

CURRICULUM VITA

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Paulette Spencer is the Founding Director of the Bioengineering Research Center (BERC), University of Kansas (KU). Before joining KU in 2007, she was a Curators' Professor and Founding Director of the Center for Research on Interfacial Structure and Properties (CRISP), University of Missouri-Kansas City (UMKC). Both centers serve as a catalyst for collaborative research focused on applying the principles of biological systems to the design, synthesis and development of biomaterials, and advanced multi-scale structure/property analysis of biological events at the cell, tissue and organ levels. The Centers provide an environment for novel approaches to next-generation biomaterials discovery and device innovation.

Dr. Spencer is an internationally recognized scholar whose research involves the design and development of durable biomaterials. Her work represents some of the earliest examples of Raman spectroscopic analyses of material/tissue interfaces. She is among the pioneers in the development of non-destructive techniques for *in situ* characterization of structure/property relationships at tissue/tissue and material/tissue interfaces. Although it has been long-recognized that the failure of reconstructed tissues using synthetic and/or tissue-engineered materials starts at the interface, mechanistic evaluation of interfacial failure remains limited. Her research employs multi-scale structure/property imaging and mathematical modeling to provide insight into mechanistic behavior of native, as well as reconstructed tissue/material interfaces. The analytical results coupled with the modeling provide understanding of interfacial behavior at scales ranging from molecules to centimeters.

Dr. Spencer's interdisciplinary research with novel findings and discoveries stems from her diverse education which includes a D.D.S., a Ph.D. in Oral Biology and Physics, and two MS degrees; one in Pediatric Dentistry, and another in Materials Engineering. This combination allows her to undertake approaches that are driven by clinical need, and integrate engineering principles with the clinical practice of medicine and dentistry. She has developed a unique research program based on "practice-inspired advances in understanding tissue-material interfaces," to drive biomaterials discovery.

She has published more than 150 journal articles, 11 book chapters, 10 papers in conference proceedings and holds 1 patent, with 2 pending. According to Google Scholar, Dr. Spencer's research papers have been cited more than 7,000 times with a current H-index of 47. She has given more than 300 presentations. Her research has been continuously supported by NIH for 25 years, as well as by other agencies, including NSF, and industry. Additionally, she raised private and thrust funds for various initiatives, including the establishment of UMKC and KU interdisciplinary research centers for a total of more than \$20 million in funding.

She has been a mentor on 3 NIH-supported career development awards, served as chair or member of 47 thesis/dissertation committees, supervised 14 postdoctoral fellows, and directed a NIH research training program that led to a new paradigm, *Dental and Craniofacial Bioengineering*. Dr. Spencer is a fellow in the American Association for the Advancement of Science (AAAS), American Institute for Medical and Biological Engineering (AIMBE), Biomaterials Science and Engineering (FBSE)-International Union of Societies for Biomaterials, the American Academy of Dental Materials, American Academy of Pediatric Dentistry, and American College of Dentistry. In 2015, she was named a Fulbright scholar on "Driving Biomaterials Discovery" by the Brazil Scientific Mobility Program and served as an invited visiting professor at the University of Sao Paulo. These credentials speak to Dr. Spencer's recognition at international and national levels in the bioengineering sciences.

I. GENERAL INFORMATION

A. Personal Data:

Place of Birth: Hannibal, MO
Marital Status: Married
Husband: Lloyd (Chuck) C. Colberg

B. Education:

B.S., University of Missouri, Columbia, MO, 1973, Teaching license in biology and related sciences.

D.D.S., University of Missouri-Kansas City School of Dentistry, Kansas City, 1978

M.S., Pediatric Dentistry, University of Minnesota, Minneapolis, MN, 1980
Thesis title: “*In vitro* comparison of a hydrophilic and hydrophobic fissure sealant”

M.S., Materials Engineering, Rensselaer Polytechnic Institute, Troy, NY, 1988

Thesis title: “Structural and chemical analysis of dental enamel from magnesium and sodium fluoride supplemented rats.” This graduate study was supported by a NIH/NIDR National Research Service Award (institutional award).

Ph.D., Oral Biology and Physics (Interdisciplinary Ph.D.), University of Missouri-Kansas City, Kansas City, MO, 1993.

Title of Dissertation: “Morphologic and structural characterization of bone formation in a canine osseous defect model.” This graduate study was supported by a Physician Scientist Award from NIH/NIDR (individual award).

C. Postgraduate Education:

1/81-7/81 Dental Materials, University of Michigan School of Dentistry, Ann Arbor, MI.

This graduate study was supported by a NIH/NIDR National Research Service Award (institutional award).

D. Licensures:

Minnesota #D8685

Missouri #DE 015869

National Board of Dental Examiners 1976, 1978

Central Regional Board of Dental Examiners, 1978

Provisional Mississippi Licensure, 1981-1984

E. Academic Appointments

- 1981-1984 Assistant Professor, Department of Pediatric Dentistry, University of Mississippi School of Dentistry, Jackson, MS
- 1984-87 Research Associate, Rensselaer Polytechnic Institute, Troy, NY.
- 1988-89 Assistant Professor, Department of Pediatric Dentistry, University of Missouri-Kansas City (UMKC) School of Dentistry, Kansas City, MO.
- 1988 Member, Graduate Faculty, UMKC.
- 1989-93 Assistant Professor, Joint Appointment in Departments of Pediatric Dentistry and Oral Biology, UMKC School of Dentistry.
- Sept. 1993 Associate Professor with tenure, Joint Appointment in Departments of Pediatric Dentistry and Oral Biology, UMKC School of Dentistry.
- Nov. 1993 Member of Doctoral Faculty, UMKC.
- May 1994-06 Director of Graduate Studies and Research, Department of Oral Biology, UMKC School of Dentistry.
- 2/97-8/97 Acting Chair, Department of Oral Biology, UMKC School of Dentistry.
- 6/02-8/02
- 6/03-8/03
- 6/04-8/04
- 9/99-9/07 Professor, Departments of Oral Biology and Pediatric Dentistry, UMKC School of Dentistry.
- Sept. 2001 Appointed as the Hamilton B. G. Robinson Professor, UMKC School of Dentistry.
- 1/02-9/07 Professor (courtesy appointment), UMKC School of Computing and Engineering.
- 10/03-9/07 Founding Director, UMKC Center for Research on Interfacial Structure and Properties (UMKC-CRISP), Kansas City, MO. Recognized as an official University Center in Oct. 2003.
- 12/03-9/07 Adjunct Professor, Department of Mechanical Engineering, University of Kansas, Lawrence, KS.
- Sept. 2004 Curators' Professor, University of Missouri.
- 9/07-present Curators' Professor Emeritus, University of Missouri.
- 9/07-present Founding Director, Bioengineering Research Center, University of Kansas.
- 9/07-present Deanne E. Ackers Distinguished Professor, Mechanical Engineering, University of Kansas School of Engineering, Lawrence, KS.
- 9/08-present Adjunct member, Doctoral Faculty, University of Missouri-Kansas City.

F. Other Employment:

- 1981-1984 Private Practice, University of Mississippi Faculty Practice, Jackson, MS.
 1982-1984 Attending Dentist, University Hospital, University of Mississippi Medical Center, Jackson, MS.
 1984-1985 Consultant, Dental Clinic, Albany Medical Center, Albany, NY.

G. Honors, Awards and Recognition:

- 1979 Tuition scholarship from the University of Minnesota Graduate School.
 1982 Graduate Pedodontic Student Research Award, American Academy of Pediatric Dentistry.
 1983 **Fellow, American Academy of Dental Materials.**
 1983 **Fellow, American Academy of Pediatric Dentistry.**
 1991 Young Investigator Award, Fifth International Conference on Cell Mediated Calcification and Matrix Vesicles.
 1991 Elected to the Faculty Council, UMKC School of Dentistry.
 1992 Elected to the Rho Chapter of Omicron Kappa Upsilon.
 1992 **Fellow, American College of Dentists.**
 1992 Faculty sponsor, Laura Marshall won third place in the Caulk Dentsply student competition for her work titled: "FTIR Photoacoustic Spectroscopic Analysis of Structural Variation in Dentin."
 1993 Elected to the Board of Trustees for the UMKC Dental Alumni Association.
 1995 Elected Secretary, UMKC Dental Alumni Association.
 1996 Elected Secretary-Treasurer, Kansas City Section-American College of Dentists.
 1996, 97, 98 Third Vice-President, Second Vice-President, First Vice-President, UMKC Dental Alumni Association.
 1997, 98, 99 Elected Vice-President, President-elect, President Omicron Kappa Upsilon, Rho Chapter.
 1997 Faculty sponsor, Drs. Mercedes Padilla and Joe Gordon received second place in scientific presentations at the annual meeting of the American Academy of Pediatric Dentistry. Title of their presentation: "Fluoride-Releasing Sealants: An In Vitro Analysis."
 1999 President-elect, UMKC Dental Alumni Association.
 2000-01 President, UMKC Dental Alumni Association. **First female president of the UMKC Dental Alumni Association.** Part of my responsibilities included organization and oversight of the alumni meeting (Midwest Dental Conference) held in Kansas City on April 5-8, 2001. There were over 3700 attendees at this

meeting including dentists, dental hygienists, assistants, and guests. During my tenure as president, the UMKC Dental Alumni Association Board voted unanimously in favor of my motion to provide \$500,000 to secure the hardware required for the electronic patient record system at the UMKC School of Dentistry.

- 2000 Distinguished Teaching Award, UMKC School of Dentistry.
- 2001 Distinguished Teaching Award, UMKC School of Dentistry.
- 2001 Elected to Editorial Board, *Journal of Pediatric Dentistry*.
- 2001 Appointed Hamilton B. G. Robinson Professor, UMKC School of Dentistry.
- 2003 **Fellow, American Institute for Medical and Biological Engineering (AIMBE).**
- 2003 Elected to Editorial Board, *Journal of Dental Research*.
- Nov. 12, 2003 Research featured on the front page of the *Kansas City Star*.
- 2004-06 Appointed to Biomaterials and Biointerfaces Study Section, National Institutes of Health.
- 2004 Curators' Professor, University of Missouri. This is the highest and most prestigious academic rank awarded by the Board of Curators.
- Jan. 20, 2005 Ph.D. Advisor with Dr. Jose Pereira for Dr. Fabio Sene. Fabio won first place in the category of operative dentistry, XVI Encontro do Grupo Brasileiro de Professores de Dentística, Rio de Janeiro. This is the leading operative dentistry conference in South America.
- 2005 Selected as one of "America's Top Dentists" and listed in the "Guide to America's Top Dentists."
- 2005 Candidate for Vice-President of the American Association for Dental Research.
- Sept. 30, 2005 My work related to Nanotechnology and the conference that I organized on this topic were featured on the front page of the *Kansas City Business Journal*.
- 2005 Madison Who's Who of Professionals.
- Sept. 1, 2007 Deane E. Ackers Distinguished Professor, School of Engineering, University of Kansas. **First female Distinguished Professor in the School of Engineering.**
- 2007-10 Cramer Research Professor, Department of Mechanical Engineering, School of Engineering, University of Kansas.
- 2007 Distinguished Women Calendar, University of Kansas.
- 2007 **Fellow, Biomaterials Science and Engineering (FBSE), International Union of Societies for Biomaterials.**
- 2007 **Fellow, American Association for the Advancement of Science (AAAS).**
- 2007 Editorial Board, *The Open Dentistry Journal*.
- 2008-10 Elected, Editorial Board, *Journal of Dental Research*.
- 2008 Honorary Editorial Board, *Clinical, Cosmetic and Investigational Dentistry*.

- 2008 Honorary Editorial Board, *Journal of Dentistry Insights*.
- 2008 Selected for Who's Who in Engineering Higher Education.
- 2008-10 Appointed to Dental Sciences SBIR Study Section, (ZRG1 MOSS-N 11), National Institutes of Health.
- 2009 Visiting Professor Program, Bauru School of Dentistry, University of Sao Paulo, Sao Paulo State, Brazil.
- 2009 Elected, Editorial Board, *Dental Materials*.
- 2010 Bellows Scholar, University of Kansas School of Engineering.
- 2010 Appointed to the Editorial Board, *Journal of Biomedical Materials Research Part B: Applied Biomaterials*.
- 2010-12 Member, College of Center for Scientific Review (CSR) Reviewers, National Institute of Health.
- 2011 UMKC Dental Alumni Achievement Award.
- 2011 Elected to the Editorial Board, *Journal of Applied Oral Science*.
- 2012 Miller Scholar, University of Kansas School of Engineering.
- 2012-15 Appointed as Society of Biomaterials delegate, International Union of Society for Biomaterials Science & Engineering (IUSBSE).
- 2012 Leading Light Award, University of Kansas.
- 2012 Elected to the Editorial Board, *Brazilian Dental Science*.
- 2013 Bellows Scholar, University of Kansas School of Engineering.
- 2013 Cramer Award, Mechanical Engineering, University of Kansas School of Engineering.
- 2013-17 Appointed member to Oral, Dental, and Craniofacial Sciences Study Section, NIH Center for Scientific Review; term beginning July 1, 2013 and ending June 30, 2017.
- 2014 Miller Scholar, Mechanical Engineering, School of Engineering, University of Kansas.
- 2014 Approved for Sabbatical, Spring 2015 Semester.
- 2014 2014-15 Fulbright U.S. Scholar Award to Brazil.
- 2015 Visiting Professor, Universidade Estadual Paulista "Julio de Mesquita Filho" (UNESP), Sao Jose dos Campos, University of Sao Paulo, Brazil.
- 2015 Higuchi-KU Endowment Research Achievement Award, Dolph Simons Award in Biomedical Sciences, University of Kansas.

II. RESEARCH

A. Publications:

Journal Articles h-index: 47 (Google Scholar)

1. **Spencer, P.** and J.E. Fleming. "Cyclic Neutropenia: A Literature Review and Report of a Case." *ASDC Journal of Dentistry for Children*, 52:108-13, 1985.
2. **Spencer, P.**, C. Barnes, R. Garcia, C. Elliott, L. Hurley, and R. Doremus. "Incorporation of Magnesium into Rat Dental Enamel and its Influence on Crystallization." *Archives of Oral Biology*, 34:767-71, 1989.
3. **Spencer, P.**, B. Bohaty, J.I. Haynes, A.E. Iwersen, and Sabates, C. "Change in Dental Treatment Needs in an Urban Pediatric Population, 1977 to 1987." *ASDC Journal of Dentistry for Children*, 57:463-6, 1989.
4. Eick, J.D., C.M. Cobb, R.P. Chappell, **P. Spencer**, and S.J. Robinson. "The Dentinal Surface - Its Influence on Dentinal Adhesion, Part I." *Quintessence International*, 22:967-77, 1991.
5. Eick, J.D., S.J. Robinson, C.M. Cobb, R.P. Chappell, and **P. Spencer**. "The Dentinal Surface - Its Influence on Dentinal Adhesion, Part II." *Quintessence International*, 23:43-51, 1991.
6. Bohaty, B., **P. Spencer**, and J.I. Haynes. "Services of UMKC's Lowry Clinic Evaluated." *Missouri Dental Journal*, 71(3):40-3, 1991.
7. **Spencer, P.**, T.J. Byerley, J.D. Eick, and J.D. Witt. "Chemical Characterization of the Dentin/Adhesive Interface by Photoacoustic Fourier Transform Infrared Spectroscopy." *Dental Materials*, 8:10-5, 1992.
8. Bohaty, B. and **P. Spencer**. "Trends in Dental Treatment Rendered under General Anesthesia, 1978 to 1990." *Journal Clinical Pediatric Dentistry*, 16:222-4, 1992.
9. **Spencer, P.**, D. Trylovich, and C.M. Cobb. "Chemical Characterization of Lased Root Surfaces using Fourier Transform Infrared Photoacoustic Spectroscopy." *Journal of Periodontology*, 63(7):633-6, 1992.
10. Trylovich, D.J., C.M. Cobb, D.J. Pippin, **P. Spencer**, and W.J. Killoy. "Effects of the Nd:YAG Laser on *In Vitro* Fibroblast Attachment to Endotoxin Treated Root Surfaces." *Journal of Periodontology*, 63(7):626-32, 1992.
11. Bohaty, B., **P. Spencer**, and J. Haynes. "Community Service and Dental Education - A Combined Approach." *ASDC Journal of Dentistry for Children*, 59(3):212-5, 1992.
12. Fales, J.T., J.W. Lowe, D.W. O'Neil, **P. Spencer**, and B.S. Bohaty. "Factors Influencing Children's Recovery Time from General Anesthesia." *Journal of the Missouri Dental Association*, 73:22-9, 1993.
13. Schultz, P.H., S.L. Brockman-Bell, J.D. Eick, K.B.W. Gross, R.P. Chappell, and **P. Spencer**. "Effects of Air-Powder Polishing on the Bond Strength of Orthodontic Bracket Adhesive System." *Journal of Dental Hygiene*, 67:74-80, 1993.

14. Parker, R., J. Rapley, R. Isley, **P. Spencer**, and W. Killoy. "Gingival Crevicular Blood for Assessment of Blood Glucose in Diabetic Patients." *Journal of Periodontology*, 64(7):666-72, 1993.
15. Shannon, H., **P. Spencer**, K. Gross, and D. Tira. "Characterization of Enamel Exposed to 10% Carbamide Peroxide Bleaching Agents." *Quintessence International*, 24:39-44, 1993.
16. Sanchez, R.A., D.J. Moore, R.D. Cowan, and **P. Spencer**. "Verifying the Reliability of Interchanging Casts between Hanau Modular Articulators." *Journal of Prosthetic Dentistry*, 2:220-3, December, 1993.
17. Eick, J.D., S.J. Robinson, R.P. Chappell, C.M. Cobb, and **P. Spencer**. "The Dentinal Surface: Its Influence on Dentinal Adhesion. Part III." *Quintessence International*, 24:571-82, 1993.
18. Chappell, R.P., **P. Spencer**, and J.D. Eick. "The Effects of Current Dentinal Adhesives on the Dentin Surface." *Quintessence International*, 25:851-9, 1994.
19. Thomas, D., C. Cobb, J. Rapley, **P. Spencer**, and W. Killoy. "Effects of the Nd:YAG Laser and Combined Treatments on In Vitro Fibroblast Attachment to Root Surfaces." *Journal of Clinical Periodontology*, 21:38-44, 1994.
20. Chappell, R.P., C.M. Cobb, **P. Spencer**, and J.D. Eick. "Dentinal Tubule Anastomosis: A Potential Factor in Adhesive Bonding?" *Journal of Prosthetic Dentistry*, 72:183-8, 1994.
21. Mixson, J.M., **P. Spencer**, D.L. Moore, R.P. Chappell, and S. Adams. "Surface Morphology and Chemical Characterization of Abrasion/Erosion Lesion." *American Journal of Dentistry*, 8:5-9, 1995.
22. Eick, J.D., S.J. Robinson, T.J. Byerley, R.P. Chappell, **P. Spencer**, and C.C. Chappelow. "Scanning Transmission Electron Microscopy/energy-Dispersive Spectroscopy Analysis of the Dentin Adhesive Interface Using a Labeled 2-Hydroxyethylmethacrylate." *Journal of Dental Research*, 74(6):1246-52, 1995.
23. Wandera, A., **P. Spencer**, and B. Bohaty. "In Vitro Comparative Fluoride Release, and Weight and Volume Change in Light-curing and Self-curing Glass Ionomer Materials." *Journal of Pediatric Dentistry*, 18:210-4, 1996.
24. Payne, J.M., C.M. Cobb, J.W. Rapley, W.J. Killoy, and **P. Spencer**. "Migration of Human Gingival Fibroblasts over Guided Tissue Regeneration Barrier Materials." *Journal of Periodontology*, 67:236-44, 1996.
25. **Spencer, P.**, C.M. Cobb, M.H. McCollum, and D.M. Wieliczka. "The Effects of CO₂ Laser and Nd:YAG with and without Water/Air Surface Cooling on Tooth Root Structure: Correlation between FTIR Spectroscopy and Histology." *Journal of Periodontal Research*, 31:453-62, 1996.
26. Arakawa, S., C.M. Cobb, J.W. Rapley, W.J. Killoy, and **P. Spencer**. "Treatment of Root Fracture by CO₂ and Nd:YAG Lasers: An In Vitro Study." *Journal of Endodontics*, 22(12):662-7, 1996.

27. Wieliczka, D.M., **P. Spencer**, and R.Z. LeGeros. "Surface Spectroscopy of Apatitic Materials: Limitations and Concerns." *Journal of Dental Research*, 75(11):1865-70, 1996.
28. Wieliczka, D.M., **P. Spencer**, C.E. Moffitt, E.J. Wagner, and A. Wandera. "Equilibrium Vapor Pressure of Mercury from Dental Amalgam." *In Vitro Dental Materials*, 12(3):179-84, 1996.
29. Wieliczka, D.M., **P. Spencer**, and M.B. Kruger. "Raman Mapping of the Dentin/Adhesive Interface." *Applied Spectroscopy*, 50:1500-4, 1996.
30. Israel, M., C.M. Cobb, J.A. Rossmann, and **P. Spencer**. "The Effects of Nd:YAG, ER:YAG and CO₂ Lasers with and without Air/Water Surface Coolant on Tooth Root Surfaces: An *In Vitro* Study." *Journal of Clinical Periodontology*, 24:595-602, 1997.
31. Krause, L.S., C.M. Cobb, J.W. Rapley, W.J. Killoy, and **P. Spencer**. "Laser Irradiation of Bone: I. An *In Vitro* Study Concerning the Effects of the CO₂ Laser on Oral Mucosa and Subjacent Cortical Bone." *Journal of Periodontology*, 68:872-80, 1997.
32. Wieliczka, D.M., M.B. Kruger, and **P. Spencer**. "Raman Imaging of Dental Adhesive Diffusion." *Applied Spectroscopy*, 51:1593-6, 1997.
33. Moffitt, C.E., D.M. Wieliczka, **P. Spencer**, R. Cole, and A. Wandera. "Equilibrium Vapor Pressure of Mercury from Dental Amalgam under Loading Conditions." *Biomaterials*, 19:1319-22, 1998.
34. Friesen, L.R., C.M. Cobb, J.W. Rapley, L.B. Forgas, and **P. Spencer**. "Laser Irradiation of Bone: II. Healing Response Following Treatment by CO₂ and Nd:YAG Lasers." *Journal of Periodontology*, 70:75-83, 1999.
35. MacNeill, S.R., C.M. Cobb, J.W. Rapley, A.G. Glaros, and **P. Spencer**. "In Vivo Comparison of Synthetic Osseous Graft Materials." *Journal of Clinical Periodontology*, 26:239-45, 1999.
36. Bohaty, B.S., A. Wandera, C. Dunlap, and **P. Spencer**. "A Thorough Dental Examination at an Early Age Assists in an Appropriate Classification of a Subtype of Epidermolysis Bullosa: Report of a Case." *Journal of Clinical Pediatric Dentistry*, 22(3):243-6, Spring 1998.
37. **Spencer, P.** "Dental Amalgam Toxicity or Tales of a 'Mad Hatter.'" *Southeastern Society of Pediatric Dentistry*, 5(1):11-2, 1999.
38. **Spencer, P.**, C.M. Cobb, D.M. Wieliczka, A.G. Glaros, and P.J. Morris. "Change in Temperature of Subjacent Bone during Soft Tissue Laser Ablation." *Journal of Periodontology*, 69:1278-82, 1998.
39. **Spencer, P.**, J.M. Payne, C.M. Cobb, L. Reinisch, G.M. Peavy, D.D. Drummer, D.L. Suchman, and J.R. Swafford. "Effective Laser Ablation of Bone Based on the Absorption Characteristics of Water and Proteins." *Journal of Periodontology*, 70:68-74, 1999.
40. **Spencer, P.** and J.R. Swafford. "Unprotected Protein at the Dentin/Adhesive Interface." *Quintessence International*, 30:501-7, 1999.

41. Lemor, R.M., D.M. Wieliczka, M.B. Kruger, J.R. Swafford, and **P. Spencer**. "Spectroscopic and Morphologic Characterization of the Dentin/adhesive Interface." *Journal of Biomedical Optics*, 4:22-7, 1999.
42. O'Mahony, A. and **P. Spencer**. "Osseointegrated Implant Failures." *Journal of the Irish Dental Association*, 45:44-51, 1999.
43. O'Mahony, A. and **P. Spencer**. "Core Build-up Restorations: Materials and Techniques." *Journal of the Irish Dental Association*, 45(3):84-90, 1999.
44. O'Mahony, A., **P. Spencer**, K. Williams, and J. Corcoran. "The Effect of Three Medicaments on the Dimensional Accuracy and Surface Detail Reproduction of Polyvinylsiloxane Impression Material." *Quintessence International*, 31(3):201-6, 2000.
45. Lemor, R.M., M.B. Kruger, D.M. Wieliczka, **P. Spencer**, and T. May. "Dentin Etch Chemistry Investigated by Raman and Infrared Spectroscopy." *Journal of Raman Spectroscopy*, 31:171-6, 2000.
46. **Spencer, P.**, C.Z. Lopez, M. Padilla, J. Gordon, and K. Williams. "Comparacion de la Cantidad de Fluor Liberado por Sellantes en Agua Destilada y Saliva Artificial." *Colombian Journal of Pediatric Dentistry*, 3(1):9-16, 1999 (Spanish).
47. **Spencer, P.**, and D.M. Wieliczka. "A Review of the Chemical and Morphologic Characterization of the Dentin/Adhesive Interface." *Recent Research Developments in Applied Spectroscopy*, 2:183-93, 1999.
48. O'Mahony, A.M., J.L. Williams, J.O. Katz, and **P. Spencer**. "Anisotropic Properties of Cancellous Bone from a Human Edentulous Mandible." *Clinical Oral Implants Research*, 11(5):415-21, 2000.
49. **Spencer, P.**, Y. Wang, M.P. Walker, D.M. Wieliczka, and J.R. Swafford. "Interfacial Chemistry of the Dentin/Adhesive Bond." *Journal of Dental Research*, 79(7):1458-63, 2000.
50. O'Mahony, A., Q. Bowles, G. Woolsey, S.J. Robinson, and **P. Spencer**. "Stress Distribution in the Single-unit Osseointegrated Dental Implants: Finite Element Analyses of Axial and Off-axial Loading." *Implant Dentistry*, 9(3):207-18, 2000.
51. Walker, M.P., Y. Wang, J. Swafford, A. Evans, and **P. Spencer**. "Influence of Additional Acid Etch Treatment on Resin Cement Dentin Infiltration." *Journal of Prosthodontics*, 9(2):77-81, 2000.
52. McDavid, V.G., C.M. Cobb, J.W. Rapley, A.G. Glaros, and **P. Spencer**. "Laser Irradiation of Bone: III. Long-Term Healing Following Treatment by CO₂ and Nd:YAG Lasers." *Journal of Periodontology*, 72:174-82, 2001.
53. Katz, J.L., S. Bumerraj, J. Dreyfuss, Y. Wang, and **P. Spencer**. "Micromechanics of the Dentin/Adhesive Interface." *Journal of Biomedical Materials Research: Applied Biomaterials*, 58(4):366-71, 2001.
54. **Spencer, P.**, C.M. Cobb, D.M. Wieliczka, A.G. Glaros, and P.J. Morris. "Change in Temperature of Subjacent Bone during Soft Tissue Laser Ablation." *Yearbook of Dentistry*, 277-9, 2000.

55. Friesen, L.R., C.M. Cobb, J.W. Rapley, L.B. Forgas, and **P. Spencer**. "Laser Irradiation of Bone: II. Healing Response following Treatment by CO₂ and Nd:YAG Lasers." *Yearbook of Dentistry*, 279-81, 2000.
56. **Spencer, P.**, and Y. Wang. "Spectral Data Processing." *Journal of Dental Research*, 80(5):1400, 2001.
57. **Spencer, P.**, Y. Wang, M.P. Walker, and J.R. Swafford. "Molecular Structure of Acid-Etched Dentin Smear Layers-*In Situ* Study." *Journal of Dental Research*, 80(9):1802-7, 2001.
58. O'Mahony, A.M., J.L. Williams, and **P. Spencer**. "A Finite Element Analysis of the Effects of Anisotropic Properties of Cancellous Bone on the Peri-implant Stress and Strain." *Clinical Oral Implants Research*, 12:648-57, 2001.
59. Petrie, C.S., J.D. Eick, K. Williams, and **P. Spencer**. "Comparison of the Tensile Bond Strengths of Three Different Surface Treated Alloys Cemented to Human Teeth." *Journal of Prosthodontics*, 10(4):217-23, 2001.
60. Gawenis, L.R., **P. Spencer**, L.S. Hillman, J.S. Morris, and L.L. Clarke. "Mineral Content of Calcified Tissues in Cystic Fibrosis Mice." *Biological Trace Element Research*, 83:69-81, 2001.
61. Masood, F., J.O. Katz, P.K. Hardman, A.G. Glaros, and **P. Spencer**. "Comparison of Panoramic Radiography and Panoramic Digital Subtraction Radiography in the Detection of Simulated Osteophytic Lesions of the Mandibular Condyle." *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, Endodontology*, 93:626-31, 2002.
62. **Spencer, P.**, and Y. Wang. "Adhesive Phase Separation at the Dentin Interface under Wet Bonding Conditions." *Journal of Biomedical Materials Research*, 62(3): 447-56, 2002.
63. Wang, Y., and **P. Spencer**. "Analysis of Acid-Treated Dentin Smear Debris and Smear Layer Using Confocal Raman Microspectroscopy." *Journal of Biomedical Materials Research*, 60(2):300-8, 2002.
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Patents

Novel Monomer for Dental Adhesive. Inventors: J Park, P Spencer, E Topp, Q Ye. United States Patent 8,344,041. Issued 1/1/2013.

Interaction With Metalloenzymes. Inventors: JS Laurence, P Spencer, G Laurence, Provision Patent: 61/903,303, Filing Date: November 12, 2013. Licensed to Echogen on June 26, 2014.

Novel Tertiary Amine Co-Initiator for Dental Compositions and Other Biomedical Applications with Reduced Leaching. Inventors: XP Ge, Q Ye, P Spencer, JS Laurence. Provisional Patent: KU Ref. No. 16994.120, Filing Date, April 11, 2015.

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149. Benavides E*, Spencer P, Katz JL, Fricke B, Wang Y, Bilgen M, and Gleeson E. Structure and Property Characterization of the Temporomandibular Joint Disc. Annual Kansas City Area Life Sciences Research Day, 158, 2005 (Poster).
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163. Misra A*, Spencer P, Marangos O, Wang Y, Walker MP, and Katz JL. Multi-scale Analysis of Dentinal Matrix Micromechanical Properties. *Journal of Dental Research* 85:0164, Special Issue, 2006, (AADR).
164. Marangos O*, Misra A, Katz JL, Wang Y, and Spencer P. Time/Frequency Domain Quantification of Dentin Elasticity with Scanning Acoustic Microscopy. *Journal of Dental Research* 85:0291, Special Issue, 2006, (AADR).
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184. Spencer P*, Park JG, Ye Q, Topp E, Yao X, Lee CH, Kostoryz EL, Misra A, and Wang Y. Synthesis and Characterization of New Methacrylate Monomers for Dentin Adhesives. Abstract #0126, AADR Meeting, April 2008.
185. Yao X*, Whitt JC, Spencer P, and Wang Y. FTIR Imaging Studies on Early Dental Caries with/without Polarization. Abstract #0422, AADR Meeting, April 2008.
186. Marangos O*, Misra A, Spencer P, Sohn M, Wang H, and Katz JL. Effect of Acid Etching on Dentin Micromechanical Properties. Abstract #0068, AADR Meeting, April 2008.
187. Misra A*, Marangos O, Spencer P, Bohaty B, Walker MP, and Katz JL. Micro-scale Compositional and Mechanical Analysis of Primary Dentin. Abstract #0067, AADR Meeting, April 2008.
188. Ye Q*, Park JG, Misra A, Marangos O, Eslick J, Einhelig J, Wang Y, Yao XM, and Spencer P. Nano-scale Heterogeneity of Dentin Adhesive Following Environmental Stress. Abstract #1100, AADR Meeting, April 2008.
189. Wang Y*, Yao X, Benganem A, Sultan H, and Spencer P. Effect of Solvent Content on Micro-scale Mechanics/Chemistry of Adhesive/Dentin Interface. Abstract #0069, AADR Meeting, April 2008.
190. Park JG*, Ye Q, Davis H, Davydova N, Topp E, Kostoryz EL, Yao X, Lee CH, Wang Y, and Spencer P. Enzymatic Degradation of Dentin Adhesives Containing New Urethane-linked Trimethacrylate Monomer. Abstract #0861, AADR Meeting, April 2008.
191. Calabria MP*, Pereira JC, Spencer P, Atta MT, Mattos MCR, and Costa LC. SEM Analysis of Dentin Intratubular Structures in Non-Carious Cervical Lesions. Abstract #2079, IADR Meeting, July 2008.
192. Misra A*, Singh V, Spencer P, and Guess T. Microstructure and Composition Based Constitutive Relationships for Meniscus/Cartilage. SIAM Life Sciences 08 Conference, Montreal, Canada, August 6-8, 2008.
193. Spencer P*, Ye Q, Park JG, Misra A, Topp EM, Kostoryz EL, and Wang Y. Effect of Water on Photopolymerization and Properties of Dentin Adhesives with Branched Methacrylate. Society for Biomaterials 2008 Symposium-Translation Biomaterials Research, Atlanta, GA, September 2008.
194. Ye Q*, Spencer P, Park JG, Misra A, Topp EM, and Wang Y. Correlation between Photo-Polymerization Behavior and Microstructure of Heterogeneous Model Dentin Adhesive. Society for Biomaterials: Symposium-Translation Biomaterials Research, Atlanta, GA September 2008.

195. Ye Q*, Park JG, Misra A, Spencer P, and Topp EM. Structural and Polymerization Characteristics of Hydroxyapatite-impregnated Organophosphate Dental Resin. Society for Biomaterials Symposium, San Antonio, TX, April 2009.
196. Spencer P*, Ye Q, Park J, Topp EM, Yao X, Nalvarte EL, Wang Y, Bohaty BS, and Misra A. Water Absorption and Wetting Properties of Dentin Adhesives with a Urethane-based Branched Methacrylate. Society for Biomaterials Symposium, San Antonio, TX, April 2009.
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199. Spencer P*, Park J, Ye Q, Topp EM, Misra A, Lee CH, Kostoryz EL, and Wang Y. Thermomechanical Behavior, Biodegradation and Ester Linkages in Novel Dentin Adhesives. *Journal of Dental Research* 88A:1650, Special Issue, Miami FL, April 2009, (IADR/AADR).
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202. Wang Y*, Guo X, Yao X, and Spencer P. Water Gradients in Dentin/Adhesive Interface by Confocal Raman Microscopy. *Journal of Dental Research* 88A:1520, Special Issue, Miami, FL, April 2009, (IADR/AADR).
203. Park JG*, Eslick J, Davis C, Secka M, Ye Q, Camarda K, Kieweg S, Misra A, and Spencer P. Structure-Property Relationships in Dentin Adhesives. Abstract #90, *Journal of Dental Research* 89: Special Issue A. Washington DC, AADR meeting, 2010.
204. Singh V, Misra A*, Marangos O, Ye Q, Park JG, Eslick J, and Spencer P. Fatigue Behavior of Dentin Adhesives under Dry and Wet Conditions. Abstract #143, *Journal of Dental Research* 89: Special Issue A, Washington DC, AADR meeting, 2010.
205. Ye Q*, Park JG, Misra A, Nalvarte E, and Spencer P. Photoinitiator Effect in Degradation Studies of Model Dentin Adhesives. Society for Biomaterials, Annual Meeting, Seattle, WA, 2010.
206. Guo X, Yao X, Spencer P, and Wang Y*. Water Gradients in Dentin/Adhesive Interface by Confocal Raman Microscopy. XXII International Conference on Raman Spectroscopy, Boston, MA, 2010.
207. Misra A*, Singh V, Parthasarathy R, Marangos O, and Spencer P. Mathematical Model for Anomalous Creep in Model Dentin Adhesives. *Journal of Dental Research* 89:574, San Diego, CA, March 2011 (IADR/AADR).

208. Marangos O*, Misra A, Spencer P, and Katz JL. Focused High Frequency Ultrasonic Wave Interaction with Acid-etched Dentin. *Journal of Dental Research* 89:1567, San Diego, CA, March 2011 (IADR/AADR).
209. Park J*, Ye Q, Chen Z, Laurence J, Misra A, and Spencer P. NMR Study for Neutralization and Stability of Basic Monomer. *Journal of Dental Research* 89:1699, San Diego, CA, March 2011 (IADR/AADR).
210. Ye Q*, Park J, Pamatmat F, Parthasarathy R, Misra A, and Spencer P. Water Compatibility and Phase Diagram of Model Dentin Adhesives. *Journal of Dental Research* 89:1700, San Diego, CA, March 2011 (IADR/AADR).
211. Spencer P*, Park J, Ye Q, Singh V, and Misra A. Preparation and Characterization of Water Compatible Dentin Adhesives. *Journal of Dental Research* 89:1707, San Diego, CA, March 2011 (IADR/AADR).
212. Singh V*, Misra A, Marangos O, Park J, Ye Q, Kieweg S, and Spencer P. Anomalous Creep in Model Dentin Adhesive under Changing Moisture Conditions. *Journal of Dental Research* 89:1708, San Diego, CA, March 2011 (IADR/AADR).
213. Parthasarathy R*, Misra A, and Spencer P. Application of Soft Tissue Micromechanics Model to Condylar Cartilage. *Journal of Dental Research* 89:3610, San Diego, CA, March 2011 (IADR/AADR).
214. Ye Q*, Park JG, Misra A, Parthasarathy R, Singh V, and Spencer P. Synthesis and Characterization of Nanostructured Dental Polymers through Phase Dispersion Control. *Society for Biomaterials 2011 Annual Meeting*, Orlando, FL, April 2011.
215. Spencer P*, Ye Q, Park JG, Chen Z, Misra A, and Laurence JS. Spectroscopic Characterization of Structural and Functional Properties of Dentin Adhesive with Buffering Capability. *Society for Biomaterials 2011 Annual Meeting*, Orlando, FL, April 2011.
216. Ye Q*, Spencer P, Parthasarathy R, Park JG, Laurence JS, and Misra A. Multivariate Spectral Analysis of Phase Partitioning in Methacrylate-based Dentin Adhesive. *American Chemistry Society, Joint Regional (Midwest & Great Lakes) Meeting*, Saint Louis, MO, October 2011.
217. Ye Q*, Parthasarathy R, Gonçalves SEP, Park JG, Misra A, Marangos O, and Spencer P. Aqueous Phase Properties of Model Dentin Adhesives Experiencing Phase Separation. *9th World Biomaterials Congress*, Chengdu, China, June 2012.
218. Gonçalves SEP*, Ye Q, Parthasarathy R, Park JG, and Spencer P. Dentin Adhesive in Overwet Environment: Photoinitiator Composition and Concentration. *International Association of Dental Research (IADR)/ Latin American Region (LAR) 2012 Annual Meeting* Iguazu Falls, Brazil, June 2012.
219. Abedin F, Ye Q, Spencer P*, Parthasarathy R, Laurence JL, and Misra A. Hydrophilic-rich Phase in Dentin Adhesive: Photo-polymerization and Critical Water Content. Abstract #1544, *IADR/AADR/CADR 2013 Annual Meeting* Seattle, WA, March 2013.

220. Spencer P*, Ye Q, Parthasarathy R, Singh V, Misra A, and Laurence JS. Structure/Property of Model Dentin Adhesives Exposed to Wet Environments. Society for Biomaterials, Boston, MA, April 2013.
221. Ye Q*, Abedin F, Spencer P, Parthasarathy R, Misra A, and Laurence JS. Photopolymerization Kinetics of Hydrophilic-rich Phase Mimic in Dentin Adhesive. *Society for Biomaterials 2013 Annual Meeting*, Boston, MA, April 2013.
222. Ye Q*, Abedin F, Good H, Spencer P, Parthasarathy R, Tamerler CB, Misra A, Laurence JS, and Berrie C. Hydrophilic-rich Phase Mimic in Dental Adhesive: Polymerization- and Solvent-Induced Phase Separation. *Society for Biomaterials 2014 Annual Meeting*, Denver, CO, April 2014.
223. Spencer P*, Ye Q, Song LY, Ge XP, Misra A, Tamerler CB, Berrie C, and Laurence JS. Interfacial Design of Dentin Adhesive with a Branched Carboxylic Acid Monomer. *Society for Biomaterials 2014 Annual Meeting* Denver, CO, April 2014.
224. Abedin F, Goncalves SEP*, Ye Q, Laurence JS, and Spencer P. Polymerization Kinetics of Hydrophilic-rich Phase in Phase-Separated Dentin Adhesives. *Academy of Dental Materials, Annual Meeting*, Bologna, Italy, October 2014.
225. Ye Q*, Abedin F, Good H, Spencer P, Parthasarathy R, Tamerler CB, Misra A, Laurence JS, and Berrie C. Synthesis and Characterization of a Novel Polymerizable Amine Co-Initiator for Dental Application: Evaluation of Polymerization Kinetics and Quantification of Leachables. *Society for Biomaterials 2015 Annual Meeting*, Charlotte, NC, April 2015.
226. Abedin F, Gonçalves SEP*, Ye Q, and Spencer P. Light Intensity and Polymerization Kinetics of Hydrophilic- and Hydrophobic-rich Adhesive Phases. *47th Meeting of the Continental European Division of the International Association for Dental Research (CED-IADR) Annual Meeting* Antalya, Turkey, October 2015.
227. Abedin F, Ye Q, Spencer P, and Camarda K*. Computer-aided Molecular Design of Water Compatible Visible Light Photosensitizer for Dental Applications. *AIChE Annual Meeting*, Salt Lake City, UT, 2015.
228. Abedin F, Roughton B, Spencer P, Ye Q, and Camarda K*. Computational Molecular Design of Water Compatible Dentin Adhesive System. 12th PSE and 25th ESCAPE meeting, Copenhagen, Denmark, June 2015.

C. Seminars & Invited Presentations:

1. Spencer P*, Physics Seminar, UMKC Physics Department. "FTIR Photoacoustic Spectroscopy of Biological Substrates." 1992.
2. Spencer P*, Dental Materials Seminar, Medical College of Georgia, Augusta, GA. "Biocompatibility: A Step Beyond." 1993.
3. Spencer P*, Seminar, University of Texas Health Science Center, San Antonio, TX. "Laser Irradiation of Dental Hard Tissues: Damage Control." 1994.
4. Spencer P*, Seminar, University of Louisville School of Dentistry, Louisville, KY. "Structural Characterization of Early Bone Healing in the Mature Canine." 1995.
5. Spencer P*, Seminar, UMKC Department of Chemistry, Kansas City, MO. "Raman Chemical Imaging of the Dentin/Adhesive Interface." 1999.
6. Spencer P*, Guest Lecture, Kansas City Chemist, Kansas City Section of the American Chemical Society, Park College, Parkville, MO. "Mercury Release from Dental Amalgam: A Clear & Present Danger or Tales of a "Mad Hatter?" 1999.
7. Spencer P*, Oral Biology Seminar Series, UMKC Faculty, Students, and Staff. "Mercury Release from Dental Amalgam: A Clear & Present Danger or Tales of a "Mad Hatter?" 1999.
8. Spencer P*, Seminar to University of Missouri-Rolla Faculty, Students, and Staff in Ceramic/Composite Engineering. "Spectroscopic Imaging of Biointerfaces & the (Political) Science of Mercury-Containing Dental Materials." 2001.
9. Spencer P*, Oral Biology Seminar Series, UMKC, "Interfacial Chemistry & Mechanics: How Do They Relate to the Clinical Performance of a Material?" 2002.
10. Spencer P*, Missouri Summit on Life Sciences, One of three invited presenters for Biomedical Engineering: Now & Future. "Biomaterials/Tissue Engineering." 2002. *Invited presentation.*
11. Spencer P*, Oral Biology Seminar Series, UMKC, "Chemical Imaging: What is it & What Can it Tell Me about the Material/Tissue Interface?" 2003.
12. Spencer P*, Wang Y, and Katz JL. "Molecular Dynamics at the Dentin/Adhesive Interface." Annual Meeting of the Academy of Dental Materials, Charleston, SC, 2003. *Invited keynote presentation.*
13. Wang Y*, Spencer P, and Katz JL. Molecular/Mechanical Imaging at the Material/Tissue Interface. FACSS 30th Annual Meeting, Ft. Lauderdale, FL, 2003. *Invited presentation.*
14. Katz JL*, Wang Y, Hein HJ, and Spencer P. "Continued Scanning Acoustic Microscopy and Ultrasonic Wave Propagation for Imaging and Measurements of Connective Tissue

- Properties.” Second International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity, Corpus Christi, TX, 2003. *Invited presentation.*
15. Katz JL*, Spencer P, Wang Y, Misra A, and Marangos O. “Hierarchical Material/Structural Relationships at the Dentin/Adhesive Interface.” Composites: The Role of Interfaces Within and Between Composites, Lake Louise, Canada, 2003. *Invited presentation.*
 16. Spencer P* and Katz JL. “Research Activities at the UMKC Center for Research on Interfacial Structure & Properties (CRISP).” Missouri Nanotechnology Alliance Meeting, St. Louis, MO, May 14 & 15, 2004. *Invited presentation.*
 17. Spencer P* and Katz JL. “Team Science and UMKC-CRISP Research Activities.” Research Alliance of Missouri, Jefferson City, MO, July 13, 2004.
 18. Spencer P*. “Molecular Dynamics at the Dentin/Adhesive Interface.” Ohio State University Seminar Series, Columbus, OH, August 13, 2004. *Invited presentation.*
 19. Spencer P*. “Molecular Dynamics at the Material/Tissue Interface.” University of Kansas, Department of Pharmaceutical Chemistry Seminar Series, Lawrence, KS, October 18, 2005. *Invited presentation.*
 20. Spencer P*, Misra A, Marangos O, Wang Y, Katz JL, and Dharmala R. “Molecular/Mechanical Imaging & Adhesive/Dentin Interfacial Structure, Properties and Functional Relationships.” Composites at Lake Louise, Lake Louise, Canada, October 31, 2005. *Invited presentation.*
 21. Spencer P*. “Structure, Property, Function: Engineering at the Interface with Clinical Sciences. The Role of Bioengineering.” University of Kansas Medical Center, Kansas City, KS and University of Kansas, Lawrence, KS. March 14-15, 2006.
 22. Spencer P*, Benavides E, Wang Y, Katz JL, Yao X, and Misra A. “Multi-scale Structure/Property Imaging of the TMJ.” TMJ Bioengineering Conference, Broomfield, CO, May 25-27, 2006. *Invited presentation.*
 23. Spencer P*. “The Future of Dental Research in an Academic Setting – How Do We Get There?” University of Minnesota School of Dentistry, September 17, 2006.
 24. Spencer P*, Wang Y, Katz JL, Misra A, Marangos O, and Bohaty BS. “Tales of a Mad Hatter.” Oral and Craniofacial Biology Symposium, Kansas City, MO, October 9, 2006. *Invited presentation.*
 25. Spencer P*, Wang Y, Bohaty B, Sene F, Katz JL, and Misra A. “Water, ‘Kissing Bonds’ and Dentin/Adhesive Interfacial Chemomechanics.” Annual Meeting of the Academy of Dental Materials, Sao Paulo, Brazil, October 23-25, 2006. *Invited presentation.*

26. Spencer P*. "The Future of Bioengineering in the Heartland." First Regional Bioengineering Day, Lawrence, KS, February 3, 2007. Organized and hosted this event with Dr. Lisa Friis.
27. Spencer P*. "Material/Tissue Interfacial Structure/Property Imaging." Annual Meeting of the International Association of Dental Research/American Association of Dental Research, Lunch & Learn Seminar, March 22, 2007. *Invited presentation.*
28. Spencer P*. "Issues Facing Oral Healthcare for Children." University of Minnesota School of Dentistry, June 15, 2007.
29. Spencer P*. "Structure, Property, Function: Engineering at the Interface with Clinical Sciences." University of Kansas, Chemical and Petroleum Engineering Colloquium, November 27, 2007.
30. Spencer P*. Featured Speaker for the Annual Meeting of the Rho Chapter of Omicron Kappa Upsilon. March 25, 2009.
31. Spencer P*. "Tales of a Mad Hatter." Distinguished Professor Lecture, University of Kansas, Lawrence, KS, October 27, 2009.
32. Benavides E, Bilgen M, Spencer P*, Katz JL, Wang Y, and Misra A. "Structure/Property Imaging of the TMJ." TMJ Bioengineering Conference, Broomfield, CO, November 4-7, 2009. *Invited keynote presentation.*
33. Spencer P*. "Tissue Reconstruction and Hydrophobic Polymers." Physics Seminar, University of Kansas, Lawrence, KS, December 7, 2009.
34. Spencer P*. "Tissue Reconstruction and Hydrophobic Polymers: Challenges and Opportunities." Webinar presented to the Society of Manufacturing Engineers, February 25, 2010.
35. Spencer P*. "Dentin/Adhesive Interface: the Weakest Link in the Composite Restoration." 25th Bauru Dental Congress-Gold Jubilee of Bauru School of Dentistry, Bauru, Sao Paulo State, Brazil. May 17-19, 2012. *Invited featured speaker.*
36. Spencer P*. "Designing New Materials for Tissue Reconstruction." Universidade Estadual Paulista "Julio de Mesquita Filho," Sao Jose dos Campos, Sao Paulo, Brazil, May 15, 2012. *Invited.*
37. Spencer P*. "The Science of Adhesion." Dental Conference, Londrina, Brazil, May 21, 2012. *Invited featured speaker.*
38. Spencer P*. "Rational Design of Materials to Reconstruct Oral & Craniofacial Tissues." Academy of Dental Materials, Lunch and Learn, Vancouver, Canada, Oct. 10, 2013. *Invited.*

D. Research Support:

Research Grants and Awards

Extramural

Title and Role on Project	Funding Agency	Amount	Dates
Development of a Substrate for Testing Dental Adhesion P Spencer: Principal Investigator (PI)	Physician Scientist Award for Dentists, Department of Health and Human Services, U.S. Public Health Service, DE00260	\$382,151 (direct costs)	6/89-5/95
Effect of Sr and Other Elements on Formation and Stabilization of Calcium Phosphates RZ LeGeros: PI, P. Spencer: Consultant	Department of Health and Human Services, U.S. Public Health Service DE04123-13		7/89-9/90
Improved Polymeric Restorative Through Molecular Design JD Eick: PI, P. Spencer: Member, Internal Review Board	National Institutes of Health/National Institute of Dental Research 5 P01 DE09696		1991-2005
Mercury Release in Dental Amalgam by Surface Spectroscopy DM Wieliczka: PI, P Spencer: co-PI	Department of Health and Human Services, U.S. Public Health Service	\$49,525 (direct costs)	5/92-4/94
Biomaterials Ph.D. Training for Dentists JD Eick: PI, P Spencer: co-PI	National Research Service Award, Department of Health and Human Services, U.S. Public Health Service, DE07294	\$870,877 (direct costs)	9/96-8/01
Spectroscopic Imaging of the Dentin/Adhesive Interface P Spencer: PI	Department of Health and Human Services, U.S. Public Health Service, R15 DE12252	\$101,368 (total costs)	5/97-4/99

Title and Role on Project	Funding Agency	Amount	Dates
Molecular Dynamics at the Dentin/Adhesive Interface P Spencer: PI	Department of Health and Human Services, U.S. Public Health Service, R01-DE12487	\$777,409 (total costs)	9/15/98- 7/31/04
Pre and Post Doctoral Training, UMKC School of Dentistry JD Eick: PI P Spencer: co-PI	Department of Health and Human Services, U.S. Public Health Service, T32 DE-7294	\$2,499,750 (direct costs)	7/01/01- 6/30/06
High and Low Frequency Scanning Acoustic Microscopes P Spencer: PI	Department of Health and Human Services, U.S. Public Health Service, S10 RR16710	\$500,000 (total costs)	5/1/02- 4/30/04
Molecular Dynamics in Class II Composite Restorations B. Bohaty: PI P Spencer: Mentor	National Institutes of Health/National Institute of Dental & Craniofacial Research, Mentored Patient-Oriented Research Career Development Award, 1K23DE/HD00468	\$636,014 (total costs; IDC: 8%)	3/15/02- 2/28/07
Im/Miscible Adhesive/Dentin Interface: Structure/Mechanic P Spencer: PI	National Institutes of Health/National Institute of Dental & Craniofacial Research, R01DE014392	\$1,366,250 (total costs)	7/15/03- 4/30/08
Molecular/Mechanical Imaging of Dentin Bonding Substrate Y Wang: PI P Spencer: Mentor	National Institutes of Health/National Institute of Dental & Craniofacial Research, Mentored Career Development Award, K25 DE015281	\$566,261 (total costs, IDC: 8%)	8/1/03- 5/31/08
Dentin/Adhesive Interface Structure Property Imaging Y Wang: PI P Spencer: Senior Investigator	National Institutes of Health/National Institute of Dental & Craniofacial Research, R03-DE15735	\$147,000 (total costs)	3/1/05- 2/28/07

Title and Role on Project	Funding Agency	Amount	Dates
Dental Science Research Training Program for Engineers P. Spencer: PI JL Katz: co-PI	National Institutes of Health, R13 DK069504	\$648,000 (total costs, IDC: 8%)	9/20/04- 7/31/07
Due to Dr. Katz's retirement, NIH approved my appointment as PI on this grant.			
Radiation Therapy Impact on Structure/Mechanics of Teeth MP Walker: PI P. Spencer: Mentor	National Institutes of Health/National Institute of Dental & Craniofacial Research K23 DE016023-01A1	\$612,500 (total costs, IDC: 8%)	7/1/05- 6/30/10
RET Site: Bioengineering Toolkits for 4 th Grade Teachers (Bet 4 Teachers) E. Friis: PI P. Spencer: Co-PI	National Science Foundation EEC-0808749	\$500,000	9/1/08- 8/31/12
Im/Miscible Adhesive/Dentin Interface: Structure/Mechanic P. Spencer: PI	National Institutes of Health/National Institute of Dental & Craniofacial Research, R01DE014392-07	\$1,378,278 (total costs)	5/1/08- 4/30/13
Im/Miscible Adhesive/Dentin Interface: Structure/Mechanic P. Spencer: PI	National Institutes of Health/National Institute of Dental & Craniofacial Research, 3R01DE014392-08S109	\$123,939 (total costs)	10/1/09- 8/31/2011

Title and Role on Project	Funding Agency	Amount	Dates
Gradient-based Strategy for Osteochondral Regeneration M Detamore: PI P Spencer: Investigator	NIH/NIAMS AR056347-01	\$1,347,542 (total costs)	04/01/2010- 3/31/2015
Proton Sponge Adhesives, Interfacial Milieu: Molecular Structure-Mechanics P Spencer: PI (contact) JS Laurence: PI	NIH/NIDCR 1R01DE022054	\$1,813,385 (total costs)	07/01/2011- 06/30/2016
Supplement for Collaborative Science P Spencer: PI JS Laurence: Co-PI	NIH/NIDCR 3R01DE022054-04S1	\$176,221	09/15/2014- 6/30/2016
MRI: Acquisition of an Advanced X-Ray Photoelectron Spectroscopy for Materials Research TV Nguyen: PI P Spencer: Co-PI	NSFCBET-1429727	\$650,000	09/01/2014- 08/31/2017
MRI: Acquisition of an FEI Versa 3D dual-beam FIB/SEM for Catalysis and Materials Research B Subramaniam: PI P Spencer: Co-PI	NSF0067935	\$2,200,000 (total costs)	09/15/2012- 8/31/2014
Peptide-Polymer Engineering Dentin/Adhesive Interfacial Bond Integrity P Spencer: PI (contact) C Tamerler: PI	NIH/NIGMS/NIDCR 1R01DE025476	\$1,519,336 (total costs)	08/07/2015- 01/31/2020

Intramural Research Grants

Title and Role on Project	Funding Agency	Amount	Dates
Surface Chemistry Properties of Selected Solids Prior and Subsequent to Pellicle Formation P Spencer: PI	University of Mississippi	\$4,527	1982
Magnesium in the Teeth of Growing Rat Pups: Amount, Distribution and Effects on Enamel Structure Robert Doremus: PI P Spencer: Co-PI	Rensselaer Polytechnic Institute	\$1,029	1986
The Effect of Magnesium on Enamel Crystal Chemistry in the Normal, Young Rat P Spencer: PI	University of Missouri-Kansas City School of Dentistry	\$2,643	1988
Mercury Release in Dental Amalgam Using Surface Spectroscopy DM Wieliczka: PI P Spencer: Co-PI	Extramural Proposals Incentive Program University of Missouri-Kansas City	\$4,000	9/91-9/92
A Novel Assessment of Dental Fluorosis BS Bohaty: PI P Spencer: co-PI	University of Missouri Research Board	\$15,761	2/93-2/94
Investigation of New Technological Materials with X-ray Photoelectron Spectroscopy DM Wieliczka: PI P Spencer: Co-PI	University of Missouri Research Board Special Opportunities	\$90,000	1994
Novel Assessment of Laser Irradiation Damage to Dental Hard Tissue P Spencer: PI	University of Missouri Research Board	\$32,475	1/94-1/95

Title and Role on Project	Funding Agency	Amount	Dates
New Microscope and Analytic Equipment for UMKC JD Eick: PI P Spencer: Co-PI	University of Missouri Research Board, Special Opportunities	\$109,000	12/9/98- 11/30/00
Purchase of FTIR Spectrometer P Spencer: PI	University of Missouri-Kansas City School of Dentistry, #0154	\$8,000	6/18/01- 5/1/02
Multi-disciplinary Research and Training at UMKC-CRISP P Spencer: PI	Chancellor's Fund for Innovation	\$29,560	7/1/04- 8/31/07
Integrated Structure/Property/Function Imaging Platform Y Wang: PI P Spencer: Co-PI	University of Missouri Research Board	\$17,300	1/1/05- 12/31/05
Optimizing Drug Delivery of Vaginal Anti-HIV Microbicides S Kieweg: PI P Spencer: Mentor (one of three mentors)	University of Kansas Medical Center, Institutional K12, Title of sponsoring grant, "Building Interdisciplinary Research Careers in Women's Health"	\$247,451	1/1/07- 12/31/09
Kansas Center for Biomaterials Innovation and Design P Spencer: Co-PI (University of Kansas) D. McDonald: Co-PI (Wichita State University)	Kansas Bioscience Authority Centers of Innovation Planning Grant	\$60,000	1/16/08- 7/16/08

Other Research Grants

Title and Role on Project	Funding Agency	Amount	Dates
Carbamide Peroxide Tooth Bleaching: Effects of Composite Composition and Topography Beth Blackwell: Dental Student P Spencer: Faculty Sponsor	American Association Dental Research (AADR) Student Research Fellowship	\$1,900	5/91- 5/92
Photoacoustic Spectroscopy: Its Use in the Characterization of Dentin Substrate Variations as a Function of Pulpal Proximity Laura Marshall: Dental Student P Spencer: Faculty Sponsor	AADR Student Research Fellowship	\$1,900	5/91- 5/92
Chemical Characterization of Sclerotic Dentin Using FT-IR Photoacoustic Spectroscopy Sara Adams: Dental Student P Spencer: Faculty Sponsor	AADR Student Research Fellowship	\$1,900	6/92- 6/93
Interfacial Chemistry of Adhesive Restorations Melissa Brown: Dental Student P Spencer: Faculty Sponsor	AADR Student Research Fellowship	\$2,400	6/1/99- 4/1/00
The Effect of a Sonic Toothbrush on Esthetic Restorative Materials P Spencer: PI	Teledyne Waterpik Corp.	\$11,500	1995
Dimensional Accuracy of Five Die Materials Nicholas Theodotou: Graduate Prosthodontics Student P Spencer: Faculty Sponsor	American Academy of Fixed Prosthodontics, Tylmsen Award	\$1,500	1995

Title and Role on Project	Funding Agency	Amount	Dates
Institute for Advancing Medical Innovation Scott Weir: PI P Spencer: Co-PI and research mentor for Stephen Waller, MD	Kauffman Foundation and Kansas University Endowment Association	\$16,000,000	1/09-13
Driving Biomaterials Discovery Through Kansas-Brazil Bridge P Spencer: PI	Fulbright-Brazil Scientific Mobility Program	\$22,854	2/15-5/15

II. TEACHING

A. Classroom/Laboratory Courses Director

Developmental Defects I and II, second and third-year dental students, University of Mississippi School of Dentistry, Jackson, MS, 1982-84.

D431, Pediatric Dentistry, Introductory course in pediatric dentistry, second-year dental students, University of Missouri-Kansas City School of Dentistry, 1989-94.

BISC 742, Dental Biomaterials for the Restorative and General Dentist, graduate level course in biomaterials, University of Missouri-Kansas City, 1989-2006.

BISC 739, Dental Biomaterials for the Dental Specialist, graduate level course in biomaterials presented to orthodontic and prosthodontic residents, University of Missouri-Kansas City, 1994-95 and 1997-98.

BISC 701, Engineering Principles of Materials Used in Dentistry, new course for interdisciplinary PhD students, University of Missouri-Kansas City, 1998-2004.

BISC 830, Structural Analysis of Biomaterials and Biomaterial/Tissue Interfaces, new course for interdisciplinary PhD students, University of Missouri-Kansas City, 1999-2004.

Initiated and Organized First Seminar Series in Oral Biology, seminars are open to all University faculty, staff, and students, University of Missouri-Kansas City, 1999-2001.

BAD 5740-Science and Methods for Studying Biological Interfaces. This course was developed and presented as a 60 hour (four credits) discipline at the Bauru School of Dentistry, University of Sao Paulo, Bauru, Brazil. *Visiting Professor*, University of Sao Paulo, 2009.

ME 990, Advanced Biomaterials, University of Kansas School of Engineering, Fall 2010-present.

ME 890, Research Methods, University of Kansas School of Engineering, Spring 2011-present.

“Materials Science-Nondestructive Characterization Techniques.” This course was developed and presented as a 120 hour (eight credits) senior undergraduate/graduate course at the Universidade Estadual Paulista “Julio de Mesquita Filho,” Sao Jose dos Campos, Sao Paulo, Brazil. Visiting Professor with the Faculty Fulbright Research/Teaching Award, University of San Paulo, 2015.

Laboratory Course Director

1986-87 Two graduate students in the materials engineering program at Rensselaer Polytechnic Institute worked with me to complete their research in partial fulfillment of the requirements for the M.S. in Materials Engineering. This research resulted in the following master's theses: "Elemental Analysis of Dental Enamel in Magnesium-Supplemented Rats" and "X-ray Diffraction Studies of Enamel in Mg Supplemented Rats."

1989-94 Faculty mentor for first-year dental students enrolled in "Research Methods in Dentistry." University of Missouri-Kansas City School of Dentistry.

1989-2007 Faculty sponsor in the Summer Research Dental Scholars Program. This program promotes first-hand research experience for undergraduate dental students. University of Missouri-Kansas City School of Dentistry. Dental Student Summer Research Scholars: Beth Blackwell, Laura Marshall, Sara Adams, Melissa Brown, Matt Defelice, Dino Drummer, David Suchman, Christy Hager, Tim McMann, Tim Hung, Brenton Reavley.

1989-2007 Faculty mentor, Elements of the Scientific Method BISC 751, individualized instruction for students enrolled in the M.S. in Oral Biology program, University of Missouri-Kansas City.

1989-2007 Faculty mentor, Research Methods in Oral Biology BISC 752, individualized instruction for students enrolled in the M.S. in Oral Biology program, University of Missouri-Kansas City.

1991-95 Responsible for the research training of post-graduate pediatric dentists involved in the Research Fellowship in Pediatric Dentistry. This Fellowship was sponsored by Children's Mercy Hospital (through funding from the Missouri Elks) and UMKC School of Dentistry.

Summer 2005, Faculty mentor and Co-Director, NIH-supported Short-Term Research Training Program in Dental and Craniofacial Bioengineering. This 10-week program provided participants with intensive didactic instruction and research experiences.

Summer 2006, Faculty mentor and Director, NIH-supported Short-Term Research Training Program in Dental and Craniofacial Bioengineering.

Summer 2007, Faculty mentor and Director, NIH-supported Short-Term Research Training Program in Dental and Craniofacial Bioengineering.

Lecturer for Courses

1982-84, Dental Morphology and Occlusion Course, University of Mississippi School of Dentistry.

1982-84, Pediatric Dentistry I and Pediatric Dentistry II, University of Mississippi School of Dentistry.

1982-84, Behavioral Disorders Course, University of Mississippi School of Dentistry.

1983-84, Dental Hygiene, Lectures and materials for three new courses to junior dental hygiene students; University of Mississippi School of Dentistry.

1989-95 Pediatric Dentistry D560, Advanced course in pediatric dentistry, presented to third-year dental students, University of Missouri-Kansas City (UMKC) School of Dentistry.

1994-2004 Dental Biomaterials DH 3220, Course in dental materials presented to junior dental hygiene students, UMKC School of Dentistry.

1995-96, Dental Biomaterials Seminar D519, Course presented to fourth-year dental students, UMKC School of Dentistry.

1995-96, 1998-2002, Operative Dentistry D510, Course presented to fourth-year dental students, UMKC School of Dentistry.

1995-2004, Pediatric Dentistry D431, Introductory course in pediatric dentistry, presented to second-year dental students, UMKC School of Dentistry.

1995-2000, PERIO 730, Biology of the Periodontium, presented to residents in orthodontics, periodontics, and oral medicine/oral radiology, UMKC School of Dentistry.

1996-2007, GNPS 728, Implantology, presented to residents in periodontics and general dentistry, UMKC School of Dentistry.

1997-99 Materials Expert, GNPR 718, Special Problems in General Practice Dentistry I, presented to residents in general dentistry, UMKC School of Dentistry.

2004, ORBIO 807, Structure and Properties of Calcified Tissues, presented to MS, Ph.D. students in engineering and/or biological sciences. University of Missouri-Kansas City.

2007, ME 765, Biomaterials, University of Kansas, Lawrence, KS, Title: "Structure, Property, Function: Engineering at the Interface with Clinical Sciences."

2007, ME 765, Biomaterials, University of Kansas School of Engineering, Lawrence, KS, Title: "Writing a Winning Grant or Is There a Pot of Gold at the End of the Rainbow?"

2008, Pediatric Dental Residents, Children's Mercy Hospital, Kansas City, MO, Title: "The Good, the Bad & the Ugly of Restorative Materials for the Pediatric Dental Patient."

2008, D 6328, Clinical Decision Making in Dentistry, UMKC School of Dentistry, Title: "Hg Release from Dental Amalgam: A Real Danger or Tales of a Mad Hatter?"

2009, CPE 765, Corrosion Engineering, University of Kansas School of Engineering, Title: "Corrosion in the Mouth."

2013, BioE 690, Introduction to Bioengineering, Title: "Interfacial Phenomena and Design/Development of Materials to Reconstruct Tissues."

2013, 2015 ME 790, University of Kansas School of Engineering, Title: "Interfacial Phenomena and Characterizing Material/tissue Samples that Abhor Environments Required for High Resolution;" and Title: "Structure/Function Relationships at the Material/Tissue Interface;" and Title: "Material Characterization: Interaction of Energy with Matter."

B. Clinical Teaching:

1981-84 Clinical instruction in Pediatric Dentistry for 3rd and 4th year dental students, University of Mississippi School of Dentistry.

1982-84 Clinical Supervision for General Dentistry Residents treating Pediatric Patients, University of Mississippi School of Dentistry.

1988-present Clinical instruction in Pediatric Dentistry to 3rd and 4th year dental students, UMKC School of Dentistry.

C.1 Ph.D. Dissertations

Dissertation Committees for Students Completing Their Ph.D.

Member, Leigh Ann Julian, Interdisciplinary Ph.D. in Pharmacology, Pharmaceutical Sciences and Oral Biology, 1998. Title of Dissertation: Molecular assessment of biocompatibility: development of an in vitro test for detection of pro-inflammatory properties of dental materials utilizing intercellular adhesion molecule-1.

Chair, Dr. Mary Walker, Interdisciplinary Ph.D. in Oral Biology and Pharmacology, 2001. Title of Dissertation: Mechanical Property Characterization of Resin Cement after Aqueous Aging with or without Dynamic Loading.

Member, Karen A. Russo, Interdisciplinary Ph.D. in Pharmacology/Toxicology and Pharmaceutical Sciences, 2002. Title of Dissertation: Kinetic Measurement of Esterase-Mediated Hydrolysis for Methacrylate Monomers Used as Biomaterials.

Member, Dr. John Purk, Interdisciplinary Ph.D. in Oral Biology and Engineering, 2002. Title of Dissertation: A Clinical Study to Evaluate the Microtensile Bond Strength of a Composite Resin Tested under In-Vivo and In-Vitro Conditions at 24 hours at the Axial and Gingival Walls of Class II Cavity Preparations.

Member, Dr. James Code, Interdisciplinary Ph.D. in Oral Biology and Chemistry, 2004. Title of Dissertation: Experimental Evaluation of Solvents with a Biological Substrate Based on Solubility Parameter Theory: Solubility Parameter Determinations by Computational Chemistry Using a Rational Design Process.

Co-Chair with Dr. Jose Pereira, Dr. Fabio Sene, Ph.D. from Universidade de São Paulo, Faculdade de Odontologia de Bauru, Brazil, 2004. Title of Dissertation: Analysis of the Quality of the Dentin-Adhesive Interface with Three Different Bonding Systems Applied *In Vivo* and *In Vitro*.

Chair, Dr. Erika Benavides, Interdisciplinary Ph.D. in Oral Biology and Engineering, 2006. Title of Dissertation: Structure and Property Characterization of the Temporomandibular Joint Disc at the Micro-scale Level.

Chair, Dr. Brenda Bohaty, Interdisciplinary Ph.D. in Oral Biology and Health Administration, 2009. Title of Dissertation: Molecular Dynamics in Class II Resin Restorations in Primary Molars.

Member, Orestes Marangos, Ph.D. in Civil Engineering, University of Kansas, School of Engineering, 2010. Title of Dissertation: Scanning Acoustic Microscopy Modeling for Micromechanical measurements of Complex Substrates.

Member, AJ Mellott, Ph.D. in Bioengineering, University of Kansas, School of Engineering, completed.

Member (Outside of Discipline), Natalie Ciaccio, Ph.D. in Pharmaceutical Chemistry, University of Kansas School of Pharmacy, December 2010.

Co-Chair, Viraj Singh, Ph.D. in Mechanical Engineering, University of Kansas, School of Engineering, May 2014.

Co-Chair, Ranganathan Parthasarathy, Ph.D. in Bioengineering, University of Kansas, School of Engineering, August 2013.

Member, Tiffany Suekama, Ph.D. in Chemical Engineering, University of Kansas, School of Engineering, May 2014.

Member, Anahita Khanlari, Ph.D. in Chemical Engineering, University of Kansas, School of Engineering, completed.

Chair, Farhana Abedin, Ph.D. in Bioengineering, University of Kansas, School of Engineering, in progress.

Member, Tricia Sprouse, Ph.D. in Chemical Engineering, University of Kansas, School of Engineering, May 2014.

C.2 Master's Theses

Thesis Committees for Students Completing M.S. Degree:

Member, Dr. Lisa Block, M.S. in Oral Biology, 1990. Physical Growth and Severity of the Oral Cleft.

Member, Dr. James Mixson, M.S. in Oral Biology, 1990. Comparison of Two-Surface and Multiple Surface Scoring Methodologies For In Vitro Microleakage Studies.

Member, Dr. John Fales, M.S. in Oral Biology, 1991. Dental Treatment for Children under General Anesthesia: Factors Influencing Recovery.

Member, Ms. Patti Jacob, M.S. in Dental Hygiene Education, 1991. The Effects of an Air-Powder Polishing Device on the Shear Bond Strength of Two Orthodontic Metal Bracket Adhesive Systems.

Member, Dr. David Trylovich, M.S. in Oral Biology, 1991. The Effects of the Nd:YAG Laser on In Vitro Fibroblast Attachment to Endotoxin Treated Root Surfaces.

Member, Dr. Robert Parker, M.S. in Oral Biology, 1992. Gingival Crevicular Blood for Assessment of Blood Glucose in Diabetic Patients.

Member, Dr. Dan Thomas, M.S. in Oral Biology, 1992. The Effects of Various Periodontal Treatment on In Vitro Fibroblast Attachments to Nd:YAG Laser Treated Non-Diseased Root Surfaces.

Member, Ms. Heather Shannon, M.S. in Dental Hygiene Education, 1992. Characterization of Enamel Exposed to 10% Carbamide Peroxide Bleaching Agents.

Member, Dr. Randall Gordon, M.S. in Oral Biology, 1993. Treatment and Evaluation of Experimentally Created Dentin Sensitivity with the CO₂ Laser.

Member, Dr. Lynn Friesen, M.S. in Oral Biology, 1995. Comparative Healing of CO₂ Laser and Nd:YAG Induced Bone Defects: In Vivo Study.

Member, Dr. Susan Arkawara, M.S. in Oral Biology, 1995. Laser Fusion of Root Fractures: An In Vitro Study.

Member, Dr. Aisling O'Mahony, M.S. in Oral Biology, 1997. A Finite Element Analysis of the Stress Distribution of an Osseointegrated Implant.

Member, Dr. Nicholas Theodotou, M.S. in Oral Biology, 1997. Dimensional Accuracy of Five Die Materials.

Member, Dr. Ender Ozgul, M.S. in Oral Biology, 1997. A Comparison of Three Radiographic Techniques in the Detection of Simulated Osteophytic Lesions of the Mandibular Condyle.

Chair, Ms. Nancy Hemingway, M.S. in Dental Hygiene Education, 1997. Interfacial Changes in an Orthodontic Bracket Adhesive System upon In Vitro Exposure to a Sonic Toothbrush.

Member, Mr. Robert Lemor, M.S. in Physics, 1998. Micro-Raman and Infrared Absorption Studies on Human Dentin/Adhesive Interfaces.

Member, Ms. Rebecca Williams, M.S. in Pharmacology/Toxicology. The Cytotoxicity of Bisphenol A and Analogs: Representative of Product Components Commercialized for Human Usage.

Member, Dr. Farah Masood, M.S. in Oral Biology, 1999. Comparison of Panoramic Temporomandibular Joint Radiography, Digital Subtraction Radiography and Color-enhanced Digital Subtraction Radiography in Detection of Simulated Osteophytic Lesions of Mandibular Condyle.

Member, Dr. Vania Castro, M.S. in Oral Biology, 2001. In Vitro Comparison of Conventional Film and Direct Digital Imaging in the Detection of Approximal Caries.

Member, Dr. Cynthia Spiliopoulou, M.S. in Oral Biology, 2000. Comparison of the Tensile Bond Strengths of Three Different Surface Treated Alloys Cemented to Human Teeth.

Member, Dr. Christos Aggelopoulos, M.S. in Oral Biology, 2002. Pre-Surgical Dental Implant Assessment: A Comparison between Plain Film Conventional Tomography and Digital Tomography Utilizing a Storage Phosphor Plate System.

Member, Dr. Federico Lamus, M.S. in Oral Biology. Comparison of Direct Digital Radiography and Conventional E-speed Film for Accuracy of Endodontic File Measurements using Different Beam Angulations.

Chair, Dr. Jarrod Williams, M.S. in Oral Biology. Chemomechanical Caries Removal: Effect on Adhesive Diffusion into Caries-Affected Dentin.

Member, Dr. Lilliam Pinzon, Specialized M.S. in Oral Chair, Dr. Reem Haj-Ali, M.S. in Oral Biology, 2004. Adhesive Diffusion into Caries-Affected Dentin under Simulated Oral Conditions.

Biomaterials, The University of Texas Health Science Center at Houston, May 2005. Effect of Mucoprotein on the Bond Strength of Resin Composite to Human Dentin.

Member, Rohini Dharmala, M.S. in Mechanical Engineering, UMKC School of Computing and Engineering, December 2006. Finite Element Analysis of Dentin/Adhesive Interface Accounting for Micro-Scale Geometrical and Mechanical Properties.

Member, Anas Athar, M.S. in Oral Biology, UMKC School of Dentistry, December 2006. Radiographic Endodontic Working Length Estimation Comparison of Three Digital Image Receptors.

Member, Viraj Singh, M.S. in Mechanical Engineering, University of Kansas School of Engineering, December 2009. Viscoelastic and Fatigue Properties of Dental Adhesives and Their Impact on Dentin-Adhesive Interface Durability.

Member, Qi Zheng, M.S. in Bioengineering, University of Kansas School of Engineering, May 2014. The Etiology of Thumb Carpometacarpal Osteoarthritis: Early Indications from In Vivo Joint Contact Mechanics.

Member, Sarah VanOosten, M.S. in Bioengineering, University of Kansas School of Engineering, in progress, 2014.

C.3 Postdoctoral Research Fellows

Yong Wang, Ph.D. in polymer science: Post-doctoral Research Fellow, 1999-2001.

Qiang Ye, Ph.D. in polymer engineering: Post-doctoral Research Fellow, 2004-2008.

Yan Wang, Ph.D. in vibrational spectroscopy: Post-doctoral Research Assistant, 2004.

Xinglin Guo, Ph.D. in polymer chemistry: Post-doctoral Research Fellow, 2005-2007.

Jong-Gu Park, Ph.D. in chemistry: Post-doctoral Research Fellow, 2006-2010, promoted to Research Assistant Professor in 2012.

Hong Zhao, Ph.D. in pharmaceutical chemistry, Post-doctoral Research Fellow, 2008.

John Eslick, Ph.D. in chemical engineering, Post-doctoral Research Fellow, 2009.

Zhaobin Chen, Ph.D. in polymer science, Post-doctoral Research Fellow, 2010-2011.

Orestes Marangos, Ph.D. in civil engineering, Post-doctoral Research Fellow, 2010-2011.

Ben Johnson, Ph.D. in pharmaceutical chemistry, Post-doctoral Researcher, 2012.

Namrata Dixit, Ph.D. in polymer chemistry, Post-doctoral Researcher, 2012-2014.

Jenifer Settle, Ph.D. in chemistry, Post-doctoral Researcher, 2012 to present.

LinYong (Leon) Song, Ph.D. in polymer chemistry, Post-doctoral Researcher, 2012 to present.

Xueping Ge, Ph.D. in polymer chemistry and physics, Post-doctoral Researcher, 2012 to present.

C.4 Visiting Scholars

Sergio Goncalves, Professor, Universidade Estadual Paulista “Julio de Mesquita Filho,” Sao Jose dos Campos, Sao Paulo, Brazil, 2011.

Odair Bim Junior, Ph.D. student from Universidade de São Paulo, Faculdade de Odontologia de Bauru, Brazil, 2015- 2016.

Tania Mara da Silva, Ph.D. student from Universidade Estadual Paulista “Julio de Mesquita Filho,” Sao Jose dos Campos, Sao Paulo, Brazil, 2015-2016.

Stella Esteves, Ph.D. student from Universidade Estadual Paulista “Julio de Mesquita Filho,” Sao Jose dos Campos, Sao Paulo, Brazil, 2015-2016.

C.5 Clinical Fellows

Uma Dixit, D.D.S.: Research Fellowship in Pediatric Dentistry, 1991-92.

Angela Wandera, D.D.S.: Research Fellowship in Pediatric Dentistry, 1992-94.

Claudia Lopez, D.D.S.: Research Fellowship in Pediatric Dentistry, 1994-95.

D. Continuing Education Lectures/Courses Presented:

1988, Featured speaker at the quarterly meeting of the NW Missouri Dental Society. “Posterior Composites-Clinical and Material Characteristics.”

1990, Featured speaker at the Fall Conference of the Kansas Association for School Health, Washburn University, Topeka, KS. “Nutrition and Oral Health.”

1990, One of four featured speakers for the following continuing education course at the UMKC School of Dentistry: Update in Pediatric Dentistry. Title of presentation: “Update in Materials: Clinical and Physical Characteristics.”

1991, In service training to dental staff at Swope Parkway Health Center, Kansas City, MO. Title of lecture: “Composite Resins.”

1991, Pittsburgh Dental Study Club, Pittsburg, KS. Lecture: “The New Composite Resin.”

1991, U.S. Army Dentac, Fort Leavenworth, KS. Lecture: “Esthetic Dentistry.”

1992, Breakfast with the Experts, University of Missouri-Kansas City Dental Alumni meeting, “Update on Materials.”

1992, The Heart of America Study Club, Kansas City, MO. Presentation: “Materials in Dentistry: An Update.”

1993, U.S. Army Dentac, Fort Leavenworth, KS. Presentation: “Dentin Bonding Agents-Past, Present, and Future.”

1995, Featured speaker at Midwest Dental Conference, Kansas City, MO. Presentation: “A Clear and Present Danger or Are We Off to See the Wizard?”

1996, Pittsburg Dental Study Club, Pittsburg, KS. Presentation: "Composites in the Twenty-First Century."

1996, Truman Medical Center East Dental Study Club, Lee's Summit, MO. Presentation: "Amalgam Mercury Release: A Clear & Present Danger?"

1996, American College of Dentists, Regency V Meeting, Kansas City, MO. Presentation: "Amalgam Mercury Release: A Clear & Present Danger or Tales of a Mad Hatter?"

1997, Colombian Academy of Pediatric Dentistry Meeting, Cartagena, Colombia, South America. Featured speaker for a two-day conference. Presentation: "Materials for the Pediatric Patient: Past, Present, and Future."

2000, Douglas County Dental Society, Lawrence, KS. Presentation: "Dentin Adhesives for the 21st Century."

2000, Faculty Development Lecture Series, UMKC School of Dentistry, half day presentation. Presentation: "Current Restorative Materials: the Good, the Bad & the Ugly."

2004, November 16 and 18, Presentations: "Dentin Bonding: Past, Present and Future"; "Micro-chemistry and Micro-mechanics at the Material/Tissue Interface;" "Molecular Dynamics at the Dentin/Adhesive Interface." Bauru School of Dentistry, Universidade de Sao Paulo, Bauru, Brazil.

2006, Guest Lecturer, Bauru School of Dentistry, Universidade de Sao Paulo, Bauru, Brazil, "Physicochemical-mechanical Behavior at the Adhesive/Dentin Interface: Factors that Undermine the Clinical Durability of Composite Restorations."

2009, August 14-15, One of four featured speakers for the International Meeting of Restorative Dentistry (Meeting Internacional De Odontologia Restauradora), Presentation: "New Posterior Restorative Materials: Esthetics or Performance?" Londrina, Brazil.

2011, January 12-15, Presentation: "Dental Substrates and the Adhesive Interface Performance." Featured speaker for the XIX Session of the Brazilian Group of Operative Dentistry Professors-GBPD, Campo Grande, MS, Brazil.

2012, May 21, Presentation: The Science of Adhesion. Featured speaker for the Dental Congress Meeting, Londrina, Brazil.

2015, Visiting Professor, Faculty Fulbright Scholar, Special Designed Course for Faculty Advancement. Course material: Fundamentals of Material Science, Structural Analysis of Biomaterials and Biomaterial/Tissue Interfaces, Phenomena Controlling Reactions at the Material/Tissue Interface. Universidade Estadual Paulista "Julio de Mesquita Filho," Sao Jose dos Campos, Sao Paulo, Brazil.

E. Special Projects

2008, ME760 Biomedical Product Development. Team 4 Tina Coop (Chemical Engineering), TJ Staley (Bioengineering), Ryan Soden (Mechanical Engineering) – Structure/Property Clinical Imaging Devices. Supervisor and Inventor: Dr. Paulette Spencer

2014 (Spring), Faculty mentor for Undergraduate Research Award Recipient, Holly J. Good, undergraduate student majoring in chemistry, Title of Project: “Photo-polymerization Kinetics and Degradation Profiles of Novel Methacrylate Polymers.”

2014 (Spring), Faculty mentor for Undergraduate Research Award Recipient, Ana Maria Villanueva Perez, undergraduate student majoring in mechanical engineering, Title of Project: “Mechanistic Investigation of the Structure/Property Relationship in Novel Methacrylate Polymers.”

2014 (Fall), Faculty mentor for Undergraduate Research Award Recipient, Ana Maria Villanueva Perez, undergraduate student majoring in mechanical engineering, Title of Project: “The Mechanical Properties and Degradation of Materials under Aging Solutions.”

IV. SERVICE

A. Professional Affiliations:

International Association of Dental Research	Member	1982-pres.
American Association of Dental Research, Mississippi Section	Secretary- Treasurer	1982-83
American Association of Dental Research, Mississippi Section	President	1983-84
American Academy of Dental Materials	Fellow	1983-pres.
American Academy of Pediatric Dentistry	Fellow	1983-pres.
Sigma Xi	Member	1987-pres.
American Association of Dental Research, Kansas City Section	Member	1988-pres.
American Association for the Advancement of Science (AAAS)	Member, Fellow	1992-pres. 2007-pres
Omicron Kappa Upsilon-Rho Chapter	Member	1992-pres.
Omicron Kappa Upsilon-Rho Chapter	President	1999-2000
American College of Dentists	Fellow	1992-pres.
American Association of Dental Research, Kansas City Section	Secretary- Treasurer	1993-94
American Association of Dental Research, Kansas City Section	President	1994-95, 4/04-9/06
American Dental Association	Member	1996-pres.
Missouri Dental Association	Member	1996-pres.
Kansas City-Midwest Section of the American College of Dentists	Secretary- Treasurer	1996-00
Society for Biomaterials	Member	1997-pres.
Biomaterials Science and Engineering	Fellow	2007
Society for Applied Spectroscopy	Member	2002-pres
American Institute for Medical and Biological Engineering	Fellow	2003-pres

B. Grant Review:

1992 - 2007	Reviewer for grants submitted to the University of Missouri Research Board
Oct 1997	Member of the merit review panel for grants submitted in response to RFA from the Department of Energy for the Development of Centers of Excellence for Laser Applications in Medicine
Feb 1999	Member, Scientific Review Special Emphasis Panel for National Institutes of Health
Feb 2000	Reviewer for Residency Programs in Pediatric Dentistry, Bureau of Health and Human Services
Oct 2000	Reviewer for National Science Foundation Special Opportunities Grant
Feb 2003	Reviewer, National Institutes of Health/National Institute of Dental and Craniofacial Research, Special Emphasis Panel for Institutional Research Training Grants

Sept 2003 Reviewer, Kansas City Area Life Sciences Institute Research Development Grants

Aug 2003-04 Ad hoc reviewer, Biomaterials and Biointerfaces Study Section, National Institutes of Health

2004-06 Member, Biomaterials and Biointerfaces Study Section, National Institutes of Health

Jan 2004 Reviewer, National Institutes of Health/National Institute of Dental and Craniofacial Research Special Emphasis Panel for Institutional Research Training Grants

June 2004 Reviewer, National Institutes of Health/Endocrinology, Metabolism, Nutrition and Reproductive Sciences. Special Emphasis Panel for Metabolomics Technology Development grants

Oct 2004 Ad hoc reviewer, National Institutes of Health/National Institute of Dental and Craniofacial Research, Oral, Dental and Craniofacial Sciences

June 2005 Ad hoc reviewer, National Institutes of Health/National Institute of Dental and Craniofacial Research

April 2006 Special emphasis panel, National Institutes of Health/National Institute of Dental and Craniofacial Research

1/06-9/07 Member, University of Missouri Research Board, reviewer for grants submitted to University of Missouri Research Board and assign reviewers for grants

Oct 2006 Ad hoc reviewer, National Institutes of Health/National Institute of Dental and Craniofacial Research, Oral, Dental and Craniofacial Sciences

Nov 2006 Ad hoc reviewer, Swiss National Science Foundation

Oct 2007 Reviewer, National Institutes of Health, Nanotechnology

7/08-9/08 Reviewer, Kansas City Center of Excellence in the Life Sciences Screening Committee, Kansas City Areas Life Sciences Institute

Fall 2008 Reviewer, National Institutes of Health, Oral and Dental: Special Emphasis Panel

Fall 2008-10 Member, Dental Sciences SBIR Study Section, (ZRG1 MOSS-N 11), National Institutes of Health

2008 Reviewer, National Science Foundation

Spring 2009 Reviewer, National Institutes of Health, Oral and Dental: Special Emphasis Panel

Spring 2009 Reviewer, Swiss National Science Foundation

Spring 2009 Reviewer, National Institutes of Health, Oral and Dental: Special Emphasis Panel

Summer 2009 Reviewer, National Institutes of Health, Oral and Dental: Special Emphasis Panel

Winter 2010 Reviewer, National Institutes of Health, Special Emphasis Panel

Spring 2010 Reviewer, National Institutes of Health, Special Emphasis Panel
 Summer 2010 Reviewer, National Institutes of Health, ARG1 MOSS K(11)B
 2010-2012 Member, College of CSR Reviewers, National Institute of Health
 Summer 2011 Reviewer, National Institutes of Health, National Institute of Dental and
 Craniofacial Research (NIDCR)
 Winter 2012 Reviewer, National Institutes of Health, NIDCR
 Summer 2012 Reviewer, National Institutes of Health, NIDCR
 Fall 2012 Reviewer, AAAS Research Competitiveness Program
 Winter 2013 Reviewer, NIH/NIDCR Special Emphasis Panel
 July 1, 2013- June 30, 2017 Member, Oral, Dental and Craniofacial Sciences Study Section, NIH Center for
 Scientific Review
 Spring 2014 NIH/NIDCR Special Emphasis Panel, Extramural Loan Repayment Applications
 Spring 2014 Israel Science Foundation
 Spring 2015 Israel Science Foundation

C. Editorial Board Membership and Journal Review:

Editorial Board:

Journal of Pediatric Dentistry 2001-2005
 Journal of Dental Research 2003-2005, 2008-2010
 Journal of Biomed Materials Research: Applied Biomaterials 2011-present
 Dental Materials 2011-present
 The Open Dentistry Journal 2007-present
 Clinical, Cosmetic and Investigational Dentistry 2008
 Honorary Editorial Board member, Open Journal of Dentistry Insights, 2008
 Journal of Applied Oral Science (Faculdade de Odontologia de Bauru, Universidade de Sao
 Paulo) 2011-2014
 Scientific World Journal 2013-2014
 Brazilian Dental Sciences 2012-present

Reviewer:

Calcified Tissue International, Scanning Microscopy, Lasers in Surgery and Medicine, Journal of
 Dental Research, Caries Research, Archives of Oral Biology, European Journal of Oral Sciences,
 Journal of Biomedical Materials Research: Part A, Journal of Dentistry, Journal of Materials
 Science, Biotechnology and Bioengineering, Biomaterials, Journal of Adhesive Dentistry,
 Journal of Oral Rehabilitation, Journal of Materials Science: Materials in Medicine, Applied
 Surface Science, Acta Odontologica Scandinavica, Acta Biomaterialia, ACS Applied Materials
 & Interfaces, Journal of American Dental Association, Annals of Biomedical Engineering,
 WIREs Nanomedicine and Nanobiotechnology, Dentomaxillofacial Radiology, Clinical Oral
 Investigations, Journal of Photochemistry & Photobiology A: Chemistry

D. Sessions Chaired at National Meetings:

Poster Discussion Session Co-Chair for the IADR/AADR Annual Meeting, Cincinnati, OH, March 1990.

Poster Discussion Session Co-Chair for the AADR Annual Meeting, Boston, MA, March 1992.

Oral Session Co-Chair, Title of Session: "Dental Materials-Adhesion: Microstructure and Microleakage," AADR Annual Meeting, Chicago, IL, March 2001.

Oral Session Co-Chair, Title of Session: "Dental Materials-Adhesion: Microstructure and Microleakage," IADR Annual Meeting, San Diego, CA, March 2002.

Oral Session Co-Chair, Title of Session: "Dental Materials II-Adhesion-Other-Tooth Microstructure/General Adhesion," AADR Annual Meeting, San Antonio, TX, March 2003.

Oral Session Co-Chair, Title of Session: "Dental Materials: Adhesion," IADR/AADR Annual Meeting, Honolulu, HI, March 2004.

Oral Session Chair, Title of Session: "Dental Materials: Adhesion," IADR/AADR Annual Meeting, Baltimore, MD, March 2005.

Oral Session Chair, Title of Session: "Dental Materials: Adhesion," AADR Annual Meeting, Orlando, FL, March 2006.

Oral Session Chair, Title of Session: "Biology," TMJ Bioengineering Conference, Bloomfield, CO, May, 2006.

Oral Session Chair, Title of Session: "Dental Materials II: Adhesion-Adhesive Interface Microstructure," IADR/AADR Annual Meeting, New Orleans, LA, March 2007.

Oral Session Chair, Title of Session: "Dental Materials 5: Polymer-based Materials-Chemistry and Composition: Polymerization Kinetics and Effects," AADR Annual Meeting, Dallas, TX, April 2008.

Oral Session Chair, Title of Session: "Dental Materials 6: Polymer-based Materials-Chemistry and Composition: Recent Advances in Dental Monomers and Polymerization Processes," IADR/AADR Annual Meeting, Miami, FL April 2009.

Oral Session Chair, Title of Session: "Dental Materials: Polymer-based Materials-Chemistry and Composition," IADR/AADR Annual Meeting, San Diego, CA, March 2011.

Oral Session Chair, Title of Session: "Adhesive Materials: Chemistry and Characterization," IADR/AADR Annual Meeting, Seattle, WA, March 2013.

Symposium Chair and Organizer, Title of Symposium: "Material/Tissue Interfacial Phenomena: Lessons Learned from Dental/Craniofacial Reconstructions." Society of Biomaterials 2014 Annual Meeting, Denver, CO, April 2014.

E. Committee Work & Related Outside Activities:**National**

- 1988 Participant in National Behavior Management Conference, sponsored by the American Academy of Pediatric Dentistry. Academic representative for UMKC School of Dentistry, October.
- 1990-93 Member, Subcommittee on Trends and Implications of Women in Pediatric Dentistry, American Academy of Pediatric Dentistry.
- 1992 Participant in NIH Strategic Planning Conference.
- 1993-94 Member, Local Arrangements Committee, annual meeting of the American Academy of Pediatric Dentistry.
- 1999-01 Member, Abstract Editors, American Academy of Pediatric Dentistry.
- 1999-01 Member, Council on Scientific Affairs, American Academy of Pediatric Dentistry.
- 1999-02 Member, Membership Committee, Society of Biomaterials.
- 2000-03 Member, National Affairs Committee, American Association of Dental Research; Chair of Subcommittee to Increase Faculty and Private Practitioners participation in AADR Cohort Program.
- 2001-02 Member, Subcommittee for Council on Scientific Affairs for Review of AAPD Foundation Awards, American Academy of Pediatric Dentistry.
- 2001-04 Member, Editorial Board, *Journal of Pediatric Dentistry*.
- 2001 Member, Local Arrangements Committee, annual meeting of the American Dental Association.
- 2003-05 Member, Editorial Board, *Journal of Dental Research*.
- 2003-present Member, American Dental Association Standards Committee on Dental Products Working Groups.
- 2006 Group Program Chair and Reviewer, Dental Materials Group, IADR 2006.
- 2006 Member, Program Committee, Dental Materials Group, IADR. Organized "Lunch and Learn" sessions for the Dental Materials Group for the 2007 IADR meeting.
- 2007 Group Program Chair and Abstract Reviewer, Dental Materials Group, AADR.
- 2008 Abstract reviewer, Society of Biomaterials.
- 2008 Abstract review, ASME 2009 Summer Bioengineering Conference.
- 2008-10 Member, Editorial Board, *Journal of Dental Research*.
- 2009-13 Board Member at Large, Academy of Dental Materials.
- 2009 Abstract review, ASME 2010 Summer Bioengineering Conference.
- 2009 Elected, Editorial Board, *Dental Materials*.
- 2010 Abstract reviewer, Society of Biomaterials.

- 2011 Appointed, Editorial Board, *Journal of Biomedical Materials Research Part B: Applied Biomaterials*.
- 2012 Abstract reviewer, International Association of Dental Research, 200 abstracts reviewed.
- 2012 IUSBSE, Society of Biomaterials delegate, International Union of Society for Biomaterials Science & Engineering (IUSBSE), (Term: 2012-2015).
- 2012 AAAS, Elected to AAAS Electorate Nominating Committee of the Section on Dentistry and Oral Health Sciences, (Term: February 19, 2013 to February 15, 2016).
- 2013 Abstract reviewer, Academy of Dental Materials, 20 abstracts reviewed.
- 2013 Abstract reviewer, Society of Biomaterials, 10 abstracts reviewed.
- 2013 Delivered "Lunch and Learn" session at the Academy of Dental Materials meeting, Vancouver, Canada.
- 2015 Abstract reviewer, 2016 World Biomaterials Congress, 30 abstracts reviewed.

State/Regional

- 1984 Member, Health Advisory Committee, Friends of Children, Mississippi State Board of Health.
- 2005 Chair, Organizing Committee, Nanoscience at the Interface with Life Science Research, 2nd Nanotechnology Conference sponsored by RAM.
- 2006 Chair, Organizing Committee, First Regional Bioengineering Day, Lawrence, KS.
- 2007 Chair, Organizing Committee, Second Regional Bioengineering Day, University of Kansas Medical Center, Kansas City, KS.
- 2008 Member, Kansas City Center of Excellence in Life Sciences Screening Committee, Kansas City Area Life Sciences.
- 2014 Organized and Hosted, Inaugural Science Thursday Event, Guest Speaker: Antonio Tomsia, Lawrence Berkley National Laboratory; Event attracted bioengineering researchers from the regional universities, Overland Park, KS, November.

University

- 1988 Member, Weldon Spring Disciplinary Review Committee-Biological Sciences, Representative from the School of Dentistry to review proposals for UMKC faculty development grants.
- 1988-07 Peer reviewer for the Office of University Patents and Licensing
- 1989-90 Member, Institutional Review Board-UMKC Pediatric Health Sciences.
- 1994-02 Member, Graduate Council, University of Missouri-Kansas City.

- 1994-95 Member, Search Committee for the Vice Provost for Research and Dean for Graduate Studies, University of Missouri-Kansas City.
- 1994-02 Member, Graduate Officers Committee, University of Missouri-Kansas City.
- 1994-02 Member, Graduate Student Fellowship and Awards Committee, University of Missouri-Kansas City.
- 2000-02 Member, Chancellor's Task Force on "Blueprint for the Future," University of Missouri-Kansas City. One of two representatives selected from School of Dentistry.
- 2000-02 Member, Chancellor's Blueprint Project titled, "Leading Life Science Innovation."
- 2001-02 Member, Chancellor's Extended Cabinet.
- 2001 Member, Program Committee, Annual Kansas City Life Sciences Research Day.
- 2003-04 Member, Chancellor's Extended Cabinet.
- 2003-04 Member, Search Committee for Vice-Chancellor of Research.
- 2004-05 Member, Bioinformatics Committee, University of Missouri-Kansas City.
- 2004 Member, Search Committee for Dean, School of Computing & Engineering, University of Missouri-Kansas City.
- 2004-06 Member, Advisory Committee for the 2004-05 and 2005-06 Presidential Award for Research and Creativity, University of Missouri.
- 2006 Member, University of Missouri Research Board, one of four investigators appointed from the University of Missouri-Kansas City campus.
- 2007 Member, Search Committee, Assistant Scientist for the Bioengineering Research Center, University of Kansas.
- 2007-present Member, Research Center Directors Committee, University of Kansas.
- 2007-present Member, Distinguished Professors Committee, University of Kansas.
- 2009-12 Member, Board of Trustees, University of Kansas, KU Center for Research, Inc.
- 2009-11 Member, Executive Committee, University of Kansas, KU Center for Research, Inc.
- 2009 Member, Implementation Team, Proof of Concept Team and External Partnerships, Institute for Advancing Medical Innovation (IAMI).
- 2011 Member, Driving Discovery and Innovation (DDI) Working Group, University of Kansas.
- 2013-15 Member, RGS Promotion Committee, University of Kansas Research & Graduate Studies.

School of Dentistry

- 1983-84 Member, Teaching Committee, General Practice Residency Program, University of Mississippi School of Dentistry.
- 1988-89 Member, Curriculum Development Committee, UMKC School of Dentistry.
- 1988-94 Member, Faculty Search Committee, UMKC School of Dentistry.
- 1988-94 Member, Table Clinics Committee, Missouri Dental Alumni Association.
- 1989-90,
1993-98,
2004-07 Member, Research Support Committee, UMKC School of Dentistry.
- 1989-91 Member, Faculty Development Committee, UMKC School of Dentistry.
- 1990-07 Interviewer for students applying to the dental program at UMKC School of Dentistry.
- 1991-95,
2004-07 Member, Faculty Council, UMKC School of Dentistry.
- 1993-94 Member, Continuing Dental Education Consultation Committee, UMKC School of Dentistry.
- 1993-94,
1995-96,
1998-00 Member, Budget Committee, UMKC School of Dentistry.
- 1994-02 Member, Advanced Education Committee, UMKC School of Dentistry.
- 1995-96 Member, Membership Committee of the Rho Chapter of Omicron Kappa Upsilon.
- 1997-98 Chair, Convocation Committee of the Rho Chapter of Omicron Kappa Upsilon.
- 12/97-5/98 Member, Task Force on Research (appointed by the Dean), University of Missouri-Kansas City School of Dentistry.
- 3/98-3/99 Chair, Nominating Committee, Rho Chapter of Omicron Kappa Upsilon.
- 3/98-3/99 Chair, Budget Committee, Rho Chapter of Omicron Kappa Upsilon.
- 5/98-04 Member, Selection, Promotion & Tenure Committee, UMKC School of Dentistry.
- 5/98-00 Ad Hoc Scholarship Selection Committee, UMKC School of Dentistry.
- 2000-01 Member, Ad Hoc Scholarship Selection Committee, UMKC School of Dentistry.
- 2000-01 Member, Search Committee for Asst/Assoc Dean for Academic Affairs, UMKC School of Dentistry.
- 2004-06 Member, Faculty Council.
- 2006-07 Member, Research Support Committee.
- 2006 Member, Organizing Committee, Oral and Craniofacial Biology Symposium.

School of Engineering

- 2007-present Member, Distinguished Professors Committee.
- 2007-2017 Member, Promotion & Tenure Committee, Dept. of Mechanical Engineering.
- 2010 Member, Internal Advisory Board for NIST Major Construction Grant.
- 2011 Research Thrust Leader for Healthcare Engineering, School of Engineering Strategic Initiative.
- 2012-13 Member, Faculty Search Committees, Dept. of Chemical and Petroleum Engineering and Dept. of Mechanical Engineering.
- 2014-present Member, Faculty Awards, Dept. of Mechanical Engineering.
- 2014-present Member, Post-tenure Review, Dept. of Mechanical Engineering.
- 2014-present Member, Launch Committee for Lin Liu, Dept. of Mechanical Engineering.
- 2015-16 Member, Promotion & Tenure Committee, KU School of Engineering.
- 2015 Chair, Promotion Committee, Bioengineering Research Center.

Industry

- 2006-07 Member, Advisory Board, Danaher Dental Platform, Danaher.

F. Community and University Service:

- 1982-84 Numerous presentations to local civic groups concerning the topic of pediatric dentistry. Tours of the dental clinic for groups of 30-40 preschoolers and kindergartners, every six months.
- Feb. 1984 Presentation to the Jackson Chapter of Parents of Twins, Title of presentation: "Parents' Responsibility in the Management of their Child's Dental Needs."
- Oct. 1994 Media interview by local news channel regarding the indications, contraindications, and cost-effectiveness of pit and fissure sealants.
- Oct. 1994 Faculty supervisor for dental students participating in Hickman Mills Consolidated School District's Second Annual Health Fair.
- 1996 Doctors with a Heart Clinic.
- 1997 Special Olympics, "Special Smiles."
- 2000 Consultation with private dentist from New Mexico regarding development of news article on the latest developments in composite materials.
- 2000-present Numerous phone consultations with private practice dentists and concerned patients regarding mercury release from dental amalgam; concerns associated with clinical lifetime of alternative restorative materials; concerns regarding composite-based restorative materials.
- 2002-present Respond to numerous requests from University public relations regarding the impact of biomaterials research on the well-being and health of our population.

- Oct. 2003 Interview with Kansas City Star Reporter regarding my research on the development of water-compatible adhesives.
- 2001-present Presentations at University events that provide various agencies with information about Life Sciences Research at UMKC. For example, event titled, “Unlocking the Future: Life Sciences at UMKC” presented to visitors from IBM. Title of my presentation: “Biomaterials Research.”
- Nov. 1, 2004 Presentation to the Rotary Club, Lawrence, KS. Title of presentation: “What do Bones, Teeth, Airplanes, Dental Fillings, and Roadways have in Common?”
- 2005 Consultations with the media regarding nanotechnology and its impact on life sciences research.
- 2005 Consultations with various components of the media including local, regional and University regarding the research and scholarly activities of the UMKC Center for Research on Interfacial Structure & Properties.
- 2006 Interview with newspaper reporter regarding mercury release from dental amalgam and biocompatibility concerns with alternative restorative materials.
- Oct. 2007 Judge, GEA poster competition, University of Kansas School of Engineering.
- Dec. 2007 Interview with reporter from the *Lawrence World Journal* regarding tuition enhancement monies and the use of these monies to promote research and scholarly experiences for students at the University of Kansas, December.
- Fall 2009 Affiliated Faculty, Center of Latin American Studies, University of Kansas.
- Nov. 2009 New Generation Society, Lawrence, KS. Presentation: “Bioengineering at the University of Kansas.”

G. Program and/or Faculty Review

- 2008 External Reviewer, Bioengineering Program, University of Oklahoma.
- 2008 External Review, Promotion and Tenure, University of Texas-Houston.
- 2010 External Review, Promotion and Tenure, Clemson University.
- 2010 External Review, Promotion and Tenure, Texas A&M University.
- 2012 External Review, Promotion and Tenure, University of California-San Francisco.
- 2015 External Review, Promotion and Tenure, University of Mississippi.

H. Administrative Responsibilities:

Director, Graduate Studies and Research

- May 1994-02 Dept. of Oral Biology, UMKC School of Dentistry, Kansas City, MO. The graduate programs included the M.S. and interdisciplinary Ph.D. I offered direction to interested students regarding research focus areas within the department of oral biology. I provided guidance in the areas of course selection, research mentors and support.

Feb.-Aug. 1997	Acting Chair, Department of Oral Biology, UMKC School of Dentistry.
May-Aug. 2002	Acting Chair, Department of Oral Biology, UMKC School of Dentistry.
May-Aug. 2003	Acting Chair, Department of Oral Biology, UMKC School of Dentistry.
May-Aug. 2004	Acting Chair, Department of Oral Biology, UMKC School of Dentistry.

Founding Director, UMKC Center for Research on Interfacial Structure & Properties (UMKC-CRISP), University of Missouri-Kansas City, Oct. 2003-Sept. 2007.

UMKC-CRISP was recognized by Chancellor Martha Gilliland as an official University Center. The overarching principle of UMKC-CRISP is that effective collaborations and partnerships between basic science investigators and clinical researchers promote the translation of fundamental laboratory results into clinical applications that directly benefit patients. This creates opportunities to bring national and international recognition to the University in the areas of bioimaging and bioengineering through the collaborative and cooperative research efforts of the UMKC-CRISP investigators.

The goals of UMKC-CRISP are to:

- Serve as a catalyst for collaborative investigations focused on applying the principles of biological systems to the hierarchical design, synthesis, and application of biomaterials.
- Advance multi-scale structure/property imaging and analysis of biological events at the cell, tissue, and organ levels.
- Provide an environment for innovative approaches to the development of new tissue-engineered materials and imaging devices for clinical use.
- Investigate the fundamental phenomena controlling biological interactions at tissue/material interfaces.
- Create new and improved imaging techniques for analyzing solid-liquid interfacial interactions in biological systems.

Founding Director, University of Kansas Bioengineering Research Center, Sept. 2007-present.

The mission of the Bioengineering Research Center (BERC) is to provide a research and teaching environment that promotes creativity while catalyzing the collaborations that will solve problems impacting the health and well-being of our society. BERC provides the mechanisms to facilitate and promote the introduction of new technologies into patient care. It is the door to the fastest growing field in engineering and to the discipline that attracts the best and brightest engineers. BERC creates partnership between education, industry and the community.

The mission of the BERC is to:

- Develop solutions to improve the lives of people.
- Create materials, devices, and technologies that will reduce human suffering.
- Educate leaders in bioengineering.
- Enable people with vision to be successful.

The Bioengineering Graduate Program operates under the umbrella of the BERC. The academic program offers M.S. and Ph.D. degrees in bioengineering. The program has grown rapidly. It began with eight students in Fall 2007. By Fall 2014, 54 students were enrolled.

In addition to my involvement with the Graduate Program, I am a research mentor for clinical scientists, as well as junior faculty from the schools of engineering and education.