foundation, December 1985.
321. Chang, C.S., Misra, A., Weeraratne, S.P., and Hashash, N., (1986) “Deformation Behavior of Sands - A Microstructural Approach,” Report to Air Force Office of Scientific Research.
322. Misra, A., Kabir, M.G. and Chang, C.S., (1990) “Constitutive Relations for Granular Solids with Particle Slidings and Fabric Changes,” Annual Report to Air Force Office of Scientific Research.
323. Becker, B.R., Misra, A. and Fricke, B.A., (1995) “Computer Algorithms for Calculations of Heat Loads and Moisture Loss in the Storage of Fruits and Vegetables,” Final Report to American Society of Heating, Refrigerating and Air-Conditioning Engineers, 158 pp.
324. Misra, A., Becker, B.R. and Jiang, H., (1996) “Utilization of Sub-Bituminous Coal Class C Fly Ash in Soil Stabilization,” Final Report to Kansas City Power and Light Company, 77 pp.
325. Misra, A., (2000) “Utilization of Western Coal Fly Ash in Construction of Highways in the Midwest,” Final Report to Mid-America Transportation Center, University of Nebraska, Lincoln, 89 pp.
326. Misra, A., Roohanirad, A., and Somboonyanon, P. (2003) “Guidelines for Roadway Management System (RMS) for Local Governments,” Final Report to Midwest Transportation Consortium, Iowa State University, Ames, 197 pp.

Presentations

1. “Physical Experimentation with Granular Assemblies,” Third Annual Joint Meeting of Geotechnical Engineering, Syracuse University, June 1986.
2. “A Microstructural Approach to Constitutive Modelling for Granular Soils,” Sixth Specialty Conference, Engineering Mechanics Division, ASCE, Buffalo, New York, May 1987.
3. “Stress-Strain Behavior of Sands Under Rotational Stress Paths,” Fourth Annual Joint Meeting of Geotechnical Engineering, Clarkson University, June 1987.
4. “Constitutive Modelling of Granular Soils,” Fifth Annual Joint Meeting of Geotechnical Engineering, Cornell University, June 1988.
5. “Fabric and Effective Moduli of Frictional Granulates,” Twelfth Canadian Congress of Applied Mechanics, Ottawa, Canada, May 1989.

6. "Micro-Mechanism of Induced Anisotropy in Granular Media," Third International Conference on Constitutive Laws for Engineering Materials: Theory and Applications, Tucson, Arizona, January 1991.
7. "Constitutive Relations for Granular Solids Accounting for Heterogeneous Deformation Fields," Eighth Engineering Mechanics Conference, ASCE, Columbus, Ohio, May 1991.
8. "A Discrete Model Analysis of Micro-Macro Crack Interactions in Particulate Composites," Twenty-second Midwestern Mechanics Conference, Rolla, MO, October 1991.
9. "Continuum Representation of Discrete Granular System," Twenty-second Midwestern Mechanics Conference, Rolla, MO, October 1991.
10. "Elastic Properties of Consolidated Granular Systems," 1992 ASME Applied Mechanics, Materials and Aerospace Summer Meeting, Scottsdale, Arizona, April 1992.
11. "Recent Advances and Future Trends in Constitutive Modelling of Soils Via Micromechanics," U.S.-Canada Workshop on Recent Accomplishments and Future Trends in Geomechanics in the 21st Century, Norman, Oklahoma, October 1992.
12. "Homogenization of Randomly Packed Elastic Grains Accounting for Particle Micromechanics," Missouri Academy of Science, Kansas City, April 1993.
13. "Effective Elastic Moduli of Random Packed Grains," First Joint ASCE/ASME/SES Meeting, University of Virginia, Charlottesville, VA, June 1993.
14. "Microstructure and Properties of Porous Solids," First Joint ASCE/ASME/SES Meeting, University of Virginia, Charlottesville, VA, June 1993.
15. "Effect of Particle Interaction on the Behavior of Consolidated and Unconsolidated Granular Aggregates," Workshop on Theory and Simulation of Compaction and Sintering of Powders, Tulane University, New Orleans, LA, December 1993.
16. "An Overview of Recent Advances in Geo-Mechanics - Applications in Engineering and Oil Industry," Invited lecture at Oil and Natural Gas Commission, Dehra Dun, India, January 1994.
17. "Summary of the Kansas City Annual Geotechnical Conference," Kansas City, April 1994.
18. "Micro-mechanical Models of Particulate Systems," The Royal Society-Unilever-Indo/UK Forum on Solid-Solid Interactions, Imperial College, London, United Kingdom, September 1994.
19. "Inter-Particle Potentials of Deformable Ultra-fine Particles," First Joint ASME Applied Mechanics and Materials Conference, Los Angeles, CA, June 1995.
20. "Effective Elastic Moduli of Particulate Systems," First Joint ASME Applied Mechanics and Materials Conference, Los Angeles, CA, June 1995.
21. "A Mechanistic Model for Multi-Asperity Contact Between Surfaces," Fifth International Symposium on Numerical Models in Geomechanics, Davos, Switzerland, September 1995.
22. "A Mechanistic Model for Rough Interfaces," Structures/Geotechnical Seminar, University of Missouri-Columbia, October 1995.

23. "A Mechanistic Model for Rough Anisotropic Interfaces," Structures/Geotechnical Seminar, University of Oklahoma, Norman, November 1995.
24. "Utilization of Class C Fly Ash for Soil Improvement," Third International Symposium on Environmental Geotechnology, San Diego, CA, June 1996.
25. "Properties of Known Kaolinite-Montmorillonite Mixtures," Third International Symposium on Environmental Geotechnology, San Diego, CA, June 1996.
26. "Particle Interactions in Aggregates of Ultra-fine Particles," ASME Applied Mechanics and Materials Conference, Baltimore, MD, June 1996.
27. "Experimental Measurements of Kinematic Fields in the Biaxial Shear of Simulated Granular Materials," ASME Applied Mechanics and Materials Conference, Baltimore, MD, June 1996.
28. "Micromechanics of Dense Particulate Systems," Grace Construction Products, Cambridge, MA, July 1996.
29. "Mechanics of Dense Particulate Systems," Physics Seminar, University of Missouri-Kansas City, September 1996.
30. "Utilization of Sub-Bituminous Coal Class C Fly Ash in Soil Stabilization," Kansas City Power and Light Company, Kansas City, MO, September 1996.
31. "ASR Behavior of Class C Fly Ash Modified Cement," Fourth Materials Engineering Conference, ASCE, Washington, D.C., November 1996.
32. "Behavior of Crumb Rubber Modified Hot Mix Asphalt," Fourth Materials Engineering Conference, ASCE, Washington, D.C., November 1996.
33. "Particle Kinematics of Rod Assemblies," Symposium on Recent Developments in the Mechanics of Geomaterials, 1996 International Mechanical Engineering Congress and Exposition, Atlanta, GA, November 1996.
34. "Experimentally Measured Micromechanical Parameters for Rod Assemblies," McNU'97, Joint Summer meeting of ASME/ASCE/SES, Evanston, IL, June 1997.
35. "Effect of Heterogeneity Upon Stress-Strain Behavior of Particle Assemblies," Sixth International Symposium on Numerical Models in Geomechanics, Montreal, Canada, July 1997.
36. "Biaxial Shear of Granular Materials," NATO Advanced Study Institute on Physics of Dry Granular Media, Cargese, France, September 1997.
37. "Stabilization Characteristics of Clays using Class C Fly Ash," 1998 Transportation Research Board Meeting, Washington, D.C., January 1998.
38. "Biaxial Shear of Granular Materials," Twelfth Engineering Mechanics Conference, ASCE, San Diego, CA, May 1998.
39. "Research Trends in Micromechanics of Particulate Materials," Chonnam National University, Kwangju, South Korea, July 1998.
40. "Application of Class C Fly Ash in Soil Stabilization," University of Incheon, South Korea, July 1998.
41. "Class C Fly Ash Clay Stabilization," Korean Institute of Civil Technology, Seoul, South Korea, July 1998.

42. "Particle Motion and Energy Distribution in Tumbling Ball Mills," European Comminution Conference, Albi, France, September 1998.
43. "Micromechanics of Geomaterials," Indian Institute of Technology, New Delhi, India, November 1999.
44. "Micromechanics of Rock Joints," Fourteenth Engineering Mechanics Conference, ASCE, Austin, Texas, May 2000
45. "Friction Behavior of Single Fracture," Joint ASME/ASCE/SES 2001 Mechanics and Materials Conference, San Diego, CA, June 2001.
46. "Micromechanics of Geomaterials," University of Roorkee, India, August 2001.
47. "Cementing Characteristics of Class C Fly Ash," International Conference on Beneficial Use of Recycled Materials in Transportation Applications, Crystal City, Virginia, November 2001.
48. "Load Displacement Relationships for Micropiles," ASCE International Deep Foundations Congress, Orlando, FL, February 2002.
49. "Micromechanics of Rock Joints," Kansas State University, Manhattan, KS, October 2002.
50. "Microstructural Mechanics Model For Cohesive Materials" ASME Mechanics and Materials Conference, Scottsdale, AZ, June 2003.
51. "Granular Material Model using Pseudo Particle Potentials" ASCE Engineering Mechanics Conference, Seattle, WA, July 2003.
52. "Utilization of Silo Stored and Poned Class C Fly Ash in Road Bases," 2003 International Ash Utilization Symposium, Lexington, KY, October 2003.
53. "Anisotropy and Adhesive Penetration Effects on d/a Interfacial Micromechanics," 82nd General Session & Exhibition of the IADR/AADR/CADR, Honolulu, March 2004.
54. "Micromechanics Model for Cohesive Material Failure," ASCE Engineering Mechanics Conference, Newark, Delaware, June 2004.
55. "Multi-asperity contact model for wave propagation through a rough fracture," Ninth International Symposium on Numerical Models in Geomechanics, Ottawa, Canada, August 2004.
56. "Micromechanics Model for Cohesive Materials," Ninth International Symposium on Numerical Models in Geomechanics, Ottawa, Canada, August 2004.
57. "Micromechanical Modeling of Materials: Examples from Cohesive Materials and Rough Interfaces," Physics Colloquium, University of Missouri-Kansas City, September 2004.
58. "Cold In-Place Recycling of Low Traffic Volume Asphalt Pavements Using Self-Cementing Fly Ash," Western Fuel Symposium, Billings, MT, October 2004.
59. "Micromechanical Modeling of Materials: Examples from Cohesive Materials and Rough Interfaces," International Congress on Computational Mechanics and Simulation, Kanpur, India, December 2004.
60. "Cold In-Place Recycling of Low Traffic Volume Asphalt Pavements Using Self-Cementing Fly Ash," Fly ash Symposium, Overland Park, KS, January 2005

61. "Integrating Entrepreneurship into Civil and Mechanical Engineering Curricula," Poster presentation, NSF Grantees Meeting, Washington, D.C., February 2005.
62. "Anisotropic Elasticity of Dentin: Micromechanical Considerations," 83rd General Session & Exhibition of the IADR/AADR/CADR, Baltimore, March 2005.
63. "Cold In-Place Recycling of Asphalt Pavements Using Self-Cementing Fly Ash: Field and Laboratory Study," World of Coal Ash, Lexington, Kentucky, April 2005.
64. "Micromechanical Analysis of Dentin Elastic Anisotropy," 2005 Joint ASME/ASCE/SES Conference on Mechanics and Materials (McMAT2005), Baton Rouge, LA, June 2005.
65. "Micromechanical Analysis of Dentin Elastic Anisotropy," Fourth International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity, Austin, TX, October 2005.
66. "Cold In-Place Recycling of Low Traffic Volume Asphalt Pavements Using Self-Cementing Fly Ash," Western Region Ash Group, Denver, CO, October 2005.
67. "Mathematical Modeling of Nano-Micro Scale Mechanics," Missouri Nanotechnology Alliance meeting on Nanotechnology at the Interface with Life Sciences Research, Kansas City, MO, November 2005.
68. "Cold In-Place Recycling of Asphalt Pavements Using Self-Cementing Fly Ash: Field and Laboratory Study," 43rd Paving and Transportation Conference, Albuquerque, NM, January 2006.
69. "Mechanical Behavior of Interfaces in Granular Materials," 2nd NASA/ARO/ASCE Workshop on Granular Materials in Lunar and Martian Exploration, Earth and Space 2006, Houston, March 2006.
70. "Multi-Scale Analysis of Dentinal Matrix Micromechanical Properties," 35th Annual Meeting & Exhibition of the AADR, Orlando, FL, March 2006.
71. "Multi Asperity Micromechanical Model of Rock Joints with Application to Wave Propagation," 2006 Joint Assembly of American Geophysical Union, Baltimore, MD, May 2006.
72. "Micromechanics Based Imperfect Interface Model with Application to Wave Propagation," 15th U.S. National Congress of theoretical and Applied Mechanics, Boulder, CO, June 2006.
73. "Application of a Micromechanical Model to Wave Propagation Through Nonlinear Rough Interfaces Under Stress," 2006 IEEE International Ultrasonics Symposium, Vancouver, British Columbia, Canada, October 2006.
74. "Load and Resistance Factor Design (LRFD) Method for Deep Foundations," Southwest Geotechnical Conference, Overland Park, KS, April 2007.
75. "Resilient Moduli and Structural Layer Coefficient of Flyash Stabilized Recycled Asphalt Base" World of Coal Ash Conference, May 2007 Covington, KY
76. "Rate-Dependent Micromechanical Model of Imperfect Interfaces with Application to Wave Propagation," 18th American Society of Civil Engineers Engineering Mechanics Conference, Blacksburg, VA, June 2007.
77. "Parametric Studies of Wave Propagation through Imperfect Interfaces Using Micromechanics Based Effective Stiffness," 34th Annual Review of Progress in Quantitative Nondestructive Evaluation, Golden, CO, July 2007.
78. "Micromechanics of Cohesive Materials and Rough Interfaces," Indian Institute of Technology, Kanpur, India, August 2007.

79. "Reliability Based Design Methodology for Foundations," Indian Institute of Technology, Kanpur, India, August 2007.
80. "Geotechnical Investigations Requirements for Trenchless Technology," US-China Workshop on Trenchless Technology, Wuhan, China, October 2007.
81. "Analytical Models for Soil-Structure Interaction during Pipe-Jacking," International Conference on Geological Engineering, Wuhan, China, October 2007.
82. "Micromechanical Models for Rough Interfaces," Hohai University, Nanjing, China, October 2007.
83. "Rate-Dependent Micromechanical Model Applied to Wave Propagation through Rough Interfaces," 2007 IEEE International Ultrasonics Symposium, New York, NY, October 2007.
84. "Micro-scale Compositional and Mechanical Analysis of Primary Dentin," 37th Annual Meeting & Exhibition of the AADR, Dallas, TX, April 2008.
85. "Keynote Address: Adhesive Dentin Interfacial Characterization and Micromechanical Behavior," 37th Annual Meeting & Exhibition of the AADR, Dallas, TX, April 2008.
86. "Load and Resistance Factor Design (LRFD) of Deep Foundations," Annual South Dakota Engineering Society Meeting, Rapid City, SD, April 2008.
87. "Effect of Contact Viscosity and Roughness on Interface Stiffness and Wave Propagation," 35th Annual Review of Progress in Quantitative Nondestructive Evaluation, Chicago, IL, July 2008.
88. "Microstructure and Composition Based Constitutive Relationships for Meniscus/Cartilage, 35th Society of Industrial and Applied Mathematics Life Sciences Conference, Montreal, Canada, August 2008.
89. "Micromechanics of Interfaces," 12th Conference of the International Association for Computer Methods and Advances in Geomechanics, Goa, India, October 2008.
90. "Full Depth Reclamation of Asphalt Pavements using Class C Fly Ash," Lafarge/ Kansas City Power & Light Fly Ash Seminar, Kansas City, MO, February 2009.
91. "Evaluation of Traditional Lateral Pile Capacity Method Using an LRFD Approach" International Foundation Congress & Equipment Expo 2009, Orlando, FL, March 2009.
92. "Two-Level Homogenization Model for Sound and Caries Affected Dentin Elasticity", General Session & Exhibition of the International Association of Dental Research (IADR/AADR/CADR), Miami, FL, March-April 2009.
93. "Micromechanical Model of Interfaces with Rate-Dependent Asperity Contacts" 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, VA, June 2009
94. "Service Limit State Design of Deep Foundations for Compatibility with Structural Performance" Panel presentation, 2010 89th Annual Meeting of Transportation Research Board, Washington, D.C., January 2010 (invited).
95. "Relating *Ab Initio* Simulations of Complex Atomic Models to Elastic and Failure Behavior at Continuum Scales" 34th International Conference & Exposition on Advanced Ceramics & Composites (ICACC), Daytona Beach, Florida, January 2010 (invited).
96. "Relating *Ab Initio* Simulations of Complex Atomic Models to Mechanical Behavior at Continuum Scales", Physics

Colloquium, University of Missouri-Kansas City, February 2010 (invited).

97. "Fatigue Behavior of Dentin Adhesives under Dry and Wet Conditions," 39th Annual Meeting & Exhibition of the AADR, Washington, DC, March 2010.
98. "Micromechanical Perspective of the Shear Induced Volume Change in Granular Geomaterials" 2010 Engineering Mechanics Institute Conference, Los Angeles, CA, August 2010.
99. "Micromechanics Based Higher-Order Continuum Theory Applied to Failure Simulation Of Cohesive Granular Materials" 2010 Engineering Mechanics Institute Conference, Los Angeles, CA, August 2010.
100. "Stress–Displacement Behavior of Rough Interfaces under Combined Normal and Shear Loading Based upon a Micromechanical Approach" 2010 Engineering Mechanics Institute Conference, Los Angeles, CA, August 2010.
101. "Mathematical model for anomalous creep in model dentin adhesives," 89th International Association of Dental Research (IADR/AADR/CADR) General Session & Exhibition, San Diego, CA March 2011.
102. "Scale Dependent Stress–Displacement Relationship of Rough Surface Contact under Combined Normal-Shear Loading" 2011 Engineering Mechanics Institute Conference, Boston, MA, June 2011.
103. "Granular Media Micromechanics and Higher Order Continuum Theories" Indian Institute of Technology, Gandhinagar, August 2011 (invited).
104. "Reliability Based Design of Drilled Shafts: LRFD and Performance Based Design" Annual Kansas City Specialty Geotechnical Seminar, January 2012 (invited).
105. "Micromechanics Based Second Gradient Continuum Theory for Cementitious Granular Materials" Workshop on Second Gradient and Generalized Continua, Cisterna di Latina, Italy March 2012 (invited).
106. "Second gradient continuum mechanics theory and its micromechanical derivation for cohesive granular materials" Applied Math Seminar, Department of Mathematics University of Kansas, April 2012 (invited).
107. "Second gradient micro-damage continuum theory applied to cementitious granular materials" 2012 Engineering Mechanics Institute Conference, South Bend, IN, June 2012.
108. "Nonlinear viscoelastic-damage modeling using granular micromechanics and finite element method" Abstracts 2012 Engineering Mechanics Institute Conference, South Bend, IN, June 2012
109. "Micro-damage model for water saturated chemically active fibrous materials" Abstracts 2012 Engineering Mechanics Institute Conference, South Bend, IN, June 2012
110. "Numerical simulation of rock joint shear test using particle flow theory" Abstracts 2012 Engineering Mechanics Institute Conference, South Bend, IN, June 2012
111. "Relationship of theoretical nano-scale structure/properties of calcium silicate hydrate (CSH) and experimental micro-scale properties of cement paste" NSF CMMI Engineering Research and Innovation Conference, July 2012 (invited).
112. "Micromechanics Based Second Gradient Continuum Theory for Cementitious Granular Materials" Workshop on Mathematics and the Materials Genome Initiative, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, September 2012 (invited).
113. "Granular Micromechanics – Discrete Element and Continuum Modeling" South China University of

Technology, Guangzhou, China, October 2012 (invited).

114. “Deep Foundation Analysis – ‘t-z’ and p-y’ Methods with Application to Probabilistic Analysis” South China University of Technology, Guangzhou, China, October 2012 (invited).
115. “Micromechanics based continuum mechanics theory for cohesive granular materials” University of Science and Technology, Beijing, China, November 2012 (invited).
116. “Micromechanics based continuum mechanics theory for cohesive granular materials” Hebei University of Technology, Tianjin, China, November 2012 (invited).
117. “Deep Foundation Analysis – ‘t-z’ and p-y’ Methods with Application to Probabilistic Analysis” Chongqing Jiaotong University Chongqing, China, November 2012 (invited).
118. “Granular Micromechanics – Discrete Element and Continuum Modeling” Chongqing Jiaotong University Chongqing, China, November 2012 (invited).
119. “Micromechanics based continuum mechanics theory for cohesive granular materials” Chongqing University Chongqing, China, November 2012 (invited).
120. “Micromechanics based continuum mechanics theory for cohesive granular materials” Shanghai Jiaotong University Shanghai, China, November 2012 (invited).
121. “Micromechanics based continuum mechanics theory for cohesive granular materials” Kansas State University, Manhattan, April 2013 (invited).
122. “Micromechanics based second gradient continuum mechanics theory for damage modeling of cohesive granular materials” PacRim 2013, San Diego, CA, June 2013 (invited).
123. “Nonlinear micro-poromechanics of fluid saturated active fibrous media” 4th Canadian Conference on Nonlinear Solid Mechanics, Montreal, Quebec, July 2013 (invited).
124. “Rate-dependent granular micromechanics model for materials with damage and plasticity” 2013 Engineering Mechanics Institute Conference, Northwestern University, Chicago, IL, August 2013.
125. “Elastic constants of materials with general anisotropy based upon granular micromechanics” 2013 Engineering Mechanics Institute Conference, Northwestern University, Chicago, IL, August 2013.
126. “Degree of swelling and sorption of chemically active materials modeled using granular micromechanics” 2013 Engineering Mechanics Institute Conference, Northwestern University, Chicago, IL, August 2013.
127. “Shear behavior of contacting rough surfaces” 2013 Engineering Mechanics Institute Conference, Northwestern University, Chicago, IL, August 2013.
128. “Shear band modeling in material bilayer using granular micromechanics based second gradient theory” 2013 Engineering Mechanics Institute Conference, Northwestern University, Chicago, IL, August 2013.
129. “Stability theory- a short course” South China University of Technology, Guangzhou, China, October 2013 (invited).
130. “Nonlinear micro-poromechanics of fluid saturated active fibrous media” Chongqing Jiaotong University Chongqing, China, October 2013 (invited).

131. “Nonlinear micro-poromechanics of fluid saturated active fibrous media” Chongqing University Chongqing, China, October 2013 (invited).
132. “Micromechanics of hard and soft biomaterials” Bioengineering Colloquium, University of Kansas, February 2014 (invited).
133. “Rate dependent damage model using granular micromechanics and thermo-mechanics frameworks” Euromech Colloquium 563, Cisterna Di Latina, Italy, March 2014 (invited).
134. “Granular micromechanics model of geomaterials derived in thermo-mechanics framework” Ecole Centrale de Nantes, France, March 2014 (invited).
135. “Micromechanics based shear and closure behavior of contacting rough surfaces” IFSTTAR, Nantes, France, March 2014 (invited).
136. “Particle kinematics and instability in 2D regular and random granular assemblies” 2014 Engineering Mechanics Institute Conference, McMaster University, Hamilton, Canada, August 2014.
137. “Thermodynamically consistent granular micromechanics model of cementitious materials” 2014 Engineering Mechanics Institute Conference, McMaster University, Hamilton, Canada, August 2014.
138. “Thermomechanics based granular micromechanics rate dependent coupled damage-plasticity model” 2014 Society of Engineering Sciences Conference, Purdue University, West Lafayette, October 2014.
139. “Granular micromechanics model for cementitious materials” 2014 Society of Engineering Sciences Conference, Purdue University, West Lafayette, October 2014.
140. “Granular micromechanics model predicts loading path dependent behavior of geomaterials” Bilateral French-Italy Workshop Going down to the microscale in multiphysics problems from seismic driven risks to petroleum geomechanics, Arpino (Italy), May 4-6, 2015 (invited).
141. “Rate dependent coupled damage-plasticity model of granular materials derived in thermo-mechanics framework” Shanghai Jiao Tong University, China, May 2015 (invited).
142. “Higher order continuum model based upon granular micromechanics” 2015 Engineering Mechanics Institute Conference, Stanford University, CA, June 16-19 2015 (invited).
143. “Micro-macro insights to failure of cementitious materials using granular micromechanics model” 2015 Engineering Mechanics Institute Conference, Stanford University, CA, June 16-19 2015.
144. “Granular micromechanics: A paradigm for continuum modeling” INCAM 2015, Indian National Conference on Applied Mechanics, Indian Institute of Technology, Delhi, July 13-15, 2015 (invited).
145. “Path dependent failure analysis of cementitious materials using granular micromechanics” Advanced Cement Based Materials Conference, Kansas State University, Manhattan, KS July 20-22, 2015 (invited).
146. “Micromechanics of granular geomaterials and interfaces: Review” Qinghai University, Xining, China, August, 2015 (invited).
147. “Micromechanics of granular geomaterials and interfaces: Review” Shandong University of Technology, Zibo, China, September, 2015 (invited).
148. “Micromorphic model derived based upon granular micromechanics” 2015 Society of Engineering Sciences

Conference, Texas A&M University, College Station, October 26-27, 2015.

149. “Granular micromechanics model predicts the effect of intermediate principal stress and loading path on failure of cementitious materials” 2015 Society of Engineering Sciences Conference, Texas A&M University, College Station, October 26-27, 2015.
150. “Micromorphic model derived based upon granular micromechanics” Workgroup on Computational Mechanics of Generalized Continua with Microstructure Materials and Applications, Scuola Superiore di Catania, Italy, Oct 29-31, 2015 (invited).
151. “Granular micromechanics Leads to Micromorphic Continuum Model” Indian Institute of Technology, Delhi, January 12, 2016 (invited).
152. “Granular micromechanics Leads to Micromorphic Continuum Model” Fudan University, Shanghai, May 6, 2016 (invited).
153. “Materials and Mechanics: Lessons from Bio- and Natural-Material Characterization and Modeling” at Chengdu University of Technology, Chengdu, China, May 12, 2016 (invited).
154. “Micromorphic Model including grain spins based upon granular micromechanics” *Mini-symposium Keynote*, 2016 Engineering Mechanics Institute Conference, Vanderbilt University, TN, May 22-25 2016 (invited).
155. “Grain size effect in granular micromechanics” 2016 Engineering Mechanics Institute Conference, Vanderbilt University, TN, May 22-25 2016.
156. “New paradigms for mechanical behavior with implications to materials genome – Lessons at diverse scales from ab initio modeling and granular micromechanics” International Workshop on the Genome of Stone-based Civil Infrastructure Materials, University of Science and Technology, Beijing, China, June 8-9, 2016 (invited).
157. “Granular micromechanics Leads to Micromorphic Continuum Model” National University of Singapore, June 17, 2016 (invited).
158. “Micromorphic Continuum Model Derived from Granular Micromechanics” School on Models of Generalized Continua characterized by Quasi-Inextensible Fibrous Structures: New Ideas for Models and Applications, Arpino, Italy, September 21, 2016 (invited).
159. “Granular micromechanics Leads to Micromorphic Continuum Model” University of Tsukuba, Japan, October 14, 2016 (invited).
160. “Application of granular micromechanics to path-dependent and rate-dependent behavior of geomaterials” Huazhong University of Science and Technology, Wuhan, China, October 19, 2016 (invited).
161. “Application of granular micromechanics to path-dependent and rate-dependent behavior of geomaterials” Wuhan University of Technology, Wuhan, China, October 20, 2016 (invited).
162. “Granular micromechanics Leads to Micromorphic Continuum Model” China Geosciences University, Wuhan, China, October 20, 2016 (invited).
163. “Granular (meta)materials with high micro-scale rigidity-extensibility ratio” Generalized and microstructured continua: [new ideas in modeling] and/or [applications to structures with (nearly)inextensible fibers], Arpino, Italy, April 3-8, 2017 (invited).
164. “Micromorphic Continuum Models for Granular Metamaterials” Short Course on Energy Methods in the

Mechanics of Metamaterials, Warsaw University of Technology, Warsaw, Poland, May 15-26, 2017 (invited).

165. “Displacement and Rotational Wave Dispersion in Granular Solids” 2017 Engineering Mechanics Institute Conference, San Diego, CA, June 4-7, 2017.
166. “Granular micromechanics: a paradigm for micromorphic continuum mechanics” Indian Institute of Technology, Madras, India, July 5, 2017 (invited).
167. “Molecules to Meters: Predicting Properties and Function” Institute for Bioengineering Research (IBER), University of Kansas, June 9, 2017 (invited).
168. “Rate dependent granular micromechanics model for polymeric biomaterials” French-Italy Workshop on Bone Biomechanics: multiscale and multiphysical aspects, Giuliano di Roma, Italy, September 26-28, 2017 (invited).
169. “Granular Micromechanics Paradigm for Structural Material Modeling” *Plenary Speaker*, International Conference on Structural Engineering and Computational Mechanics, Guangzhou, China, August 25-27, 2017 (invited).
170. “Granular micromechanics: a paradigm for micromorphic continuum mechanics” University of Macau, Macau, August 30, 2017 (invited).
171. “Granular micromechanics paradigm for structural material modeling” Guangzhou University, China, September 2, 2017 (invited).
172. “Granular micromechanics and Interfaces of Rough Solids” University of Tsukuba, Japan, September 6, 2017 (invited).
173. “Granular micromechanics: a paradigm for micromorphic continuum mechanics” Kyoto University, Japan, September 8, 2017 (invited).
174. “Granular Micromechanics: Paradigm for Modeling Structural/Geo Materials” ERDC, US Army Experiment Station, Vicksburg, MS, October 27, 2017 (invited).
175. “Granular micromechanics: a paradigm for continuum mechanics” University of California, Berkeley, February 1, 2018 (invited).
176. “Failure and Damage of Mineralized Tissue under Tension” Euromech 594, Nancy, France, May 15, 2018 (invited).
177. “Granular micromechanics: a paradigm for continuum mechanics” LM3, University of Lorraine, Metz, May 16, 2018 (invited).
178. “Variational Methods and Granular Metamaterials” Short Course on Energy Methods in the Mechanics of Metamaterials as part of Fulbright Specialist award, Warsaw University of Technology, Warsaw, Poland, May 18-June 3, 2018 (invited).
179. “Granular micromechanics: a paradigm for continuum mechanics” International symposium on Geo-Mechanics from Micro to Macro, Atlanta, GA, September 10-12, 2018.
180. “Granular micromechanics: bridging grain interactions and continuum descriptions” *Plenary Speaker*, International Conference on Nonlinear Solid Mechanics, Roma, Italy, June 16-19, 2019 (invited).
181. “Shear and closure behavior of contacting rough surfaces” International Conference on Nonlinear Solid

Mechanics, Roma, Italy, June 16-19, 2019 (invited).

182. “Application of Micromorphic Model based upon Granular Micromechanics” Joint MEMOCS Workshop on Models of Complex Materials and Systems, Arpino, Italy, June 20-23, 2019 (invited).
183. “Granular micromechanics: a paradigm for continuum modelling” Zhejiang University, Hangzhou, China, September 3, 2019 (invited).
184. “Granular micromechanics: a paradigm for continuum modelling” Guangxi University of Science and Technology, Liuzhou, China, September 6, 2019 (invited).
185. “Non-classical Micromorphic Continuum Model for Granular Microstructure Design” Poster presentation at the 2019 NSF Mechanics of Materials and Structures Grantees Meeting at SES, Washington University, St. Louis, MO, October 13, 2019 (invited).
186. “Granular micromechanics: paradigm for bridging grain interactions and continuum descriptions” 2019 Society of Engineering Sciences (SES) Conference, Washington University, St. Louis, MO, October 13-15, 2019 (invited).
187. “Granular micromechanics: paradigm for bridging grain interactions and continuum descriptions” Center for Nonlinear Studies Colloquia, Los Alamos National Laboratories, NM, January 13, 2020 (invited).

Patents:

1. Patent disclosure entitled “Portable sample-holder tracking system for homotopic cross-instrument measurements in microscopy/spectroscopy (ID 09KU081M)”

GRANTS

Research Grants

1. ASHRAE, \$93,598, 09/91-09/93, *Co-Principal Investigator*. Title: "Development of a design procedure for thermal energy storage tanks utilizing technologies which separate the manufacture of ice from the storage of ice."
2. ASHRAE, \$81,544, 04/93-09/95, *Co-Principal Investigator*. Title: "Computer Algorithms for Heat Transfer and Moisture Loss in Bulk Storage of Granular Materials."
3. National Science Foundation, \$60,962, 11/92-11/94, *Principal Investigator*. Title: "Engineering Research Equipment: Computing Workstation."
4. University of Missouri Research Board, \$32,900, 6/93-5/95, *Principal Investigator*. Title: "A Model for Failure of Granular Geomaterials."
5. Kansas City Power and Light Company, \$50,000, 1/95-9/96, *Principal Investigator*. Title: "Utilization of Western Coal Fly Ash in the Construction of Highways in the Midwest."
6. U.S. Department of Transportation, Mid-America Transportation Center, University of Nebraska-Lincoln, \$58,019, 9/95-8/98, *Principal Investigator*. Title: "Utilization of Western Coal Fly Ash in the Construction of Highways in the Midwest."
7. ASHRAE, \$89,158, 04/96-07/97, *Co-Principal Investigator*. Title: "Computer Algorithms for Refrigeration Loads and Thermal Properties of Heterogeneous Foods and Beverages."
8. Kansas City Water Services Department, \$16,590, 01/98-06/98, *Principal Investigator*. Title: "Municipal Applications of PVC Pipes and Plastic Shrink Wrap."
9. U.S. Department of Transportation, Midwest Transportation Consortium, \$66,350, 12/00-11/03, *Principal Investigator*. Title: "Roadway Management System - Pavement Characterization."
10. Missouri Local Transportation Assistance Program, Missouri Department of Transportation, \$5,000, 12/00-11/03, *Principal Investigator*. Title: "Roadway Management System - Pavement Characterization."
11. Kansas Local Transportation Assistance Program, University of Kansas, \$2,500, 12/00-12/02, *Principal Investigator*. Title: "Roadway Management System - Pavement Characterization."
12. Bucher, Willis & Ratliff, and Shafer, Warren & Kline, \$2,000, 12/00-12/02, *Principal Investigator*. Title: "Roadway Management System - Pavement Characterization."
13. U.S. Department of Energy, Combustion Byproducts Recycling Consortium, \$76,563, 2/01-6/04, *Principal Investigator*. Title: "Crushed Aggregates from Class C Fly Ash."
14. Kansas City Power and Light Company, \$20,061, 2/01-1/03, *Principal Investigator*. Title: "Crushed Aggregates from Class C Fly Ash."
15. Kansas City Power and Light Company, \$64,390, 8/03-6/05, *Principal Investigator*. Title: "Cold in-place Recycling of Asphalt Pavements using Class C Fly Ash: Field and Laboratory Study."
16. National Institute of Health, \$1,367,150, 7/03-6/08, *Investigator*. Title: "Im/Miscible Adhesive/Dentin Interface: Structure/Mechanic (PI: Paulette Spencer)."
17. UMKC Chancellor's Innovation Award, \$29,560, 7/04-12/05, *Co-Principal Investigator*. Title: "Multi-disciplinary

Research and Teaching at UMKC-Center for Research on Interfacial Structure and Properties (UMKC-CRISP).”

18. National Science Foundation, \$99,978, 9/04-8/06, *Principal Investigator*. Title: “Integrating Entrepreneurship Concepts and Entrepreneurial Service Learning Components into Undergraduate Civil and Mechanical Engineering Courses.”
19. National Institute of Health, \$648,000, 9/04-9/07, *Trainee Mentor*. Title: “Dental Science Research Training Program for Engineers (PI: J. Lawrence Katz).”
20. Kansas City Power and Light Company, \$40,477, 1/05-12/08, *Principal Investigator*. Title: “Performance Evaluation of Road Base Constructed from Cold in-place Recycled Asphalt Pavements using Self Cementing Fly Ash.”
21. National Science Foundation, \$429,990, 9/05-8/09, *Co-Principal Investigator*. Title: “Dynamic Simulation of Joints Using Multi-Scale Modeling.” (PI: T. Guess)
22. U.S. Department of Energy, Combustion Byproducts Recycling Consortium, \$24,987, 5/06-7/08, *Principal Investigator*. Title: “Cold in-place Recycling of Asphalt Pavements using Self Cementing Fly Ash: Analysis of Pavement Performance and Structure Number.”
23. Kansas NASA EPsCOR, \$15,000, 5/08-9/09, *Principal Investigator*. Title: “Constitutive Models of lunar soils and interfaces for numerical simulation using mesh free methods.”
24. National Institute of Health/NIDCR, \$1,490,814, 5/08-4/13, *Co-Principal Investigator*. Title: “Im/Miscible Adhesive/Dentin Interface: Structure/Mechanic (PI: Paulette Spencer).”
25. National Institute of Health/NIDCR, \$123,939, 10/09-9/11, *Co-Principal Investigator*. Title: “Im/Miscible Adhesive/Dentin Interface: Structure/Mechanic – ARRA Supplement” (PI: Paulette Spencer).”
26. National Institute of Health/NIDCR, \$1,813,385, 8/11-9/16, *Co-Principal Investigator*. Title: “Proton Sponge Adhesives, Interfacial Milieu: Molecular Structure-Mechanics (PI: Paulette Spencer/Jennifer Laurence).”
27. National Science Foundation, \$280,000, 7/11-12/15, *Principal Investigator*. Title: “Relationship of theoretical nano-scale structure/properties of calcium silicate hydrate (CSH) and experimental micro-scale properties of cement paste”
28. Kansas Department of Transportation, \$55,000, 7/12-6/13, *Co-Principal Investigator*. Title: “Calibrating mechanistic-empirical pavement design guide for Kansas.” (PI: Jie Han)
29. Kansas Department of Transportation, \$58,000, 7/12-6/13, *Co-Principal Investigator*. Title: “Development of resistance factors for piles from PDA data.” (PI: Robert Parsons)
30. National Institute of Health/NIDCR, \$1,519,336, 8/15-1/20, *Co-Principal Investigator*. Title: “Peptide-Polymer Engineering Dentin/Adhesive Interfacial Bond Integrity (PI: Paulette Spencer).”
31. National Science Foundation, \$380,086, 8/17-8/20, *Principal Investigator*. Title: “Non-classical Micromorphic Continuum Model for Granular Microstructure Design”
32. Kansas Department of Transportation, \$86,939, 8/18-1/20, *Co-Principal Investigator*. Title: “Development of test procedures to evaluate moisture susceptibility of asphalt mixtures used in the state of Kansas, Phase I: surface free energy for binders” (PI: Masoud Darabi)
33. National Science Foundation, \$97,682, 9/18-8/20, *Principal Investigator*. Title: “Planning Grant: Engineering Research Center for Intelligent Infrastructure for Safe, Efficient and Resilient Mobility (ERC-I2SERM)”

Travel Grants

1. National Science Foundation (through the University of Arizona), \$300, 12/90. Travel grant to present paper at the 3rd International Conference on Constitutive Laws for Engineering Materials: Theory and Applications at Tucson, Arizona, January 1991.
2. National Science Foundation (through the University of Oklahoma), \$250, 10/92. Travel grant to U.S.-Canada Workshop on Recent Accomplishments and Future Trends in Geomechanics in the 21st Century, Norman, Oklahoma, October 1992.
3. Institute of Mechanics and Materials, University of California, San Diego (through the Tulane University), \$571, 12/93. Travel grant to Workshop on Theory and Simulation of Compaction and Sintering of Powders, Tulane University, New Orleans, LA, December 1993.
4. UMKC International Fellowship Grant, \$350, 7/95. To attend the 5th International Symposium on Numerical Models in Geomechanics, Davos, Switzerland, September 1995.
5. NATO Advanced Study Institute Grant, \$700, 9/97. To attend NATO Advanced Study Institute on Physics of Dry Granular Media, Cargese, France, September 1997.
6. National Asphalt Paving Association, \$1460, 6/99. To attend Asphalt Technology Professor Training Course, National Center for Asphalt Technology, Auburn, Alabama, June 1999.
7. Midwest Association of Trenchless Technology, \$875, 4/01. To attend No-Dig 2001 Conference, Nashville, Tennessee.

D. SERVICE.

PROFESSIONAL SERVICE

Society Memberships:

- Member, American Society of Civil Engineers (ASCE).
- Member, American Society of Mechanical Engineers (ASME).
- Member, Particle Technology Forum, American Institute of Chemical Engineers (AIChE).
- Member, International Association for Dental Research (IADR).
- Member, American Association for the Advancement of Science (AAAS).
- Member, American Geophysical Union (AGU).
- Member, Society of Experimental Mechanics (SEM).

Society Committee Memberships/Chairmanships:

- Member, Geotechnical Engineering Committee, ASCE-Kansas City Section, (1991, 1993-2013).
- Member, ASME Applied Mechanics Division Committee on Geomechanics (1992-).
- Corresponding Member, Technical Subcommittee 13 on Nonbuilding Structures, Building Seismic Safety Council (2001-).
- Chair, ASME Applied Mechanics Division Committee on Geomechanics (2001-5).
- Member, ASME Applied Mechanics Division-Materials Division Joint Committee on Constitutive Equations (1992-).
- Member, ASCE Engineering Mechanics Division Properties of Materials Committee (1996-).
- Member, ASCE Engineering Mechanics Division Granular Flow Sub-Committee (1997-2001).
- Member, Transportation Research Board Geomaterials Section Committee on Chemical and Mechanical Stabilization (1997-2001).
- Control Group Member, ASCE Engineering Mechanics Division Granular Materials Committee (2001-5, 2010-).
- Vice Chair, ASCE Engineering Mechanics Division Granular Materials Committee (2004-6).
- Chair, ASCE Engineering Mechanics Division Granular Materials Committee (2006-10).

Journal Editorial Board/Technical Advisory Group Memberships:

- Member, Geotechnical Technical Advisory Group of MOTREC, Missouri Department of Transportation (2001-3).
- Member, Editorial Board of the journal of Computers and Geotechnics, Elsevier Science (2001-2015).
- Member, Editorial Board of the Journal of Geotechnical and Geoenvironmental Engineering, American Society of Civil Engineers (2006-8).
- Associate Editor, the Journal of Engineering Mechanics, American Society of Civil Engineers (2007-).
- Member, Editorial Board of the Journal of Pipeline Systems Engineering and Practice, American Society of Civil Engineers (2009-2017).
- Associate Editor, the Journal of Nanomechanics and Micromechanics, American Society of Civil Engineers (2010-).
- Member, Editorial Board of the International Journal of Geotechnical Engineering, JA Ross Publishing (2010-2012).
- Member, Editorial Board of Mathematics and Mechanics of Solids, Sage (2018-).
- Member, Editorial Board of Mathematics and Mechanics of Complex Systems, MPS (2019-).

Conference Session Chairmanships/Organizer:

- **Chair**, Session on Damage/Crack/Plasticity, 22nd Midwestern Mechanics Conference, Rolla, MO, October 1991.
- **Organizer and Session Chair**, Symposium on Mechanics of Materials with Discontinuities and Heterogeneities (4 sessions), Joint Applied Mechanics and Materials Summer Conference, American Society of Mechanical Engineers, Los Angeles, CA, June 1995.
- **Organizer**, Symposium on Computational and Experimental Methods for Particulate Materials (4 sessions), Applied Mechanics and Materials Summer Conference, American Society of Mechanical Engineers, Baltimore, MD, June 1996. **Session chair**, Symposium on Powders, Particles and Plasticity at the above conference.
- **Organizer and Session Chair**, Symposium on Recent Developments in the Mechanics of Geomaterials (2 sessions), 1996 International Mechanical Engineering Congress and Exposition, Atlanta, GA, November 1996.
- **Organizer and Session Chair**, Symposium on Mechanics of Particulate Materials (9 sessions), 1997 Joint American Society of Mechanical Engineers/ American Society of Civil Engineers/ Society of Engineering Science, Northwestern University, June 1997.

- **Organizer and Session Chair**, Symposium on Mechanics of Composite, Discrete and Particulate Civil Engineering Materials (5 sessions), 1998 American Society of Civil Engineers Engineering Mechanics Specialty Conference, San Diego, May 1998.
- **Co-Director**, Trenchless Technology Symposium: New Installations and Pipeline Renewal, Kansas City, MO, March 1999.
- **Co-Director**, Trenchless Pipeline Renewal Design and Construction '99, Kansas City, MO, November 1999.
- **Co-Director**, Trenchless Technology Conference, Kansas City, MO, September 2000.
- **Session Chair**, Trenchless Technology Conference, St Louis, MO, November 2000.
- **Organizer and Session Chair**, Symposium on Recent Development in Geomechanics (6 sessions), 2001 Joint Mechanics and Materials Conference of American Society of Mechanical Engineers/ American Society of Civil Engineers/ Society of Engineering Science, San Diego, CA, June 2001.
- **Organizer and Session Chair**, Symposium on Instabilities in Geomechanics (2 sessions), 2003 American Society of Mechanical Engineers Mechanics and Materials Conference, Scottsdale, AZ, June 2003.
- **Session Chair**, Session on Granular Mechanics, 2003 American Society of Civil Engineers Engineering Mechanics Conference, Seattle, WA, July 2003.
- **Session Chair**, Session on Microleakage, 82nd General Session & Exhibition of the International Association of Dental Research (IADR/AADR/CADR), Honolulu, March 2004.
- **Session Chair**, Session on Instabilities in Geo/Granular Materials, 2004 American Society of Civil Engineers Engineering Mechanics Conference, Newark, Delaware, June 2004.
- **Session Chair**, Session on Numerical Algorithms: Formulation & Performance, International Symposium on Numerical Models in Geomechanics (NUMOG IX), Ottawa, Canada, August 2004.
- **Session Chair**, Session on Fracture and Failure, International Congress on Computational Mechanics and Simulation (ICCMS-04), Kanpur, India, December 2004.
- **Session Chair**, Session on Multiphase Granular Materials, McMat 2005, Joint Mechanics and Materials Conference of American Society of Mechanical Engineers/ American Society of Civil Engineers/ Society of Engineering Science, Baton Rouge, LA, June 2005.
- **Organizer and Session Chair**, Session on Multi-scale Mechanics of Hierarchical Materials and Interfaces, McMat 2005, Joint Mechanics and Materials Conference of American Society of Mechanical Engineers/ American Society of Civil Engineers/ Society of Engineering Science, Baton Rouge, LA, June 2005.
- **Session Chair**, Session on Modeling Issues for Granular Materials, 2nd NASA/ARO/ASCE Workshop on Granular Materials in Lunar and Martian Exploration, Earth and Space 2006, Houston, March 2006.
- **Session Chair**, Session on Adhesive Microstructure Analysis, 35th Annual Meeting & Exhibition of the American Association of Dental Research (AADR), Orlando, FL, March 2006.
- **Organizer and Session Chair**, Symposium on Wave Propagation in Granular Materials, 15th U.S. National Congress of Theoretical and Applied Mechanics, Boulder, Co, June 2006.
- **Session Chair**, Symposium on Granular Materials, 18th American Society of Civil Engineers Engineering Mechanics Conference, Blacksburg, VA, June 2007.
- **Session Chair**, 12th Conference of the International Association for Computer Methods and Advances in Geomechanics, Goa, India, October 2008.
- **Session Chair**, Session on Operative Materials and Tooth Properties, General Session & Exhibition of the International Association of Dental Research (IADR/AADR/CADR), Miami, FL, March-April 2009.
- **Session Chair**, Session on Rate Dependent Behavior of Granular Materials, 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, VA, June 2009.
- **Session Chair**, Session on Simulation/Characterization of Deformation Mechanisms and Other Properties, 34th International Conference & Exposition on Advanced Ceramics & Composites (ICACC), Daytona Beach, Florida, January 2010.
- **Group Program Chair**, Dental Materials, 39th Annual Meeting & Exhibition of the American Association of Dental Research (AADR), Washington, DC, March 2010.
- **Session Chair**, Session on Adhesive-Enamel/Dentin Bond Strength, 39th Annual Meeting & Exhibition of the American Association of Dental Research (AADR), Washington, DC, March 2010.
- **Symposium Organizer and Session Chair**, Minisymposium on Micromechanics of Granular Geomaterials in honor of Ching Chang, 2010 Engineering Mechanics Institute Conference, Los Angeles, CA, August 2010.
- **Poster session Chair**, Session on Operative Materials and Tooth Properties, 89th International Association of Dental

- Research (IADR/AADR/CADR) General Session & Exhibition, San Diego, CA March 2011.
- **Session Chair**, Granular Materials, 2011 Engineering Mechanics Institute Conference, Boston, MA, June 2011.
 - **Session Chair**, Euromech Colloquium 563, Cisterna Di Latina, Italy, March 2014.
 - **Symposium Organizer and Session Chair**, Minisymposium on Experimental and Numerical Methods in Multi-scale Granular Mechanics, 2014 Engineering Mechanics Institute Conference, McMaster University, Hamilton, Canada, August 2014.
 - **Symposium Organizer and Session Chair**, Dr. Masao Satake Memorial Symposium on Granular Mechanics, 2015 Engineering Mechanics Institute Conference, Stanford University, June 16-19, 2015.
 - **Session Chair**, Workgroup on Computational Mechanics of Generalized Continua with Microstructure Materials and Applications, Scuola Superiore di Catania, Italy, Oct 29-31, 2015.
 - **Session Chair**, Granular Materials: Deformation, Flow, Phase Transitions, and Multi-scale Modeling, 2016 Engineering Mechanics Institute Conference, Vanderbilt University, TN, May 22-25 2016.
 - **Session Chair**, International Workshop on the Genome of Stone-based Civil Infrastructure Materials, University of Science and Technology, Beijing, China, June 8-9, 2016.
 - **Session Chair**, School on Models of Generalized Continua characterized by Quasi-Inextensible Fibrous Structures: New Ideas for Models and Applications, Arpino, Italy, September 21, 2016.
 - **Session Chair**, Recent Trends in Granular Materials across the Scales, 2017 Engineering Mechanics Institute Conference, San Diego, CA, June 4-7, 2017.
 - **Session Chair**, International Conference on Structural Engineering and Computational Mechanics, Guangzhou, China, August 25-27, 2017.
 - **Session Chair**, French-Italy Workshop on Bone Biomechanics: multiscale and multiphysical aspects, Giuliano di Roma, Italy, September 26-28, 2017.
 - **Moderator**, Lorentz Center Workshop on Granular Matter Across Scales, Leiden, the Netherlands, March 18-22, 2019.
 - **Symposium Organizer and Session Chair**, Nonlinear Phenomena in Granular Solids: Modelling and Experiments, International Conference on Nonlinear Solid Mechanics, Roma, Italy, June 16-19, 2019.
 - **Symposium Organizer and Session Chair**, Contact Mechanics of Interfaces, International Conference on Nonlinear Solid Mechanics, Roma, Italy, June 16-19, 2019.
 - **Symposium Organizer and Session Chair**, New frontiers in regularized damage modelling, International Conference on Nonlinear Solid Mechanics, Roma, Italy, June 16-19, 2019.
 - **Symposium Organizer**, Multiscale mechanics of granular media (Symposium 6.2) at the 56th Annual Technical Meeting of the Society of Engineering Science (SES), Washington University, St. Louis, October 13-15, 2019.
 - **Workshop Organizer**, Road Infrastructure Reimagined, workshop to support NSF Engineering Research Center planning grant, Alexandria, VA, October 3-4, 2019.

Technical Reviewer: (counts since 2008)

- ACS Energy and Fuels (2020-2).
- Acta Biomaterialia (2008-1, 2009-1, 2010-1, 2012-2, 2013-1, 2015-1, 2016-1, 2018-1).
- Acta Geotechnica (2015-1).
- Advances in Materials Science and Engineering (2018-1).
- ASME Journal of Biomechanical Engineering (2009-1).
- ASME Journal of Engineering Materials and Technology (2012-1).
- ASME 2010 Summer Bioengineering Conference (2010-1).
- Biomechanics and Modeling in Mechanobiology (2010-1)
- BONE (2009-1).
- Canadian Geotechnical Journal (2008-1).
- Chilean National Science Foundation (2015-1).
- Computers and Geotechnics (2008-2, 2009-1, 2010-1, 2011-2, 2012-2, 2013-2, 2014-1, 2015-1, 2016-1, 2019-2).
- Composites B (2019-2).
- Composites Science and Technology (2019-1).
- Computer Methods in Applied Mechanics and Engineering.
- Continuum Mechanics and Thermodynamics, (2012-1, 2013-4, 2014-2, 2015-3, 2019-3).
- Dental Materials (2010-1, 2013-1, 2018-1).

- Energy Science and Engineering (2019-1).
- Engineering Fracture Mechanics (2018-1).
- European Commission (2020-1).
- European Journal of Civil Engineering (2015-2, 2016-1).
- Experimental Mechanics (2019-1).
- Finite Elements in Analysis & Design (2018-1)
- Geotechnical Engineering (2008-1).
- Georisk (2008-1).
- GeoShanghai Conference (2009-1).
- GeoRisk Conference (2010-2).
- Granular Matter (2015-1, 2018-1).
- Hong Kong Science Foundation (2009-1).
- IEEE Transactions UFFC, (2012-1).
- Indian Institute of Technology, Roorkee, Ph.D. Dissertation external reviewer.
- Indian Institute of Technology, Kanpur, Ph.D. Dissertation external reviewer (2013-2).
- International Journal of Composites Engineering.
- International Journal of Geomechanics (2008-1, 2009-1, 2012-1, 2013-1, 2014-1, 2016-1, 2018-1, 2019-1).
- International Journal of Geotechnical Engineering (2010-1).
- International Journal of Plasticity.
- International Journal of Solids and Structures. (2010-1, 2011-1, 2012-1, 2013-2, 2014-1, 2017-1, 2018-1)
- Israel Science Foundation. (2014-1)
- International Conference on Advances in Geotechnical Earthquake Engineering and Soil Dynamics.
- International Journal for Numerical and Analytical Methods in Geomechanics.(2009-1, 2010-1, 2011-1, 2014-1, 2015-1, 2018-1)
- Islamia University of Bahawalpur, Pakistan (2010-1).
- Journal of Acoustical Society of America (JASA) (2009-1).
- Journal of Aerospace Engineering, American Society of Civil Engineers (2008-1, 2010-1, 2011-1).
- Journal of American Dentistry Association, (2012-1).
- Journal of Biomedical Materials Research (2008-2, 2010-1).
- Journal of Biomedical Materials Research: Part B (2010-1, 2011-1).
- Journal of Bridge Engineering, American Society of Civil Engineers (2011-2, 2012-1, 2013-2).
- Journal of Dental Research.
- Journal of Engineering Mathematics (2015-1)
- Journal of Engineering Mechanics, American Society of Civil Engineers (2009-4, 2010-2, 2011-5, 2012-6, 2013-2, 2015-2, 2016-1, 2017-2)
- Journal of Engineering Tribology (2013-1)
- Journal of Geotechnical and Geoenvironmental Engineering, ASCE (2008-1, 2009-2, 2010-1, 2011-1).
- Journal of Geotechnical and Geological Engineering.
- Journal of Materials in Civil Engineering, American Society of Civil Engineers.
- Journal of the Mechanical Behavior of Biomedical Materials (2018-1)
- Journal of Nanomechanics and Micromechanics, ASCE (2015-2), (2017-2)
- Journal of Pipeline Systems Engineering and Practice, American Society of Civil Engineers (2010-1).
- Journal of Structural Geology.
- Journal of Volcanology and Geothermal Research.
- Journal of Zhejiang University (2020-1).
- Materialia (2018-1).
- Mathematics and Mechanics of Complex Systems (2015-1, 2018-1).
- Mathematics and Mechanics of Solids (2013-3, 2017-2, 2019-2).
- Mechanics of Materials.
- Mechanics Research Communications (2017-1, 2018-1, 2019-2).
- Motilal Nehru National Institute of Technology, Ph.D. Dissertation external reviewer (2009-1).
- Multidiscipline Modeling in Materials and Structures (2013-1, 2014-1)
- Nanoscale Research Letters (2017-1).

- NASA Post Doc Application Review (2008-1).
- NIH Dental and Enamel: Developmental Biology (2009-1).
- Oak Ridge Associated University (2009-2).
- Physica D (2013-1, 2014-1, 2015-1).
- Polish-U.S. Fulbright Commission, Graduate Student Award (2019-1)
- Polish-U.S. Fulbright Commission, STEM Impact Award 2019/20 (2019-1)
- Powder Technology (2013-1).
- Proceedings of Royal Society A (2015-1, 2017-2, 2018-4).
- Pure and Applied Geophysics (2013-1).
- PWS Publishing Company.
- Qatar National Research Fund, (2017-1, 2018-1, 2019-2).
- Recycled Materials Resource Center, University of New Hampshire.
- Scientific Reports (2016-1).
- Soil Dynamics and Earthquake Engineering (2013-1, 2014-1)
- Strain, (2013-2).
- Swiss National Science Foundation, (2011-2, 2018-3).
- Transportation Research C, (2018-1).
- Tribology Letters, (2012-1).
- University of Missouri Research Board.
- U.S. National Science Foundation (2008-2, 2011-1, 2012-1, 2013-2, 2014-2, 2016-2, 2017-1, 2018-1, 2019-1).
- Zeitschrift für Angewandte Mathematik und Mechanik, (2011-2, 2014-2, 2016-1).
- Zeitschrift für Angewandte Mathematik und Physik, (2016-1).

Workshop Participation:

- Invited Participant and Member of Panel on Constitutive Modeling, U.S.-Canada Workshop on Recent Accomplishments and Future Trends in Geomechanics in the 21st Century, Norman, Oklahoma, October 1992.
- Invited Speaker, Workshop on Theory and Simulation of Compaction and Sintering of Powders, Tulane University, New Orleans, LA, December 1993.
- Invited Participant, The Royal Society-Unilever-Indo/UK Forum on Solid-Solid Interactions, London, United Kingdom, September 1994.
- Invited Participant, NATO Advanced Study Institute on Physics of Dry Granular Media, Cargese, France, September 1997.
- Participant, the 7th International Comminution Research Association Workshop, Toulouse, France, September 1998.
- Lunch and Learning Speaker, 85th General Session & Exhibition of the IADR, New Orleans, LA, March 2007.
- Invited Speaker, US-China Workshop on Trenchless Technologies and Critical Underground Infrastructure Issues, China Geosciences University, Wuhan, October, 2007.

UNIVERSITY SERVICE

University of Missouri (1990-2007)

- Chair, Coordinated Engineering Programs-Civil Engineering Director Evaluation Committee (1994).
- Chair, Scholarships and Awards Committee, Coordinated Engineering Programs (1991-96).
- Member, Ad Hoc Committee for Evaluation of Engineering 20 (1994).
- Member, Computing Services Committee, Coordinated Engineering Programs (1992-96).
- Member, Facilities Planning Committee, Coordinated Engineering Programs (1992-94).
- Member, Library Committee, Coordinated Engineering Programs (1991-92).
- Member, Faculty Search Committee, Department of Civil Engineering (1991, 1993).
- Laboratory and Computer Facilities Coordinator, Department of Civil Engineering (1991-96).
- Member, Doctoral Faculty, University of Missouri-Columbia (1995-).
- Member, Civil Engineering Chair Search Committee, University of Missouri-Columbia (1996).
- Member, Faculty Search Committee, Department of Mechanical Engineering (1996).
- Member, Engineering Policy Committee, University of Missouri-Columbia (1997-99).
- Member, Engineering Annual Research Award Committee, University of Missouri-Columbia (1998, 99).
- Member, Graduate Recruiting Task Force, University of Missouri-Kansas City (1999).

- Member, IT Vision Committee, University of Missouri-Columbia (1999-2000).
- Member, Technology and Curriculum Task Force, University of Missouri-Kansas City (2000).
- Member, Chancellor's Extended Cabinet, University of Missouri-Kansas City (2001-2002).
- Member, Workstation Support Standards Subcommittee, University of Missouri-Kansas City (2001).
- Faculty Advisor, ISPE Student Chapter, University of Missouri-Kansas City (2001-2002).
- Chair, Graduate Committee, Engineering Sciences Division, SICE, UMKC (2001-2002).
- Chair, Undergraduate Committee for Curriculum and Handbook, Engineering Sciences Division, SICE, UMKC (2001-2002).
- Chair, Structural Engineering Faculty Search Committee, Engineering Sciences Division, SICE, UMKC (2001-2002).
- Member, Mechanical Engineering Faculty Search Committee, Engineering Sciences Division, SICE, UMKC (2002).
- Member, Promotion and Tenure Committee, School of Interdisciplinary Computing and Engineering, UMKC (2002).
- Member, Organizational Committee, School of Interdisciplinary Computing and Engineering, UMKC (2002).
- Member, Policy Committee, School of Interdisciplinary Computing and Engineering, UMKC (2002).
- Member, Academic Affairs Committee, School of Interdisciplinary Computing and Engineering, UMKC (2002).
- Member, Machine Shop Committee, School of Interdisciplinary Computing and Engineering, UMKC (2002-).
- Chair, ABET Lab Equipment Committee, School of Computing and Engineering (SCE), UMKC (2002-).
- Graduate Program Coordinator, Civil and Mechanical Engineering, SCE, UMKC (2002-).
- Engineering Discipline Coordinator, Interdisciplinary Ph.D., UMKC (2002-).
- Member, UMKC Interdisciplinary Ph.D. Executive Committee, UMKC (2002-).
- Member, Space Committee, School of Computing and Engineering, UMKC (2003).
- Chair, Mechanical Engineering Faculty Search Committee (3 searches), SICE, UMKC (2003).
- Member, Campus Promotion and Tenure Committee, UMKC (2003-6).
- Member, Absence Policy Committee, School of Computing and Engineering, UMKC (2004).
- Member, Promotion and Tenure Committee, School of Computing and Engineering, UMKC (2004, 2007).
- Chair, Mechanical Engineering Faculty Search Committee, SCE, UMKC (2004-05).
- Chair, Civil Engineering Faculty Search Committee, SCE, UMKC (2004-05).
- Member, Provost Search Committee, UMKC (2005-06).
- Member, Health and Life Sciences Action Commission, UMKC (2006-07).
- Chair, Civil and Mechanical Engineering Promotion and Tenure Committee, UMKC (2007).

University of Kansas (2008-)

- Member, Tenure and Promotion Committee, CEAE Department (2008-).
- Member, Ophthalmic Bioengineering Search Committee, KU Eye (2008).
- Member, Research Development and Enhancement Committee, CEAE Department (2008-10).
- Member, Curriculum Committee, CEAE Department (2008-).
- Member, Tenure and Promotion Committee, School of Engineering (2008-10).
- Member, Sabbatical Leave Committee, School of Engineering (2011-12).
- Member, University Senate Judicial Board (2012-4).
- Member, Equipment Committee, CEAE Department (2012-3).
- Chair, Advanced Infrastructure Materials and Sustainability Search Committee, CEAE Department (2013-2014).
- Member, Structures Search Committee, CEAE Department (2014-2015).
- Member, Launch Committee, Masoud Darabi, Assistant Professor CEAE, (2014-16)
- Member, Academic Standards Committee, School of Engineering (2014-2016).
- Member, Sabbatical Leave Committee, School of Engineering (2016-17), (2018-19).
- Member, Bioengineering Search Committee, School of Engineering (2016-17).
- Member, Post Tenure Review Committee, CEAE Department (2014-15), (2017-18).
- Chair, Sabbatical Leave Committee, CEAE Department (2017-18).
- Chair, CEAE Department Chair (5-year) Review Committee, School of Engineering (2017-18).
- Member, Faculty Senate Standards and Procedures on Promotion and Tenure Committee (2018-21).

INTERNATIONAL OUTREACH

- Key facilitator in establishing an academic exchange program between University of Kansas, Lawrence and Università dell'Aquila, Italy (2017)

OUTREACH AND COMMUNITY SERVICE

- Assisted with organization of ASCE-Kansas City Section Geotechnical Engineering seminars and annual conference (1993-2013). These events resulted in funds that were endowed to establish a Geotechnical Engineering scholarship at UMKC in 2004.
- Advisor for high school science projects and participant in numerous recruitment and open house events.
- Judge, 53rd Greater Kansas City Science & Engineering Fair, 2004.
- Assisted with organization, 2004 International Bridge Building Regional Contest, Western Chapter of MSPE held in Flarsheim Hall, UMKC, February 7, 2004.
- Assisted with organization, 2005 International Bridge Building Regional Contest, Western Chapter of MSPE held in Flarsheim Hall, UMKC, February 12, 2005.
- Assisted with organization, 2006 International Bridge Building Regional Contest, Western Chapter of MSPE held in Flarsheim Hall, UMKC, February 11, 2006.
- Assisted with organization, 2007 International Bridge Building Regional Contest, Western Chapter of MSPE held in Flarsheim Hall, UMKC, February 10, 2007.

CONSULTING SERVICE

- Terracon Consultants: Rock property evaluation (1990).
- T.J. Lipton: Retaining walls and steel deck design evaluation (1991, 92).
- Expert opinion: Groundwater flow evaluation (1991).
- GSI Consultants: Soil property evaluation (1996).
- Taliaferro and Browne: Slope stability evaluation (1996).
- Grace Construction Products: Cement grinding simulation (1997).
- Downtown Motors: Review and Expert Testimony for Concrete Property Evaluation (2002).

E. SHORT BIOGRAPHY.

Biography of Dr. Anil Misra, Professor of Civil Engineering

Dr. Anil Misra is a Professor in the Civil, Environmental and Architectural Engineering Department of the University of Kansas (KU), Lawrence, and Associate Director of KU Institute for Bioengineering Research (IBER). He previously served as a faculty member at the University of Missouri-Kansas City (UMKC) from 1990 to 2007. He received his bachelor's degree in civil engineering from the Indian Institute of Technology, Kanpur, India in 1985, and his M.S. and Ph.D. degrees from the University of Massachusetts at Amherst in 1988 and 1991, respectively. At KU he teaches undergraduate and graduate courses in engineering mechanics, materials engineering, computer methods and geotechnical engineering. He has a broad research interest that spans topics covering both basic and applied aspects of civil engineering, particularly, engineering mechanics, materials and geotechnical engineering.

Dr. Misra's research has focused upon the analytical, computational and experimental micro-mechanics of granular materials. In particular, he has pioneered the method of **granular micromechanics** with which he seeks to develop generalized (micromorphic) continuum model of a range of granular materials and materials with granular texture, including geomaterials, biomaterials, cement/asphalt concrete, polymers, and architected/metamaterials. He is deeply interested in interdisciplinary research at the intersection of mechanics and material science. He has also published on soil thermal properties; soil stabilization using coal combustion products; and application of numerical methods in geotechnical design and analysis. He continues his work in granular micromechanics, mechanics of dental interfaces; and multi-modal material characterization using high-resolution techniques.

Dr. Misra has co-edited four books, guest edited five journal special issue, and authored more than 300 papers in journals, edited books and conference proceedings. He has made more than 180 presentations of his research results at national and international fora. His research has been funded by a variety of sources including governmental agencies and private industry. He is active in various professional societies. He serves on a number of society technical committees, on editorial board of major journals, and as a reviewer for journal articles and grant proposals. He has also provided consulting service to the industry on technical issues.

Dr. Misra was awarded the 2017 Eugenio Beltrami Senior Scientist Prize for his seminal contributions to granular micromechanics, his pioneering works and innovations in theoretical and experimental mechanics, and his ability to transcend basic and applied research (see the [laudatio for this award](#)). He was selected as a Fulbright Specialist in Engineering Education in 2018. He has been honored for his work with Chair and Visiting Professorships as well as membership of academic boards at international universities. He has also been recognized at his home institutions of KU and UMKC with various research and teaching awards.