CURRICULUM VITAE

January 2024

JEFFREY WILSON STANSBURY, PhD

CONTACT INFORMATION

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School of Dental Medicine
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EDUCATION:

University of Maryland, College Park	PhD	1982-1988	Organic Chemistry
University of Maryland, College Park	BS	1973-1977	Chemistry

PROFESSIONAL EXPERIENCE:

Affiliate, BioFrontiers Institute — June 2017 – present
University of Colorado
Boulder, Colorado

Professor, Adjunct Appointment — March 2015 –December 2017
Department of Chemical and Biological Engineering
Colorado State University
Fort Collins, Colorado

Affiliate, Materials Science and Engineering Program — September 2013 – present
University of Colorado
Boulder, Colorado

Senior Associate Dean for Research — August 2013 - present
University of Colorado School of Dental Medicine
Aurora, Colorado

Associate Dean for Research — January 2009 – July 2013
University of Colorado School of Dental Medicine
Aurora, Colorado

Vice-Chair, Department of Craniofacial Biology — November 2004 – Sept 2020
University of Colorado School of Dental Medicine
Aurora, Colorado

Professor, Adjunct Appointment — June 2003 – September 2007
Department of Metallurgy and Materials Engineering
Colorado School of Mines
Golden, Colorado

Professor, Adjunct Appointment — September 2000 - present
Department of Chemical and Biological Engineering
University of Colorado
Boulder, Colorado

Professor, Restorative Dentistry — July 2000 – December 2004
Director, Biomaterials Research Center
University of Colorado School of Dental Medicine
Aurora, Colorado

Research Chemist — 1983-2000
Polymers Division, National Institute of Standards and Technology
Gaithersburg, Maryland

Chemist — 1979-1983
Polymers Division, National Bureau of Standards (NIST)
Gaithersburg, Maryland

Quality Assurance Chemist — 1978-1979
S.B. Thomas Company
Frederick, Maryland

HONORS

Fellow of the American Association for Dental, Oral and Craniofacial Research — 2018

Fellow of the Leadership in Innovative Team Science Program at University of Colorado Denver — 2012

Fellow of the Academy of Dental Materials — 2012

Omicron Kappa Upsilon Honor Society – honorary member — 2010

Wilmer Souder Award of the Dental Materials Group 2009
International Association for Dental Research Distinguished Scientist

University of Colorado Pinnacles of Inventorship Group 2005

New Inventor of the Year 2004
University of Colorado Health Sciences Center

University of Colorado Emerging Leaders Fellow 2003-2004

Department of Commerce Bronze Metal 1999

I. TEACHING ACTIVITIES

TEACHING RESPONSIBILITIES

University of Colorado School of Dental Medicine
- Dental Materials I – DSRE 5504
  - Course Director: 2001 – 2004
  - Instructor: 2002 – 2005 (4-8 hours/course)
  - Lecturer: 2006–2013; 2015-2018 (2 hours/course); 2019–2020 (8 hours/course); 2021-current (21 hours/course)
- Dental Materials II – DSRE 6608
  - Course Director: 2002 – 2005
  - Instructor: 2002 – 2004 (8 hours/course); 2020 - present (18 hours/course)
- Dental Materials DISP 7107
  - Instructor: 2020 - present (10 hours/course)
- Advanced Oral Biology - DSDG 6114
  - Lecturer: 2012 - 2015 (2 hours/course)
- Introduction to Dentistry – DSRE 5001
  - Lecturer: 2017-present (4 hours/course)
- Dental Materials Seminar - DSRE 2023
  - Instructor: 2020 – present (8 hours/course)

University of Colorado School of Pharmacy
- Nanotechnology and Drug Delivery – PHSC 7345
  - Instructor: 2009, 2011 (2 hours/course)

University of Colorado; Department of Chemical & Biological Engineering
- Polymer Chemistry – 4450/5450
  - Lecturer: 2013 (6 hours/course)
  - Course Co-Director and Co-Instructor: 2008 (18 hours/course)
  - Course Director and Instructor: 2006 (35 hours/course)
  - Course Co-Director and Co-Instructor: 2002 (18 hours/course)

University of Colorado; Department of Bioengineering
Polymer Chemistry – Independent Study – BIOE 5840
Course Director and Instructor 2010, 2011 (16 hours/course)

University of Colorado Boulder
Department of Chemical and Biological Engineering – Independent Study CHEN 3840
Course Director: 2012, 2013, 2014 (6 hours/course)
Department of Chemical and Biological Engineering – Independent Study CHEN 4840
Course Director: 2013 (6 hours/course)
Department of Chemical and Biological Engineering – Special Topics CHEN 5919
Course Director: 2012 (6 hours/course)
Materials Science and Engineering Program – Independent Study
Course Director: 2015, 2016 (6 hours/course)
Materials Science and Engineering Program – Graduate Boot Camp
Polymer Chemistry, Lecturer: 2019 (6 hours/course)

II. RESEARCH and SCHOLARLY ACTIVITIES

CURRENT RESEARCH

Polymers used in biomedical materials applications take many different forms and functions. We are designing, synthesizing, characterizing and evaluating novel polymeric materials for a wide array of dental and biomedical applications. Some of these materials, such as dental restorations, are intended for permanent placement while others, as with scaffolds for tissue engineering, may be designed to degrade and clear the body after their service is complete. Analytical efforts that couple real-time conversion measurement along with polymer property evolution, particularly mechanical property development as well as polymerization shrinkage and stress development, are directed toward a better fundamental understanding of network forming photopolymerization processes. We are advancing the controlled formation and unique properties of heterogeneous photopolymers in a variety of forms. Our basic studies of photopolymerization processes and reaction kinetics extend to the development of novel photoinitiator systems and novel polymer additives such as functional nanogels. Several of these aspects have been integrated into 3D printing technologies reliant on photopolymerization, which include work on layer-by-layer printing, inkjet deposition and volumetric printing. Our high-performance 3D printable materials have led to a spin-off company.

Current research interests: dental and biomedical polymeric materials; hybrid radical/cationic polymeric materials; photopolymerization processes; network polymers and IPN systems; nano-scale polymeric particles; hydrogels and scaffolds for biomaterial/tissue engineering applications; polymerization with minimal shrinkage and stress development; combinatorial approaches to biomaterials development and characterization; polymerization-induced phase separation; conversion-dependent polymer property evolution; degradable polymers; radical photopolymerization with extensive dark cure and shadow cure potential; redox initiation chemistry, materials and techniques using high-performance materials for 3D printing.

RESEARCH FUNDING (with annual direct costs)

1. Principal Investigator “Multimaterial 3D print processing of antimicrobial and antifungal dental prosthetics”. Anschutz Foundation, Anschutz Acceleration Initiative, $1,072,224 October 1, 2024 – September 31, 2029.

2. Principal Investigator “High-performance BPA-free dental restoration composites with remineralization capabilities”. NIH/NIDCR, 1R41DE033937-01A1, $294,808, August 19, 2024 – August 18, 2025.

3. Co-Investigator (PI Devatha Nair) “Light-propelled dental adhesives with enhanced bonding capability”. NIH/NIDCR, 1R21DE032135-01A1, $150,000, July 12, 2023 – July 11, 2025.

4. Principal Investigator “Uniquely high conversion and mechanically robust composite restorative materials for functionally elevated performance”. NIH/NIDCR, 1R21DE032797, $150,000, September 5, 2023 – September 4, 2025.

5. Co-Principal Investigator (co-PI with Allan Guymon) “Hyperbranched Oligomers to Enhance Conversion and Toughness in Densely Crosslinked Systems”. I/UCRC Fundamentals and Applications of Photopolymerization, $45,000, July 1, 2021 – June 30, 2025.

6. Co-Principal Investigator (co-PI with Robert MacCurdy and Nicholas Jacobson) “Patient-specific On-demand Pre-surgical Planning Models via 3D Printing”. University of Colorado AB Nexus, $50,000, December 1, 2020 – December 31, 2021.

7. Principal Investigator “Physically Reinforced Photopolymer Networks”. I/UCRC Fundamentals and Applications of Photopolymerization, $45,000, April 1, 2020 – March 31, 2023.

8. Principal Investigator “High Performance Polymers for 3D Printing and Beyond”. 3M-CU Boulder Master Research Agreement, $110,000, May 1, 2020 – April 30, 2022.

9. Principal Investigator “Biocompatible and Biodegradable Polymeric Nanogel as Targeted Delivery Vehicle for CRISPR-Cas9”. Colorado Advanced Industries Program 2019 AI TTO POC Award, $200,000, July 1, 2019 – June 30, 2022.

10. Principal Investigator “Enabling 3D Printing for Dentistry through High-Performance Materials, New Processing Techniques and Comprehensive Metrics”. NIH/NIDCR, R21DE028444, $150,000, July 9, 2019 – June 30, 2022.

11. Principal Investigator “A One-Part Free Radical Initiator System to Enable Visible Light-

Activated Polymerization with Post-Exposure Dark Cure and Extensive, Athermal Shadow Cure Behavior". NIH/NIDCR, R21DE028017, $150,000, April 1, 2019 – March 31, 2022.

12. Principal Investigator "Nanogel Development and Characterization". Dentsply Sirona, $61,345, January 1, 2019 – December 31, 2019.

13. Principal Investigator "Chemically Extended Radical Photopolymerization Beyond Temporal and Spatial Irradiation Limitations". I/UCRC Fundamentals and Applications of Photopolymerization, $45,000, April 1, 2019 – March 31, 2022.

14. Principal Investigator "Low Migration Radiation Curable Technologies Via Nanogels". Altana, $120,000, April 1, 2018 – March 31, 2021.

15. Principal Investigator "Scalable Synthetic Approaches to Nanoparticle Production". Dentsply Sirona, $40,000, April 1, 2017 – September 30, 2019.

16. Principal Investigator "New Approaches to Reactive Oligomers and Prepolymers in Photo-cured Systems". I/UCRC Fundamentals and Applications of Photopolymerization, $40,000, January 1, 2016 – December 31, 2019.

17. Principal Investigator "Photodynamic Additives for Photopolymers". I/UCRC Fundamentals and Applications of Photopolymerization, $40,000, January 1, 2015 – December 31, 2018.

18. Principal Investigator "Simultaneous UV-Vis/NIR Applied to Photo-initiation/polymerization". I/UCRC Fundamentals and Applications of Photopolymerization, $40,000, January 1, 2014 – December 31, 2017.

19. Co-Principal Investigator (Co-PI with Guymon and Jessop from the University of Iowa) "Nano/Microstructured Materials Obtained Using Photopolymerization-Induced Phase Separation (PhIPS)". I/UCRC Fundamentals and Applications of Photopolymerization, $40,000, January 1, 2014 – December 31, 2018.

20. Co-Principal Investigator "Cu-Catalyzed Azide-Alkyne Reactions for Novel Dental Composite Materials." NIH/NIDCR, U01DE023774, $315,000 (through CU Boulder), September 1, 2013 – August 31, 2018.

21. Principal Investigator "Monomers and Nanogel to Improve Adhesive Resin Structural Integrity/Durability". NIH/NIDCR, R01DE023197, $265,388, July 1, 2013 – June 30, 2018.

22. Principal Investigator "Improved Dental Restorative Systems." Caulk/Dentsply, $38,700, March 1, 2013 – September 30, 2014.

23. Principal Investigator "Interactions between Monomers and Initiators Affecting Photopolymerization Efficiency and Polymer Structure." I/UCRC Fundamentals and Applications of Photopolymerization, $25,000, January 1, 2013 – May 31, 2014.

24. Principal Investigator “Application of Nanogel-modified Resins for Improved Polymeric Dental Materials”. NIH/NIDCR, R01DE022348, $250,000, July 1, 2012 – June 30, 2018.

25. Principal Investigator “Denture Tooth Formulation and Testing”. Myerson, $2500, February 1, 2012 – June 30, 2012.

26. Co-Principal Investigator (Newman, co-PI) “Methacrylate-based UV-cured Resin Systems”, Esstech, $3600, October 1, 2011 – January 31, 2012.

27. Co-Principal Investigator (Bowman, Cramer, Pfeifer, co-PIs) “Improved Understanding of Polymer Property Evolution: Dynamic Measurement and Modeling”. I/UCRC Fundamentals and Applications of Photopolymerization, $40,000, January 1, 2011 – December 31, 2014.

28. Principal Investigator “Improved Resin Bonded Dental Restoratives Based on Nanogel-modified Adhesives”. NIH/NIDCR, RC1DE020480, $325,000, October 1, 2009 – September 30, 2011.

29. Principal Investigator “Quantitative Methods and Reference Materials for Characterizing Polymeric Dental Composites” NIST, 70NANB5H1174, $225,397, October 1, 2009 – September 30, 2012.

30. Principal Investigator “Processing and Material Variations to Improve Mechanical Properties of PA-LH”. BioPlant R&D, $3500, June 1, 2009 – November 31, 2009.

31. Principal Investigator “Characterization of Polymeric Property Development in SDR Materials”. Dentsply/Caulk, $5500, July 1, 2009 – December 31, 2009.

32. Principal Investigator “Nanogel-modified Resins and Composites”. Septodont, $90,000, May 25, 2009 – June 30, 2014.

33. Co-Investigator (Christopher Bowman, PI) “Thiol-ene-methacrylate Composites for Dental Restorative Materials”. NIH/NIDCR 1R01DE018233 - 01A2, $250,000, September 1, 2008 – August 30, 2012.

34. Principal Investigator “Applications of Polymerization-induced Phase Separation to Restorative Materials”. NIH/NIDCR R01, $250,000, July 1, 2007 – June 30, 2013.

35. Principal Investigator “Heterogeneous Polymer Matrices from Nanogel Macromers”. NIH/NIDCR R21, $175,000, March 1, 2007 – February 28, 2010.

36. Principal Investigator (Bowman, co-PI) “Controlled Formation and Practical Use of Polymer/Polymer Interfaces”. NSF/IUCRC Fundamentals and Applications of Photopolymerization, $20,000, January 1, 2007 – December 31, 2008.

37. Co-Investigator (Christopher Bowman, PI) “Novel Cross-link Polymers for Dental Restorations”. NIH/NIDCR R01, $250,000, April 1, 2006 – March 31, 2011.

38. Principal Investigator “Improved Materials and Characterization Techniques Applied to Dental Composite Restoratives”. NIST CRADA, $140,000, October 1, 2005 – September 30, 2009.

39. Co-investigator (Kristi Anseth, PI) “3D Scaffolds for Controlled hMSC Differentiation”. NIH/NIDCR R01, $250,000, May 1, 2005 – April 30, 2010.

40. Co-Principal Investigator (Scranton, co-PI) “Fundamental Characterization of Cationic Polymerizations”. NSF/IUCRC Fundamentals and Applications of Photopolymerization, $20,000, January 1, 2005 – December 31, 2008.

41. Principal Investigator “Novel Surface Treatment of Fillers for Dental Composites”. NIH/NIDCR R21, $150,000, April 1, 2005 – March 31, 2008.

42. Principal Investigator “Development of Hybrid Radical/cationic Resins for Dental Composites”. Dentsply/Caulk, $24,000, January 1, 2005 – December 31, 2005.

43. Co-Principal Investigator (Christopher Bowman, co-PI) “Development of Novel Dental Resins and Composites”. Septodont, $72,117, April 1, 2004 – January 31, 2011.

44. Co-Principal Investigator (Christopher Bowman, co-PI) “Development and Application of High-throughput Techniques for Evaluation of UV Monomer Formulations”. IUCRC Photopolymerization Center, $24,000, January 1, 2004 – December 31, 2007.

45. Principal Investigator “Novel Polymer-Drug Conjugates for COPD Therapies”. Colorado Tobacco Research Program, $75,000, July 1, 2002 – December 31, 2003.

46. Principal Investigator “Low Shrinkage Dental Resins from SOC Oligomers”. NIH/NIDCR R01, $150,000, May 1, 2002 – April 30, 2007.

47. Principal Investigator “Development of Hybrid Radical/Cationic Resins for Dental Composites”. I/UCRC $20,000, December 1, 2004 – November 31, 2005.

48. Co-Principal Investigator (Christopher Bowman, co-PI) “Degradable Acrylic Acid Hydrogel Beads”. Biosphere Medical, $48,000, July 1, 2001 – June 30, 2002.

49. Co-investigator (Christopher Bowman, PI) “Novel Cross-link Polymers for Dental Restorations”. NIH/NIDCR R01, $200,000, April 1, 2001 – March 31, 2006.

50. Principal Investigator “Formation of hybrid Structures by Controlled Photopolymerization”. IUCRC Photopolymerization Center, $24,000, January 1, 2001 – December 31, 2002.

51. Principal Investigator “Cross-linking Photopolymerization”. Sub-contract with NIST, $80,000, October 1, 2000 – September 30, 2003.

52. Principal Investigator “Studies of the Cross-linking Photopolymerization Process in Dental Resins“ and “Strategies to Eliminate Polymerization Shrinkage and Stress Development in Dental Resins” contained in “Foundation for Advanced Dental and Medical Materials through Molecular Design and Measurement Science”. NIDCR-NIST Interagency Agreement, $310,000 (total for projects 1+2) October 1, 1999 – September 30, 2004.

53. Principal Investigator “Dental Resins Based on Fluorinated Monomers and Oligomers” contained in “Improved Dental Restorative Materials and Adhesives through Molecular Design and Measurement Science”. NIDCR-NIST Interagency Agreement, $242,000, October 1, 1996 – September 30, 1999.

54. Principal Investigator “Improvement of Polymeric Resin Systems for Dental Composites” contained in “Research for Improved Dental Restorative Materials”. NIDCR-NIST Interagency Agreement, $187,000, October 1, 1993 – September 30, 1996.

UNIVERSITY PATENT ROYALTY INCOME – 2010 - present

PUBLICATIONS

PERIODICALS (peer reviewed)

1. Childress KK, Hernandez JJ, Alim MD, Bowman CN, Stansbury JW. 3D printed shape memory photopolymers with tunable mechanical properties. ACS Applied Polymer Materials (submitted).

2. Messina M, Barros MD, Erickson C, Schroeder WG, Bateman TA, Bucknell AL, Stansbury JW, King KB. Delivery of BMP-2 in a novel time-degradable nanogel-based hydrogel in a mouse model of type 1 diabetes for intramembranous bone repair. Biomedical Materials Research PartB: Applied Biomaterials (submitted).

3. Sadowsky SJ, Stansbury JW. A completely digital workflow of an interim complete arch fixed implant prosthesis using a novel high-performance 3D printed polymer: A clinical report. Oral 2023; 3:477-486.

4. Sadowsky SJ, Stansbury JW. A 3D printed immediate load provisional complete arch implant supported prosthesis: A clinical report. EC Dental Science 2022: 21.4:64-74.

5. Labrie D, Price RB, Sullivan B, Salazar AM, Gautam D, Stansbury JW, Ferracane JL. Effect of thickness on the degree of conversion of two bulk-fill and one conventional posterior resin-based composites at high irradiance and high temporal resolution. Journal of the Mechanical Behavior of Biomedical Materials 2022; 136:105489.

6. Trivedi R, Gautam D, Kehe G, Escobedo H, Patel K, Stansbury J, Schurr M, Nair D. Synthesis, characterization and evaluation of azobenzene nanogels as anti-bacterial additives in adhesive dentistry. European Journal of Oral Sciences 2022; 130:e12832.

7. Gao G, Wang XC, Chen MT, Bowman CN, Stansbury JW. Functional nanogels as a route to interpenetrating polymer networks with improved mechanical properties. Macromolecules 2021; 54:10657-10666.

8. Sullivan B, Kalliecharan D, Kostylev I, Earle G, Stansbury JW, Price RB, Labrie D. Photo-polymerization kinetics of a dental resin at a high temporal resolution. Journal of the Mechanical Behavior of Biomedical Materials 2021; 124:104884.

9. Kim K, Mascarenas A, Musgrave CB, Stansbury JW. Relocation and reinforcement of the adhesive/composite interface with amine-peroxide interfacial polymerization. Dental Materials 2021; 37:1865-1872.

10. Wang X, Gao G, Song HB, Zhang X, Stansbury JW, Bowman CN. Evaluation of a photo-initiated copper(I)-catalyzed azide-alkyne cycloaddition polymer network with improved water stability and high mechanical performance as an ester-free dental restorative. Dental Materials 2021; 37:1592-1600.

11. Kim K, Sinha J, Stansbury JW, Musgrave CB. Visible-light photoinitiation of (meth)acrylate polymerization with autonomous post-conversion. Macromolecules 2021; 54:7702-7715.

12. Rad IY, Lewis S, Barros MD, Kipper M, Stansbury JW. Suppression of hydrolytic degradation in labile polymer networks via integrated styrenic nanogels. Dental Materials 2021; 37:1295-1306.

13. Huang S, Kim K, Musgrave G, Sharp M, Sinha J, Stansbury JW, Musgrave CB, Bowman CN. Determining Michael acceptor reactivity from kinetic, mechanistic, and electron-density analysis for the thiol-Michael reaction. Polymer Chemistry 2021; 12:3619-3628.

14. Wang X, Hernandez J, Gao G, Stansbury J, Bowman C. Poly(triazole) glassy networks via thiol-norbornene photopolymerization: structure-property relationships and implementation in 3D printing. Macromolecules 2021; 54:4042–4049.

15. Childress KK, Alim MD, Mavila S, Martinez V, Ding Y, Bowman CN, Stansbury JW. Systematic modulation and structure properties in photopolymerizable thermoplastics. ACS Applied Polymer Materials 2021; 3:1171-1181.

16. Shah PK, Stansbury JW. Photopolymerization shrinkage-stress reduction in polymer-based dental restoratives by surface modification of fillers. Dental Materials 2021; 37: 578-587.

17. Della Bona A, Cantelli V, Britto VT, Collares K, Stansbury JW. 3D printing restorative materials using a stereolithographic technique: a systematic review. Dental Materials 2021; 37:336-350.

18. Musgrave CB III, Kim K, Singstock NR, Salazar AM, Stansbury JW, Musgrave CB. Computational and experimental evaluation of peroxide oxidants for amine-peroxide redox polymerization. Macromolecules 2020; 53:9736–9746.

19. Kim K, Sinha J, Gao G, Childress K, Sartor S, Salazar A, Musgrave C, Stansbury J. High efficiency radical photopolymerization enhanced by autonomous dark cure. Macromolecules 2020; 53: 5034-5046.

20. Hasa E, Stansbury JW, Guymon CA. Manipulation of crosslinking in photo-induced phase separated polymers to control morphology and thermo-mechanical properties. Polymer 2020; 202:122699.

21. Gao G, Han X, Swan N, Zhang X, Shah PK, Chen M, Bowman CN, Stansbury JW. Stress relaxation via covalent dynamic bonds in nanogel containing thiol-ene resin. ACS Macro Letters 2020; 9:713-719.

22. Escobedo H, Stansbury J, Nair, D. Photoreactive nanogels as versatile polymer networks with tunable in situ drug release kinetics. Journal of the Mechanical Behavior of Biomedical Materials 2020; 108:103755.

23. Sinha J, Dobson A, Bankhar O, Podgórski M, Shah PK, Zajdowicz SLW, Alotaibi A, Stansbury JW, Bowman CN. Vinyl sulfonamide based thermosetting composites via thiol-Michael polymerization. Dental Materials 2020; 36:249-256.

24. Childress KK, Alim MD, Hernandez JJ, Stansbury JW, Bowman CN. Additive manufacture of lightly crosslinked semicrystalline thiol-enes for enhanced mechanical performance. Polymer Chemistry 2020; 11:39-46.

25. Alim MD, Childress KK, Baugh NJ, Martinez AM, Davenport A, Fairbanks BD, McBride MK, Worrell BT, Stansbury JW, McLeod RR, Bowman CN. A photopolymerizable thermoplastic with tunable mechanical performance. Materials Horizons 2020; 7:835-842.

26. Love D, Kim K, Domaille DW, Williams O, Stansbury J, Musgrave C, Bowman C. Catalyst-free, aza-Michael polymerization of hydrazides: polymerizability, kinetics, and mechanistic origin of an α-effect. Polymer Chemistry 2019; 10:5790-5804.

27. Childress KK, Kim K, Glugla DJ, Musgrave CB, Bowman CN, Stansbury JW. Independent control of singlet oxygen and radical generation via irradiation of a two-color photosensitive molecule. Macromolecules 2019; 52:4968-4978.

28. Fronza BM, Rad IY, Shah PK, Barros MD, Giannini M, Stansbury JW. Nanogel based filler-

matrix interphase for polymerization stress reduction. Journal of Dental Research 2019; 98:779-785.

29. Hasa E, Scholte Jon, Jessop J, Stansbury J, Guymon CA. Kinetically-controlled photo-induced phase separation for hybrid radical/cationic systems. Macromolecules 2019; 52:2975–2986.

30. Zhang D, Shah PK, Culver H, Sabrina D, Stansbury JW, Xiaobo Y, Bowman CN. Photo-responsive liposomes composed of spiropyran-containing triazole-phosphotidylcholine: Investigation of merocyanine-stacking effects on liposome-fiber assembly-transition. Soft Matter 2019; 8:3740-3750.

31. Kim K, Singstock N, Childress K, Sinha J, Salazar A, Whitfield S, Holder Aaron, Stansbury, J, Musgrave C. Rational design of efficient amine reductant initiators for amine-peroxide redox polymerization. Journal of the American Chemical Society 2019; 141:6279-6291.

32. Fronza BM, Lewis SH, Shah PK, Barros MD, Giannini M, Stansbury JW. Modification of filler surface treatment of composite resins using alternative silanes and functional nanogels. Dental Materials 2019; 35:928-936.

33. Gao G, Shah PK, Liu T, Stansbury JW. Step-growth production of nanogels for use as macromers with dimethacrylate monomers. Reactive and Functional Polymers 2019; 134:85-92.

34. Zhang X, Xi W, Gao G, Wang X, Stansbury J, Bowman C. o-Nitrobenzyl-based photobase generators: efficient photoinitators for visible-light induced thiol-Michael addition photopolymerization. ACS Macro Letters 2018; 7:852-857.

35. D'Ovido TJ, Roberts RM, Gautam D, Marks ZD, Saraswathy M, Stansbury JW, Nair DP. Photopolymerization kinetics of methyl methacrylate with reactive and inert nanogels. Journal of the Mechanical Behavior of Biomedical Materials 2018; 85:218-224.

36. Liu T, Shah PK, Liu Z, Gao G, Bowman CN, Stansbury JW. Effects of photodegradable o-nitrobenzyl nanogels on the photopolymerization process. Macromolecular Materials and Engineering 2018; 303:1800206.

37. Sowan N, Cox L, Shah P, Song H-B, Stansbury J, Bowman C. Dynamic covalent chemistry at interfaces: development of tougher, healable composites through stress relaxation at the resin-filler interface. Advanced Materials Interfaces 2018, 5, 1800511.

38. Huang S, Podgórski M, Zhang X, Sinha J, Claudino M, Stansbury JW, Bowman CN. Dental restorative materials based on thiol-Michael photopolymerization. Journal of Dental Research 2018; 97:530-536.

39. Alzahrani AA, Saed M, Yakacki CM, Song HB, Sowan N, Walston JJ, Shah PK, McBride MK, Stansbury JW, Bowman CN. Fully recoverable rigid shape memory foam based on copper-catalyzed azide-alkyne cycloaddition (CuAAC) using a salt leaching technique. Polymer Chemistry 2018; 9:121-130.

40. Liu Z, Fairbanks B, He L, Liu T, Shah P, Cha J, Stansbury JW, Bowman CN. Water-soluble clickable nucleic acid (CNA) polymer synthesis by functionalizing the pendant hydroxyl. Chemical Communications 2017; 53:10156-10159.

41. Ferracane JL, Hilton TJ, Stansbury JW, Watts DC, Silikas N, Ilie N, Heintze S, Cadenaro M, Hickel R. Academy of Dental Materials Guidance—Resin composites: Part II - Technique sensitivity (handling, polymerization, dimensional changes). Dental Materials 2017; 33:1171-1191.

42. Shah PK, Stansbury JW, Bowman CN. Application of an addition-fragmentation-chain transfer monomer in di(meth)acrylate network formation to reduce polymerization shrinkage stress. Polymer Chemistry 2017; 8:4339-4351. *[cover image]*

43. Ilie N, Hilton TJ, Heintze SD, Hickel R, Watts DC, Silikas N, Stansbury JW, Cadenaro M, Ferracane JL. Academy of Dental Materials Guidance – resin composites: Part I - mechanical properties. Dental Materials 2017; 33:880-894.

44. Saraswathy M, Stansbury J, Nair D. Thiol-functionalized nanogels as reactive plasticizers for crosslinked polymer networks. Journal of the Mechanical Behavior of Biomedical Materials 2017; 74:296-303.

45. Stansbury JW. Change is inevitable but make it evidence based improvement rather than convenience based. Revista da Faculdade de Odontologia 2017 DOI: 10.5335/rfo.v21i3.7142 (invited editorial).

46. Song HB, Wang X, Patton JR, Stansbury JW, Bowman CN. Kinetics and mechanics of photo-polymerized triazole-containing thermosetting composites via copper(I)-catalyzed azide-alkyne cycloaddition. Dental Materials 2017; 33:621-629.

47. Dailing EA, Nair DP, Van De Veer T, Stansbury JW. Multistructured nanogel-based networks formed from interfacial redox polymerizations modulate small molecule release. Macromolecular Chemistry and Physics 2017; 218 (21):1700256 (1-7).

48. Yang H, Stansbury JW, Ai X, Hu R, Tang H, Maitlo, Nie J. Nanostructure superhydrophobic surface prepared by photopolymerization. Chemistry Letters 2017; 46:371-373.

49. Yang H, Li G, Zhu X, Stansbury J, Wang X, Nie, J. Smart antibacterial surfaces made by photopolymerization. ACS Applied Materials and Interfaces 2016; 8:28047-28054.

50. Gotti V, Correr AB, Lewis SH, Feitosa VP, Correr-Sobrinho L, Stansbury JW. Influence of nanogel additive hydrophilicity on dental adhesive mechanical performance and dentin bonding. Dental Materials 2016; 32:1406-1413.

51. Song HB, Sowan N, Shah PK, Baranek A, Flores A, Stansbury JW, Bowman CN. Reduced shrinkage stress via photo-initiated copper(I)-catalyzed azide-alkyne cycloaddition (CuAAC) polymerizations. Dental Materials 2016; 32:1332-1342.

52. Kalliecharan D, Germscheid W, Price RB, Stansbury J, Labrie D. Shrinkage stress kinetics of Bulk Fill resin-based composites at tooth temperature and long time. Dental Materials 2016; 32:1322-1331.

53. Saraswathy M, Stansbury J, Nair D. Water dispersible siloxane nanogels: a novel technique to control surface characteristics and drug release kinetics. Journal of Materials Chemistry B 2016; 4:5299-5307.

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MEETING PROCEEDINGS/PREPRINTS

1. Kim K, Sinha J, Salazar A, Whitfield S, Childress K, Sartor S, Wendt E, Musgrave C, Stansbury J. Chemically extended radical photopolymerization beyond temporal irradiation limitations: Radical dark curing. Am Chem Soc, Poly, 2019.

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97. Pfeifer CS, Shelton ZR, Greenstein L, Moraes RR, Shah PK, Stansbury JW. Iniferter effects on kinetic, mechanical and viscoelastic properties of dimethacrylates. 2009 IADR Meeting, Miami, FL.

98. Garcia JW, Moraes RR, Stansbury JW. Methods for formation of crosslinked polymeric nanoparticles. 2009 IADR Meeting, Miami, FL.

99. Wilson ND, Moraes RR, Stansbury JW. Modification of dental adhesives with reactive nano-scale polymeric particles. 2009 IADR Meeting, Miami, FL.

100. Moraes RR, Garcia JW, Stansbury JW. Shrinkage reduction in resins and composites modified with polymeric nanoparticles. 2009 IADR Meeting, Miami, FL.

101. Tanaka J, Hashimoto Y, Nakamura M, Stansbury JW, Antonucci JM, Suzuki K. Multi-functional denture liner using divinyl sebacate/PEMA paste. 2008 IADR Meeting, Toronto, Canada.

102. Guimarães TC, Pfeifer CS, Braga RR, Stansbury JW. Conversion of resins with different amine:camphorquinone ratios and concentrations. 2008 IADR Meeting, Toronto, Canada.

103. Stansbury JW. Use of well-designed polymers and polymerization methods to address challenges in dental materials. 2008 IADR Meeting, Toronto, Canada.

104. Kim D, Stansbury JW. Radical-based visible-light initiator system with extensive dark cure potential. 2008 IADR Meeting, Toronto, Canada.

105. Garcia JW, Shah PK, Bowman CN, Stansbury JW. Effects of reaction kinetics and conversion on photopolymerization stress development. 2008 AADR Meeting, Dallas, TX.

106. Stansbury JW, Tanaka J. Effect of monomer structure and resin composition on photopolymerization. 2008 AADR Meeting, Dallas, TX.

107. Wilson ND, Newman SM, Stansbury JW. Depth-dependent photopolymerization reaction kinetics in dental composites. 2008 AADR Meeting, Dallas, TX.

108. Kleinman B, Newman SM, Stansbury JW. Varying hydrophilic resin composite matrices effects on strength versus time. 2008 AADR Meeting, Dallas, TX.

109. Abbott SM, Garcia JW, Newman SM, Stansbury JW. Conversion-dependent mechanical stress relaxation behavior in crosslinked polymers. 2008 AADR Meeting, Dallas, TX.

110. Cramer N, Kilambi H, Schneidewind L, Stansbury JW, Bowman CN. Highly reactive monomethacrylates as reactive diluents for dimethacrylate-based dental composites. 2008 AADR Meeting, Dallas, TX.

111. Stansbury JW. Real-time monitoring of conversion dependence of polymerization shrinkage and stress. 2008 AADR Meeting, Dallas, TX.

112. Howe S, Newman SM, Stansbury JW. Bond strength of thiol-ene/methacrylate composite restorative materials. 2008 AADR Meeting, Dallas, TX.

113. Musange L, Ferracane JL, Stansbury JW. Effects of photoinitiator/co-initiators on degree and rate of monomer conversion. 2007 IADR Meeting, New Orleans, LA.

114. Cramer N, Carioscia J, Stansbury J, Bowman C. Ternary thiol-ene systems as low-stress, high-Tg dental restorative materials. 2007 IADR Meeting, New Orleans, LA.

115. Howard B, Newman SM, Stansbury JW. Coupled dynamic spectroscopic characterization of composite restorative photopolymerization. 2007 IADR Meeting, New Orleans, LA.

116. Tanaka J, Hashimoto Y, Nakamura M, Stansbury JW, Antonucci JM, Suzuki K. Application of vinyl ester/PEMA paste to denture liner. 2007 IADR Meeting, New Orleans, LA.

117. Newman SM, Sheth S, Stansbury JW. Polymerization shrinkage versus conversion in commercial composites. 2007 IADR Meeting, New Orleans, LA.

118. Stansbury JW. Developing new chemistries for polymeric dental materials. 2006 IADR Meeting, Brisbane, Australia. Invited keynote talk.

119. Stansbury JW, Crawford LR. Polymerization-induced phase separation in methacrylate/vinyl ether mixtures. 2006 IADR Meeting, Brisbane, Australia.

120. Carioscia JA, Bowman CN, Stansbury JW. Free radical and anionic polymerizations of thiol-ene/thiol-epoxy hybrid systems. 2006 IADR Meeting, Brisbane, Australia.

121. Bowman CN, Lu H, Lehigh BE, Stansbury JW. Hybrid methacrylate/thiol-ene system for novel dental resins. 2006 IADR Meeting, Brisbane, Australia.

122. Tanaka J, Stansbury JW, Antonucci JW, Suzuki K. Characteristic properties of a novel compomer using UDMA/MAA matrix resin. 2006 IADR Meeting, Brisbane, Australia.

123. Lu H, Newman SM, Bowman CN, Stansbury JW. Dimer acid derived dimethacrylates for ternary dental restorative resins. 2006 AADR Meeting, Orlando, FL.

124. Cramer N, Carioscia JA, Lu H, Stansbury JW, Bowman CN. Thiol-enes as low-shrinkage, low-stress, high-tg dental restorative materials. 2006 AADR Meeting, Orlando, FL.

125. Ding X, Stansbury JW. Resin-based improvements of composites containing polymer brush-modified fillers. 2005 IADR Meeting, Baltimore, MD.

126. Trujillo-Lemon M, Lu H, Stansbury JW. Thermal effects on photopolymerization stress development. 2005 IADR Meeting, Baltimore, MD.

127. Ge J, Trujillo-Lemon M, Lu H, Stansbury JW. Dimer acid-derived dimethacrylates as diluent monomers in restorative resins. 2005 IADR Meeting, Baltimore, MD.

128. Tanaka J, Hashimoto T, Stansbury JW, Antonucci JM, Suzuki K. Novel fluoride-releasing compomers based on UDMA/MAA matrix resins. 2005 IADR Meeting, Baltimore, MD.

129. Ding X, Stansbury JW. Polymer-brush modified filler for dental composites. 2004 IADR Meeting, Honolulu, HI.

130. Stansbury JW, Ding X, Trujillo M, Johnson B. Nanogels as organic fillers for resin-based dental materials. 2004 IADR Meeting, Honolulu, HI.

131. Newman SM, Stansbury JW, Bowman CN. Synthesis and photopolymerization kinetics of hydroxymethacrylates. 2004 IADR Meeting, Honolulu, HI.

132. Tanaka J, Stansbury JW, Antonucci JM, Suzuki K. Characteristic water durability behavior of UDMA/methacrylic acid resin. 2004 IADR Meeting, Honolulu, HI.

133. Lu H, Stansbury JW, Bowman CN. Filler effect on shrinkage stress and in situ polymerization kinetics. 2004 IADR Meeting, Honolulu, HI.

134. Lin Y, Stansbury JW. Simultaneous conversion and shrinkage characterization in methacrylate-vinyl ether hybrid systems. 2004 IADR Meeting, Honolulu, HI.

135. Bowman CN, Lu H, Stansbury JW. Novel investigation of thiol-ene system for future dental restorative resins. 2004 IADR Meeting, Honolulu, HI.

136. Stansbury JW, Lin Y. Controlled photopolymerization of methacrylate-vinyl ether hybrid resins. 2003 IADR Meeting, Goteborg, Sweden.

137. Hui L, Stansbury JW, Dickens SH, Eichmiller FC, Bowman CN. Effect of curing protocol on polymerization shrinkage stress development. 2003 IADR Meeting, Goteborg, Sweden.

138. Beckel ER, Hui L, Nie J, Stansbury JW, Bowman CN. Fundamental studies of novel (meth)acrylate monomers for dental restorative applications. 2003 IADR Meeting, Goteborg, Sweden.

139. Tanaka J, Chujo S, Stansbury JW, Antonucci JM, Suzuki K. Characteristic polymerization

shrinkage behavior of UDMA/acidic monomer resins. 2003 IADR Meeting, Goteborg, Sweden.

140. Astroth JD, Naasz K, Berg RG, Stansbury JW. Effect of heat activation on setting times of glass ionomers. 2003 IADR Meeting, Goteborg, Sweden.

141. Stansbury JW, Trujillo M, Bowman CN. Development of pH-responsive Hydrogels as Biomaterials. 2003 AADR Meeting, San Antonio, TX.

142. Newman SM, Stansbury JW, Bowman CN, Knauss DM. Fast-reacting novel monomethacrylates. 2003 AADR Meeting, San Antonio, TX.

143. Ge J, Trujillo M, Stansbury JW. Design of low-shrinkage methacrylate polymers. 2003 AADR Meeting, San Antonio, TX.

144. Schneider M, Trujillo M, Stansbury JW. Hydrogen bonding interactions in dental resins. 2003 AADR Meeting, San Antonio, TX.

145. Trujillo M, Stansbury JW. Thermal effects on composite photopolymerization monitored by real-time NIR. 2003 AADR Meeting, San Antonio, TX.

146. Lu H, Dickens SH, Eichmiller FC, Stansbury JW, Bowman CN. Novel method of simultaneous measurement of polymerization shrinkage stress and conversion. 2003 AADR Meeting, San Antonio, TX.

147. Bowman CN, Lu H, Nie J, Stansbury JW. Development of rapidly polymerizing monomethacrylates as reactive diluents. 2003 AADR Meeting, San Antonio, TX.

148. Moss L, Rueggeberg FA, Stansbury JW. Effect of solvent type on absorption profile of camphorquinone. IADR Meeting, March 2002, San Diego, CA.

149. Kim J, Astroth J, Stansbury JW. Effect of an inert filter on physical properties of ethyl/isobutyl methacrylate. IADR Meeting, March 2002, San Diego, CA.

150. Jiro T, Stansbury JW, Antonucci JM, Suzuki K. Effect of acidic monomer structure on polymer properties of UDMA/Acidic monomer resins. IADR Meeting, March 2002, San Diego, CA.

151. Stansbury JW, Trujillo M. Preparation and applications of soluble hyperbranched polymeric particles. IADR Meeting, March 2002, San Diego, CA.

152. Astroth J, Kim J, Stansbury JW. Suitability of sapphire as a complete denture impression material. IADR Meeting, March 2002, San Diego, CA.

153. Watts D, Stansbury J, Nagel R, Kunzelmann K. Controversies in polymerization of light-

activated polymer matrix composites. IADR Meeting, June 27, 2001, Chiba, Japan.

154. Tanaka J, Stansbury JW, Antonucci JM, Suzuki K. Cross-linked dental resin reinforced with noncovalent bond. IADR Meeting, June 28, 2001, Chiba, Japan.

155. Stansbury JW, Tanaka J. Effect of monomer structure and resin composition on photopolymerization. IADR Meeting, June 29, 2001, Chiba, Japan.

156. Stansbury JW. (2001). Modifying dental resins with monomers based on dimer acid. AADR Meeting, Chicago, IL.

157. Lefebvre CA, Schuster GS, Rueggeberg FA, Stansbury JW, Caughman GB. (2001). Cytotoxicity of Bis-GMA, its precursors and degredation products. AADR Meeting, Chicago, IL.

158. Stansbury JW, Tanaka J, Antonucci JM. (2000). Photopolymerization studies and polymer properties of methacrylate/vinyl ester resins. IADR Meeting, Washington, D.C.

159. Tanaka J, Stansbury JW, Antonucci JM. (2000). New hydrophobic diluent monomers for UDMA and Bis-GMA. IADR Meeting, Washington, D.C.

160. Antonucci JM, Stansbury JW, Fowler BO. (2000). Synthesis and characterization of ethyl α-hydroxymethylacrylate, a novel isomeric analog of HEMA. IADR Meeting, Washington, D.C.

161. Lovell, L.G., Lu, H., Stansbury, J.W., Bowman, C.N. (2000). The effect of cure rate on the mechanical properties of dental resins. IADR Meeting, Washington, D.C.

162. Khatri, C.A., Antonucci, J.M., Stansbury, J.W. (2000). Synthesis and characterization of urethane derivatives of Bis-GMA. IADR Meeting, Washington, D.C.

163. Skrtic, D., Antonucci, J.M., Eichmiller, F.C., Stansbury, J.W. (2000). Polymerization shrinkage and methacrylate conversion in amorphous calcium phosphate composites. IADR Meeting, Washington, D.C.

164. Hartzell, S.L., Stansbury, J.W., Schumacher, G.E. (2000). Comparison of Bis-GMA/HEMA and UDMA/HEMA adhesive resins. IADR Meeting, Washington, D.C.

165. Berchtold, K.A., Stansbury, J.W., Bowman, C.N. (2000). Structural effects on the cure characteristics of functionalized methacrylate monomers. IADR Meeting, Washington, D.C.

166. Xu, H.H.K., Smith, D.T., Schumacher, G.E., Eichmiller, F.C., Antonucci, J.M., Stansbury, J.W. (2000). Whisker-reinforced composites: effects of filler level, heat-cure temperature and time. IADR Meeting, Washington, D.C.

167. Stansbury, J.W., Dickens, S.H. (1999). Near-infrared analysis of conversion in resins and composites. IADR Meeting, Vancouver, B.C., Canada.

168. Dickens, S.H., Stansbury, J.W., Floyd, C.J.E. (1999). Effects of chemical composition on cure properties of dental resins. IADR Meeting, Vancouver, B.C., Canada.

169. Khatri, C.A., Stansbury, J.W. (1999). Investigation of alternatives to urethane dimethacrylate in dental resins. IADR Meeting, Vancouver, B.C., Canada.

170. Takahashi, H., Antonucci, J.M., Stansbury, J.W. (1999). Effect of silane coupling agent and filler on composite durability. IADR Meeting, Vancouver, B.C., Canada.

171. Stansbury, J.W., Dickens, S.H., Khatri, C.A. (1998). Compositional drift during the copolymerization of dental resins. IADR Meeting, Nice, France.

172. Stansbury, J.W., Choi, K.M., Khatri, C.A., Reed, B.B., Dickens, S.H. (1998). Photopolymerization kinetics of methacrylate dental resins. AADR Meeting, Minneapolis, MN.

173. Antonucci, J.M., Fowler, B.O., Stansbury, J.W. (1998). Facile synthesis of silanated derivatives of Bis-GMA. AADR Meeting, Minneapolis, MN.

174. Farahani, M., Stansbury, J.W., Antonucci, J.M., Phinney, C.S. (1997). The addition reaction of aryl amines with acrylic monomers: A gas chromatography-mass spectrometry study. IADR Meeting, Orlando, FL.

175. Antonucci, J.M., Fowler, B.O., Stansbury, J.W. (1997). Facile synthesis of reactive organosilsesquioxanes for dental applications. IADR Meeting, Orlando, FL.

176. Stansbury, J.W., Dermann, M.H. (1997). Radical/cationic photopolymerization of spiro orthocarbonate-modified methacrylate resins. IADR Meeting, Orlando, FL.

177. Stansbury, J.W., Antonucci, J.M., Choi, K.M. (1996). High strength hydrophobic composites from urethane-containing fluorinated resins. IADR Meeting, San Francisco, CA.

178. Antonucci, J.M., Stansbury, J.W., Kim, S.I. (1995). Effect of long chain silane coupling agent on composite strength. IADR Meeting, Singapore.

179. Stansbury, J.W., Kim, S.I., Scott, G., Antonucci, J.M. (1995). Low surface energy monomers with varied fluorine contents and distributions. AADR Meeting, San Antonio, TX.

180. Reed, B.B., Antonucci, J.M., Stansbury, J.W. (1995). Cationic polymerization of vinyl cyclic acetals by visible light. AADR Meeting, San Antonio, TX.

181. Gingreau, C., Antonucci, J.M., Stansbury, J.W. (1995). Visible light polymerization of vinyl ether-acrylic monomer systems. AADR Meeting San Antonio.

182. Stansbury, J.W., Liu, D.-W., Kim, S.I. (1994). Ring-opening polymerization with expansion and crosslink formation. IADR Meeting, Seattle, WA.

183. Reed, B.B., Antonucci, J.M., Stansbury, J.W. (1994). Synthesis of a vinyl cyclic ketal derivative of camphorquinone. IADR Meeting, Seattle, WA.

184. Liu, D.-W., Kim, S.I., Stansbury, J.W. (1994). Polymer-supported catalysts for synthesis of cyclopolymerizable monomers. IADR Meeting, Seattle, WA.

185. Stansbury, J.W., Liu, D.-W. (1993). One-step synthesis/formulation of cyclopolymerizable dental resins. IADR Meeting, Chicago, IL.

186. Antonucci, J.M.; Liu, D.-W.; Stansbury, J.W. (1993). Synthesis of hydrophobic oligomeric monomers for dental applications. IADR Meeting, Chicago, IL.

187. Stansbury, J. W.; Antonucci, J.M.; Reed, B.B. (1993). Initiator effects on the tensile strength of novel dental composites. IADR Meeting, Chicago, IL.

188. Antonucci, J.M., Stansbury, J.W., Keeny, S.M., Matsukawa, S. (1992). Effect of aldehydes on the mechanical strength of dental composites. IADR Meeting, Glasgow, Scotland.

189. Stansbury, J.W. (1992). Spiro orthocarbonate-substituted methacrylates: New monomers for ring-opening polymerization. AADR Meeting, Boston, MA.

190. Antonucci, J.M., Stansbury, J.W., Farahani, M. (1992). Polymerization of dental resins via amine-acid interactions. AADR Meeting, Boston, MA.

191. Reed, B.B., Stansbury, J.W., Antonucci, J.M. (1992). Ring-opening dental resin systems based on cyclic acetals. AADR Meeting, Boston, MA.

192. Stansbury, J.W. (1991). Improved monomers for double ring-opening polymerization with expansion. IADR Meeting, Acapulco, Mexico.

193. Antonucci, J.M., Stansbury, J.W., Cheng, G.-W. (1991). Synthesis of novel hydrophilic and hydrophobic multifunctional monomers. IADR Meeting, Acapulco, Mexico.

194. Cheng, G.-W., Stansbury, J.W., Antonucci, J.M. (1990). Synthesis of novel highly fluorinated multifunctional vinyl monomers and oligomers. IADR Meeting, Cincinnati, OH.

195. Stansbury, J.W. (1990). Evaluation of a new multifunctional oligomer for dental composites. IADR Meeting, Cincinnati, OH.

196. Antonucci, J.M., Stansbury, J.W., Fowler, B.O., Eichmiller, F. (1990). Monomer systems based on multivalent metal monocarboxylate monomers. IADR Meeting, Cincinnati, OH.

197. Antonucci, J.M., Stansbury, J.W., Fowler, B.O. (1989). Synthesis of multivalent metal dicarboxylate monomers. IADR Meeting, Dublin, Ireland.

198. Stansbury, J.W. (1989). Synthesis and high conversion polymerization of novel difunctional monomers. AADR Meeting, San Francisco, CA.

199. Antonucci, J.M., Stansbury, J.W. (1989). Polymer-modified glass ionomer cements. AADR Meeting, San Francisco, CA.

200. Stansbury, J.W., Antonucci, J.M. (1987). Evaluation of alpha-methylene-gamma-butyrolactone as a monomer in dental resin formulations. IADR Meeting, Chicago, IL.

201. Lee, C., Brauer, G.M., Stansbury, J.W. (1986). Copolymers of 2-isocyanatoethyl methacrylate or m-isopropenyl-α,α-dimethylbenzyl isocyanate – Synthesis and adhesive properties. IADR Meeting, The Hague, The Netherlands.

202. Antonucci, J.M., Stansbury, J.W., Venz, S. (1986). Synthesis of silyl ether derivatives of Bis-GMA. AADR Meeting, Washington, D.C.

203. Stansbury, J.W., Bailey, W.J. (1986). Synthesis of monomers that polymerize with expansion in volume. AADR Meeting, Washington, D.C.

204. Antonucci, J.M., Stansbury, J.W., Venz, S. (1985). Synthesis of a polyfluorinated prepolymer multifunctional urethane methacrylate. IADR Meeting, Las Vegas, NV.

205. Brauer, G.M., Stansbury, J.W. (1985). Color changes of composites on exposure to various energy sources. IADR Meeting, Las Vegas, NV.

206. Stansbury, J.W., Brauer, G.M. (1985). Properties of vanillate and syringate cements containing various fluorides. IADR Meeting, Las Vegas, NV.

207. Brauer, G.M., Stansbury, J.W. (1984). Modification of cements containing vanillate or syringate esters. IADR Meeting, Dallas, TX.

208. Stansbury, J.W., Brauer, G.M. (1984). Bonding of vanillate and syringate cements to various substrates. IADR Meeting, Dallas, TX.

209. Antonucci, J.M., Venz, S., Dudderar, D.J., Stansbury, J.W. (1984). Non-aqueous polycarboxylate cements based on dimer and trimer acids. IADR Meeting, Dallas, TX.

210. Brauer, G.M., Stansbury, J.W. (1983). Intermediate restoratives from n-hexyl vanillate EBA-ZnO-glass composites. IADR Meeting, Sydney, Australia.

211. Brauer, G.M., Stansbury, J.W. (1983). Dental cements containing hexyl syringates. AADR Meeting, Cincinnati, OH.

212. Stansbury, J.W., Brauer, G.M., Antonucci, J.M. (1983). Divanillates and polymerizable vanillates as ingredients of dental cements. AADR Meeting, Cincinnati, OH.

213. Antonucci, J.M., Venz, S., Brauer, G.M., Duddarar, D. (1983). Formulation and evaluation of fluorine-containing composite resins. AADR Meeting, Cincinnati, OH.

214. Brauer, G.M., Stansbury, J.W. (1981). Peroxy esters and hydroperoxides as initiators for composite resins. IADR Meeting, Chicago, IL.

215. Stansbury, J.W., Argentar, H., Brauer, G.M. (1981). Cements from 2,5-dimethoxyphenol and zinc oxide. IADR Meeting, Chicago, IL.

216. Brauer, G.M., Stansbury, J.W. (1980). Derivatives of p-N,N-dialkylaminophenylalkanoic acid: New accelerators for dental composites. IADR Meeting, Osaka, Japan.

Lunch and Learning Presentations at AADR/IADR and Academy of Dental Materials

1. Nuremberg, Germany Academy of Dental Materials (October 2017) What's new and on the horizon in photopolymer-based 3D printing.

2. Los Angeles, CA AADR for DMG (March, 2016) Using light for more than 'simple' photopolymerization.

3. Cape Town, South Africa IADR for DMG (June, 2014) Novel dental polymers – what is new on the horizon?

4. Vancouver, Canada Academy of Dental Materials (October 2013) Fundamentals of photopolymerization as applied to dental materials.

5. Iguacu Falls, Brazil IADR for DMG (June 2012) The chemistry and photochemistry of resin composites.

Other Published Abstracts and Presentations

1. Salazar A, Bharath A, Stansbury JW. Semi- or fully-water compatible monomers for photopolymer network construction. October 2024, Academy of Dental Materials Meeting, Torino, Italy.

2. Kim K, Sinha J, Musgrave CB, Stansbury JW. Highly efficient polymerization involving redox-assisted photoinitiation of one-part formulations. May 2021, Joint Meeting of the Academy of Dental Materials and the Chinese Stomatological Association's Society of Dental Material Science, Guangzhou, China (virtual program).

3. Shah PK, Stansbury JW. Control of dynamic material property development in photopolymers using photochromism. October 2019, Academy of Dental Materials Meeting, Jackson Hole, WY.

4. Gautam D, Stansbury JW, Nair DP. Methacrylic resin compatibilization via reactive and inert nanogels. October 2019, Academy of Dental Materials Meeting, Jackson Hole, WY.

5. Escobedo H, Stansbury JW, Nair DP. Photoreactive nanogels for local treatment of the oral cavity. October 2019, Academy of Dental Materials Meeting, Jackson Hole, WY.

6. Gao G, Han X, Swan N, Zhang X, Bowman C, Stansbury J. Stress relaxation via covalent dynamic bonds in nanogel containing resins. October 2019, Academy of Dental Materials Meeting, Jackson Hole, WY.

7. Barros M, Vigil J, Stansbury J. Resin property control throughout conversion based on nanogel functionalization. October 2019, Academy of Dental Materials Meeting, Jackson Hole, WY.

8. Bailey R, Barros M, Shah P, Stansbury J. 3D printable resins combining extreme strength with toughness. October 2019, Academy of Dental Materials Meeting, Jackson Hole, WY.

9. Kim K, Sinha J, Gao G, Shah PK, Childress KK, Sartor SM, Salazar AM, Whitfield SN, Wendt ER, Musgrave CB, Stansbury JW. Dark curing photoinitiators that can extend the depth of cure in composite materials. October 2019, Academy of Dental Materials Meeting, Jackson Hole, WY.

10. Childress K, Alim MD, Hernandez JJ, Stansbury JW, Bowman CN. Additive manufacturing of photopolymerizable thiol-ene thermoplastics. October 2019, Academy of Dental Materials Meeting, Jackson Hole, WY.

11. Kim K, Musgrave C, Stansbury J. A fresh look at redox initiation: new possibilities for high efficiency photocuring. February 2019, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

12. Childress KK, Kim K, Glugla DJ, Musgrave CB, Bowman CN, Stansbury JW. Irradiation of a dual-wavelength photosensitive molecule to overcome oxygen inhibition. February 2019, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

13. Gao G, Shah P, Liu T, Stansbury J. New approaches to reactive oligomers and prepolymers in photo-cured systems. February 2019, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

14. Shah P, Childress K, Stansbury J. Radiation curing technology using nanogels to achieve reduced oxygen inhibition and low photoinitiator migration in coating applications. February 2019, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

15. Kim K, Singstock N, Childress K, Musgrave C, Stansbury J. Computational analysis of amine activators in amine-peroxide redox polymerization. October 2018, Academy of Dental Materials Meeting, Porto de Galinhas, Brazil.

16. Kim K, Sinha J, Musgrave, Bowman C, Stansbury J. Free-radical polymerization using a photobase/redox initiating system to provide light-activated dark cure. May, 2018, RadTech Meeting, Chicago, IL.

17. Fronza BM, Giannini M, Stansbury JW. Modification of filler-matrix interphase of restorative composites using reactive nanogels. October 2017, Academy of Dental Materials Meeting, Nuremberg, Germany. Received the Paffenbarger Award.

18. Kim K, Musgrave CB, Stansbury JW. Photo-activated dark curing of methacrylate resins. October 2017, Academy of Dental Materials Meeting, Nuremberg, Germany.

19. Hasa E, Jessop JLP, Stansbury JW, Guymon CA. Control Nano/Microstructure Using Photopolymerization-Induced Phase Separation (PhIPS). October 2017, AIChE Meeting, Minneapolis, MN.

20. Roberts R, Cao P, Tyus Andrew, Jones D, Simboski K, Barros M, Lewis S, Stansbury J. Polymerization Stress Reduction with Thiol-Functional Nanogels. September 2017, Photopolymerization Fundamentals, Boulder, CO.

21. Hagen T, Shah PK, Stansbury JW. Evaluation of the Photodynamic Behavior of Spiropyran Additives in Photopolymer Systems. September 2017, Photopolymerization Fundamentals, Boulder, CO.

22. Shah PK, Utzcategui C, McLeod RR, Stansbury JW. 3D Printing with Polymeric Nanogel Particles. September 2017, Photopolymerization Fundamentals, Boulder, CO.

23. Gao G, Stansbury JW. Synthesis of nanogels by step-growth polymerization. September 2017, Photopolymerization Fundamentals, Boulder, CO.

24. Rad I, Kumor N, Barros M, Stansbury J. Suppression of Hydrolytic Degradation via Styrenic Nanogels. September 2017, Photopolymerization Fundamentals, Boulder, CO.

25. Childress K, Stansbury JW. Coupled UV-Vis/FT-NIR Spectroscopy for the Real-Time Investigation of Photopolymerization Kinetics using Mixed Photoinitiating Systems. Division of Polymer Chemistry, American Chemical Society, August 2017, Washington DC.

26. Stansbury JW. Improved understanding of simple and not-so-simple photopolymerization reactions through real-time analytical techniques. October 2016, Photopolymerization: Past, Present and Future, Estes Park, CO.

27. Hasa E, Scholte J, Jessop JLP, Stansbury JW, Guymon CA. Nano/microstructured materials obtained using photopolymerization-induced phase separation. October 2016, Photopolymerization: Past, Present and Future, Estes Park, CO.

28. Shah P, Stansbury JW. Polymeric nanogel particles as additives for photopolymer applications. October 2016, Photopolymerization: Past, Present and Future, Estes Park, CO.

29. Messina M, Barros MD, Bateman T, Stansbury JW, Bucknell AL, King KB. BMP-2 in a novel and time-degradable hydrogel demonstrates enhanced bone repair in a mouse model of diabetes. March 2016, Orthopaedic Research Society, Orlando, FL.

30. Lu H, Jin X, Barros M, Stansbury J. Shrinkage and shrinkage stress control in highly-filled nanogel-modified composite. October 2015, Academy of Dental Materials, Lahaina, HI.

31. Tanaka J, Irie M, Stansbury JW, Matsumoto T. Novel powder-liquid type high-performance PMMA/MMA based resin. October 2015, Academy of Dental Materials, Lahaina, HI.

32. Boyes V, Stansbury J, Festy F, Thompson V, Watson T. 2-Photon analysis of nanogel-infiltrated adhesive-dentine interfaces. September 2015, British Society for Oral and Dental Research, Cardiff, UK

33. Sauro S, Stansbury JW, Cumia L, Watson TF. Innovative self-etching dental adhesives formulated using reactive nanogel additives. October 2014, Academy of Dental Materials, Bologna, Italy.

34. Sarao K, Lewis SH, Barros MD, Stansbury JW. Physical reinforcement of polymeric networks associated with urethane dimethacrylates. October 2014, Academy of Dental Materials, Bologna, Italy.

35. Aguirre Soto A, Stansbury JW. Investigation of diffusion-controlled kinetics in free-radical photopolymerizations initiated via photoredox catalysis. November 2013, AIChE Annual Meeting San Francisco, CA.

36. Aguirre Soto A, Hwang A, Stansbury JW. Photo-activated redox initiation of polymerization via energy storage that mimics photosynthesis. September 2013, Photopolymerization Fundamentals, Jackson Hole, WY.

37. Aguirre Soto A, Stansbury JW. Supramolecular hydrogen bonding in mono-vinyl hydroxylated monomers leading to long-lived propagating radicals, August 2013, IUPAC 10th International Conference on Advanced Polymers via Macromolecular Engineering, Durham, UK.

38. Aguirre Soto A, Hwang A, Stansbury JW. UV-Vis/FT-NIR simultaneous monitoring of photopolymerizations; April 2014; IUCRC Spring Meeting, St. Charles, IL.

39. Lewis SH, Kheirieh S, Barros MD, Liu J, Stansbury JW. Formulation of dental composites to include a nanogel-modified resin phase. October 2013, Academy of Dental Materials, Vancouver, Canada.

40. Aguirre Soto A, Hwang A, Stansbury JW. Probing photopolymerization reactions with real-time UV/Vis/near-IR spectroscopy. October 2012, Academy of Dental Materials, Orlando, FL.

41. Anderson RK, Morrill JA, Bowman CN, Stansbury JW. Experimental investigation of the polymerization reactivity of novel acrylate monomers bearing carbamate functionality. March 2011, Division of Chemical Education, American Chemical Society, Anaheim, CA.

42. Stansbury JW, Moraes RR, Garcia JW, Barros MD, Lewis SH, Pfeifer CS. Nanogel-modified composite materials: route to low shrinkage and stress. October 2010, Academy of Dental Materials, Trieste, Italy.

43. Pfeifer CS, Wilson ND, Lewis SH, Shelton ZR, Stansbury JW. Delayed gelation through chain-transfer reactions: stress reduction in methacrylate networks. October 2010, Academy of Dental Materials, Trieste, Italy.

44. Kim D, Barros M, Pfeifer C, Knigge K, Stansbury JW. Radical photopolymerizations with extensive dark cure potential. Pacific Polymer Conference 11, Cairns, Australia, December 9, 2009.

45. Shah PK, Garcia JW, Plaseied A, Newman SM, Stansbury JW. Conversion-dependent stress relaxation in dental resins and composites. April 2009, Society for Biomaterials Meeting, San Francisco, CA.

46. Gozalo DJ, Stansbury JW, Baker KP. The effect of implant design on primary stability. February 2009, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

47. Shah PK, Stansbury JW. Conversion dependent evolution of shrinkage, modulus and stress: filler effects. October 2008, Academy of Dental Materials Meeting, Wurzburg, Germany.

48. Pfeifer CS, Stansbury JW, Newman SM. Simultaneous evaluation of degree of conversion and modulus development of an unfilled resin. October 2008, Academy of Dental Materials Meeting, Wurzburg, Germany.

49. Kim D, Pfeifer CS, Jozsa A, Stansbury JW. Three-component radical photoinitiator system: improving methacrylate conversion in the dark. February 2009, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

50. Kim S, Cramer NB, Stansbury JW. Comparing mechanical properties of chain-growth dimethacrylate and step-growth thiol-ene network polymers. February 2008, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

51. Shah PK, Stansbury JW. Effect of particulate filler content on the simultaneous development of shrinkage, modulus and shrinkage stress, as a function of conversion, for a visible light cured composite. February 2008, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

52. Guimarães TC, Pfeifer CS, Braga RR, Stansbury JW. Conversion of resins with different amine:camphorquinone ratios and concentrations. February 2008, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

53. Garcia JW, Shah PK, Stansbury JW. Effects of reaction kinetics and conversion on photopolymerization stress development. February 2008, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

54. Wilson N, Newman SM, Stansbury JW. Depth-dependent photopolymerization reaction kinetics in dental composites. February 2008, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

55. Schreck KM, Boulden JE, Hetzel AK, Cramer NB, Stansbury JW, Bowman CN. Methacrylate-thiol-ene compositions for dental restorative materials. February 2008, University of Colorado School of Dental Medicine Research Day, Aurora, CO.

56. Kim D, Jessop JL, Stansbury JW. Effects of water on the cationic ring-opening photopolymerizations of epoxycyclohexane monomers. AIChE 2007 Annual Meeting Conference Proceedings, November 2007.

57. Johnson, P., Bowman, C.N., Stansbury, J.W. Production of light intensity gradients for photopolymer conversion analysis. February 2007, University of Colorado School of Dentistry Research Day, Aurora, CO.

58. Shah PK, Stansbury JW. Modified filler-matrix interfaces in polymeric composites used as dental restoratives. February 2007, University of Colorado School of Dentistry Research Day, Aurora, CO.

59. Musanje L, Ferracance JL, Stansbury JW. Effects of photoinitiator/co-initiators on degree and rate of monomer conversion. February 2007, University of Colorado School of Dentistry Research Day, Aurora, CO.

60. Howard B, Newman SM, Stansbury JW. Coupled dynamic spectroscopic characterization of composite restorative photopolymerization. February 2007, University of Colorado School of Dentistry Research Day, Aurora, CO.

61. Trujillo-Lemon, M., Bowman, C.N., Anseth, K.S., Stansbury, J.W. Development of novel polymers for applications in bioengineering. March 2005, NanoTech Meeting, San Diego, CA.

62. Johnson, P., Bowman, C.N., Stansbury, J.W. High-throughput analysis of photopolymer kinetics. March 2005, CSU Bioengineering Student Research Forum, Fort Collins, CO.

63. Ge J, Lemon MT, Stansbury JW. Photopolymerization of 2-methylene-7-phenyl-1,4,6,9-tetraoxaspiro[4.4]nonane. February 2006, University of Colorado School of Dentistry Research Day, Aurora, CO.

64. Shah PK, Stansbury JW. Polymer-brush modified fillers for dental composites. February 2006, University of Colorado School of Dentistry Research Day, Aurora, CO.

65. Crawford LR, Stansbury JW. Polymerization induced phase separation and polymerization sequence as controls of hybrid cationic/free radical photopolymerizations. February 2006, University of Colorado School of Dentistry Research Day, Aurora, CO.

66. Johnson P, Bowman CN, Stansbury JW. High-throughput analysis of photopolymer kinetics. February 2005, University of Colorado School of Dentistry Research Day, Denver, CO.

67. Ge J, Trujillo-Lemon M, Lu H, Stansbury JW. Dimer acid-derived dimethacrylates as diluent monomers in restorative resins. February 2005, University of Colorado School of Dentistry Research Day, Denver, CO.

68. Trujillo-Lemon M, Lu H, Stansbury JW. Thermal effects on photopolymerization stress development. February 2005, University of Colorado School of Dentistry Research Day, Denver, CO.

69. Lu H, Trujillo-Lemon M, Ge J, Stansbury JW. Developing novel dental resin formulations with dimer acid-derived dimethacrylate. February 2005, University of Colorado School of Dentistry Research Day, Denver, CO.

70. Carioscia J, Bowman CN, Stansbury JW. Network formation of thiol-ene oligomer polymerizations. February 2005, University of Colorado School of Dentistry Research Day, Denver, CO.

71. Ding X, Judd J, Trujillo-Lemon M, Stansbury JW. Resin-based improvements of composites containing polymer brush-modified fillers. February 2005, University of Colorado School of Dentistry Research Day, Denver, CO.

72. Lin Y, Stansbury JW. Impact of photopolymerization kinetics on volumetric shrinkage and phase behaviors of dimethacrylate/divinyl ether hybrid systems. November 2004, MRS Meeting, Boston, MA.

73. Johnson, P., Bowman, C.N., Stansbury, J.W. Rapid analysis of conversion and material properties using photopolymer property gradients. November 2004, AIChE Meeting, San Antonio, TX.

74. Ge, J., Stansbury, J.W. (2004). Investigation of polymerization induced phase separation effect on polymerization shrinkage. November 2004, AIChE Meeting, San Antonio, TX.

75. Lin, Y., Stansbury, J.W. (2004). In situ characterization of conversion and polymerization shrinkage simultaneously in photo-cured hybrid systems. May 2004, RadTech Meeting, Charlotte, NC.

76. Beckel E, Nie J, Stansbury JW, Bowman CN. Monomers effect of aryl substitution on the polymerization rate of novel monovinyl acrylate. November 2003, AIChE Meeting, San Francisco, CA.

77. Stansbury JW, Trujillo M, Bowman CN. Development of pH-responsive hydrogels as biomaterials. February 2003, University of Colorado School of Dentistry Research Day, Denver, CO.

78. Stansbury JW, Trujillo M, Bowman CN. Controlled swelling and degradation of pH-responsive hydrogels. Colorado Alliance for Bioengineering, BioExpo, December 4, 2002, Aurora, CO.

79. Lin Y, Stansbury JW. Formation of hybrid structure by controlled photopolymerization. February 2002, University of Colorado School of Dentistry Research Day, Denver, CO.

80. Berchtold KA, Beckel ER, Nie J, Hacioglua B, Stansbury JW, Bowman CN. Development of novel (meth)acrylate monomers for ultrarapid polymerization and enhanced polymer properties. February 2002, University of Colorado School of Dentistry Research Day, Denver, CO.

81. Syrpes DC, Stansbury JW. Monomer reactivity and polymeric network formation in composite dental restoratives. February 2002, University of Colorado School of Dentistry Research Day, Denver, CO.

82. Berchtold KA, Nie J, Stansbury JW, Bowman CN. Structural effects on the cure characteristics of functionalized methacrylate monomers. Society for Biomaterials Meeting, April 26, 2001, St. Paul, MN.

83. Berchtold KA, Nie J, Elliott JE, Hacioglu B, Luo N, Trotter AJN, Stansbury JW, Bowman CN. Structural effects on the cure characteristics of functionalized methacrylate monomers. RadTech Europe 2001, Conference Proceedings, Basel, Switzerland, October 2001.

84. Stansbury, J.W., Antonucci, J.M. (2000). Ethyl α-hydroxymethylacrylate: an isomeric analog of HEMA. Colorado Alliance for Bioengineering Meeting, Aurora, CO.

85. Tesk, JA, Stansbury, JW, Litsky AS. Cyclopolymerizable monomers for use as acrylic biomaterials. Society for Biomaterials Meeting, San Diego, CA, April 1998.

86. Reed BB, Stansbury JW, Antonucci JM. (1991). Radical ring-opening characteristics of cyclic vinyl monomers. Amer. Chem. Soc. Meeting, Div. Organic Chem., New York, NY.

87. Antonucci JM, Stansbury JW, Reed BB. (1991). Radical reactivity of cyclic acetals. Amer. Chem. Soc. Meeting, Div. Organic Chem., New York, NY.

INVENTION DISCLOSURES AND PATENTS

1. Stansbury JW, Salazar A. Curable Composition with Urethane (Meth)acrylate Monomer and Acidic Comonomer. Provisional application 63/463,406 filed CU filed May 2, 2023; #CU5910H PPA2.

2. Stansbury JW, Salazar A, Barros MD, Sadowsky SJ. Low Viscosity Urethane (Meth)Acrylate Monomers and Their Use in Production of Tough Polymers with Well-controlled Modulus and Strength. WO 2023/077159 A1, filed November 1, 2021 – Licensed by Hybrid Ceramic, LLC.

3. Nair DP, Gautam D, Kehe G, Stansbury JW. Crystallization Driven Self-strengthening Polymers and Associated Compositions and Methods. U.S. Application (No. 63/183,169). CU file No. CU5574H-PPA1.

4. Stansbury JW, Nair DP, Lewis SH. Control of Polymer Network Structures Via Nanogels. PCT/US2017/039111, filed June 23, 2016; International WO 2017 /223511, filed June 23, 2017.

5. Stansbury JW, Barros MD, Sadowsky S. Polymerizable Composition for Dental Tooth and Material 3D Printing. US Provisional application (No. 63/105068) filed October 16, 2020. CU file No. CU5408H.

6. Bowman CN, Childress KK, Hernandez JJ, Alim MD, Stansbury JW. Chemical and Physical Modification of a Crosslinkable Semicrystalline Thiol-ene for Enhanced Mechanical Performance. Provisional patent application (No. 62/900,308) filed on September 13, 2019. CU File No. CU5151B-PPA1.

7. Rad IY, Stansbury JW. Regio-Specific Biodegradable Nanogels for Cargo Delivery Platform. Provisional patent filed February 5, 2019. CU File No. CU4796H-PPA1.

8. Stansbury JW, Kim K, Musgrave CB, Sinha J. Highly Efficient Free Radical Photopolymerizations Through Enabled Dark Cure; PCT/US2018/6480; Full patent – international application filed December 10, 2018.

9. Stansbury JW, Shah PK, McLeod RR. 3D Printing with Polymeric Nanogel Particles; PCT/US2018/51598; Full patent – international application filed September 18, 2018.

10. Stansbury JW, Kim K, Musgrave CB, Sinha J. Highly Efficient Free Radical Photopolymerizations Through Enabled Dark Cure. Provisional patent filed December 8, 2017. CU File No. CU4592H-PPA1.

11. Stansbury JW, Shah PK, McLeod RR. 3D Printing with Polymeric Nanogel Particles. Provisional patent filed September 18, 2017. CU File No. CU4511H-PPA

12. Nair DP, Dailing E, Stansbury JW, Kahook MY. Multilayer Polymeric Matrix Based Medical Devices. US 2017/0239176 A1. U.S. National Phase Patent Application No. 15/507,219. Filed August 24, 2017.

13. Bowman CN, Kloxin CJ, Stansbury JW, Gong T, McBride M. Composite compositions and methods of preparing and using same. US9,701,792. Issued: July 11, 2017; Filed: March 19, 2015.

14. Nair D, Kahook M, Torbati A, Marks Z, Stansbury JW, Saraswathy M. Nanogels for Ophthalmic Applications. PCT/US2016/025319, Filed March 31, 2016 (WO 2016/161144 A1).

15. Stansbury JW, Sadowsky S. Improved denture tooth and material. U.S. Patent Application Serial No.: 14/656,332, Filed March 12, 2015.

16. Stansbury JW. Methods for extensive dark curing based on visible-light initiated, controlled radical polymerization. Application No. 13/001,535, Filed July 19, 2013.

17. Stansbury JW. Water compatible nanogel compositions. US Patent 9,845,415, Issued: December 17, 2017.

18. Kim D, Stansbury JW. Methods for extensive dark curing based on visible-light initiated, controlled radical polymerization. US8,883,948B2, Issued: November 11, 2014; Filed: July 1, 2008.

19. Stansbury JW. Novel nanogel materials and methods of use thereof. US9,138,383, Issued: September 22, 2015.

20. Bowman CN, Carioscia J, Lu H, Stansbury JW. Reactive oligomeric thiol and ene materials as dental restorative mixtures. US 2007/0185230 A1, issued August 9, 2007. Application optioned to Confi-Dental Products.

21. Stansbury JW, Trujillo M, Ding X. Novel nanogel materials and methods of use thereof. Application No. 40281.0005USU1, filed April 28, 2005. Continuation in part filed December 2008 and optioned by Septodont.

22. Stansbury JW, Trujillo M, Ding X. Novel functionalized nanogel materials and methods of manufacture thereof. Application No. 40281.0005USU2, filed April 28, 2005.

23. Stansbury JW, Trujillo M, Ding X. Novel nanogel materials for use as dental fillers. Application No. 40281.0005USU3, filed April 28, 2005.

24. Ding Z, Stansbury JW. Polymer brush modified fillers for composites. Application No. 40281.0003USU1, filed March 10, 2005.

25. Stansbury JW, Trujillo M, Bowman CN. Dimer acid-derived dimethacrylates and use in dental restorative compositions. US8,727,775, Issued: May 20, 2014, Filed: December 29, 2004. Application licensed to Confi-Dental Products/Septodont.

26. Bowman CN, Lu H, Stansbury JW. Photopolymers and use in dental restorative materials. Patent No US 7,838,571 B2, granted November 33, 2010. Application optioned by Septodont/Confi-Dental Products Division.

27. Bowman CN, Stansbury JW, Berchtold KA. (Meth)acrylic and (meth)acrylamide monomers comprising cyclic acetal/thioacetal groups, polymerizable compositions, and polymers obtained. Application No. 2002.114B, filed February 20, 2004.

28. Bowman CN, Stansbury JW, Berchtold KA, Nie J. (Meth)acrylic and (meth)acrylamide monomers, polymerizable compositions, and polymers obtained. Application No. WO 2004/077511 A2, filed February 20, 2004.

29. Stansbury JW, Antonucci JM, Choi KM. High strength polymeric networks derived from (meth)acrylate resins with organofluorine contents and process for preparing same. US Patent No. 6,184,399, issued February 6, 2001.

30. Antonucci JM, Stansbury JW, Fowler BO. Silylated resins and the synthesis thereof. US Patent No. 6,177,534, issued January 23, 2001.

31. Antonucci JM, Stansbury JW, Cheng G-W. Multifunctional acrylates and the synthesis thereof. US Patent No. 5,380,901, issued January 10, 1995.

32. Stansbury JW. Monomers for double ring-opening polymerization with expansion. U.S. Patent No. 5,463,008, issued October 31, 1995.

33. Stansbury JW. Improved monomers for double ring-opening polymerization with expansion. US Patent No. 5,362,889, issued November 8, 1994.

34. Stansbury, JW. Synthetic dental compositions formed from cyclopolymerizable bis-acrylate and multi-functional oligomer and bonding method. U.S. Patent No. 5,145,374, issued September 8, 1992.

35. Brauer GM, Stansbury JW. Biocompatible cementitious dental compositions. U.S. Patent No. 4,486,179, issued December 4, 1984.

36. Brauer GM, Argentar H, Stansbury JW. Cementitious dental compositions which do not inhibit polymerization. U.S. Patent No. 4,362,510, issued December 7, 1982.

THESIS DIRECTED

Completed

1. Guangzhe Gao "Functional Thiol-Michael nanogel additives for improved photopolymer performance". Graduated in 2021 with PhD in Materials Science and Engineering Program, CU Boulder. Now at Adaptive 3D.

2. Kang-Min Kim (co-advised with Charles Musgrave) "Rational design and evaluation of novel polymerization initiators based on amine-peroxide redox reactions". Graduated in 2020 with PhD in Chemistry, CU Boulder. Initially at Living Ink Technologies and now Senior Development Engineer at Corden Pharma.

3. Kimberly Childress "High performance, oxygen insensitive photopolymeric materials". Graduated in 2020 with PhD in Chemical and Biological Engineering, CU Boulder. Now at Facebook Reality Labs.

4. Erion Hasa, PhD co-advised with Allan-Guymon – Department of Chemical and Biochemical Engineering, University of Iowa, graduated 2019 with PhD, with a post-doc at University of Iowa and now at Covestro.

5. Bruna Fronza, PhD co-advised at University of Colorado Denver 2016 – 2017 within a dental materials PhD graduate program at Piracicaba School of Dentistry, UNICAMP, Brazil.

6. Ima Yaghoubi Rad - Department of Chemical and Biological Engineering, Colorado State University, Fort Collins, CO, graduated 2017 with PhD; now CEO of Sepanta Inc.

7. Theodore Hagen - Materials Science and Engineering Program, CU Boulder 2017-2018, withdrew from program.

8. Valeria Gotti, co-advised at University of Colorado Denver during 2014 – 2015 within a dental materials PhD graduate program at Piracicaba School of Dentistry, UNICAMP, Brazil. "Dentin Bonding Studies with Nanogel-modified Adhesives", Graduated with PhD. Faculty at University of Pelotas School of Dentistry, Brazil.

9. James Wydra (co-advised with Christopher Bowman) – "Property Evolution in Photopolymer Systems", PhD program in Chemical and Biological Engineering, 2011 – 2013 (withdrew from the program).

10. Alan Aguirre-Soto – "Radical Dark Cure in Three-component Photoinitiator Systems", PhD program in Chemical and Biological Engineering; graduated 2014 with PhD, now on faculty at Tecnológico de Monterrey, Mexico.

11. Caroline Szczepanski – "Design of heterogeneous polymer structures", PhD program in Chemical and Biological Engineering, Graduated 2014 with PhD, post-doc at Univ. Nice Sophia Antipolis, CNRS, LPMC, UMR 7336, Nice, France. Now on faculty at Michigan State.

12. Eric Dialing (co-advised with Kristi Anseth), "Nanogels applied to tissue engineering", PhD program in Chemical and Biological Engineering, Graduated 2014 with PhD, post-doc at Vanderbilt (Craig Duvall) and now at Lawrence Berkeley National Lab.

13. Winsean Lin (co-advised with Atousa Plaseied), Department of Mechanical Engineering, University of Colorado Denver, "Fracture Toughness of Dental Resins and Composites Modified with Polymeric Crosslinked Nanoparticles"; graduated with thesis MS.

14. JianCheng Liu, "Nanogel Preparation and Applications", PhD program in Chemical and Biological Engineering, Graduated 2014 with PhD, initially with Bemis, now at PPG, Los Angeles, CA.

15. Abby Tyler (co-advised with Christopher Bowman and Charles Musgrave), Chemical and Biological Engineering, "Computational Approaches to Self-Replicating Polymers", 2009 (withdrawn).

16. Rafael Moraes, co-advised at University of Colorado Denver during 2008 – 2009 within a dental materials graduate program at Piracicaba School of Dentistry, UNICAMP, Brazil. Graduated with PhD. Faculty at University of Pelotas School of Dentistry, Brazil.

17. Parag Shah, PhD program in Chemical and Biological Engineering, "Polymer Brush Treatment of Fillers used in Dental Restoratives", 2005 – 2012, Graduated with PhD, post-doc that converted to a Research Associate at University of Colorado and now at Azul 3D.

18. Laura Crawford, Chemical and Biological Engineering, "Applications of Cationic Photopolymerization to Biomaterials", 2005 – 2006, Graduated with MS (non-thesis), National Renewable Energy Laboratory, Golden, CO.

19. Peter Johnson (co-advised with Christopher Bowman), Chemical and Biological Engineering, "Highly Parallel Methods for Polymerization Process Design and Polymer Characterization", 2003 – 2007 Graduated with PhD, NRC post-doc at the National Institute of Standards and Technology, Gaithersburg, MD.

20. Junhao Ge, Chemical and Biological Engineering, "Development of Low Shrinkage, Low Stress Polymeric Materials", 2002 - 2006, Graduated with PhD, Ophthonix in San Diego, CA.

21. Yan Lin, Chemical and Biological Engineering, "Formation of Hybrid Structures by Controlled Photopolymerization", 2001 – 2005, Graduated with PhD, post-doc at Tufts University with Pam Yelick. Faculty at Emmanuel College, Boston, MA.

POST-DOCTORAL RESEARCH ASSOCIATES ADVISED

1. Dr. Tao Liu, 2016-2017; South China Agricultural University, Guangzhou, PR China
2. Dr. Victoria Boyes, 2014-2017 (located at King's College, London); now at UK Cabinet Office, London.
3. Dr. Parag Shah, 2013 – 2021 with conversion to Research Assistant; now at Azul 3D, Chicago.
4. Dr. Bin Yang, 2010 – 2011; Prosthodontics residency training at University of Rochester, NY; now faculty at University of Illinois at Chicago, College of Dentistry.
5. Dr. Carmem Pfeifer, 2008 – 2009. Faculty at University of Colorado School of Dental Medicine 2009-2011; now faculty at Oregon Health & Science University.
6. Dr. Dongkwan Kim, 2007 – 2010; LG Hausys, Korea.
7. Dr. Hui Lu, 2004-2006. Currently at Dentsply/Caulk, Milford, DE.
8. Dr. Marianela Trujillo, February 2001 – 2005. Currently at Septodont, Louisville, CO.
9. Dr. Xingzhe Ding, February 2003 – 2004; Danville Materials, Orange, CA.
10. Dr. Cathrine Gingreau 1993-1995; BASF.
11. Dr. Kyung M. Choi 1996-1998; Lucent/Bell Labs.
12. Dr. Chetan Khatri 1998-2000; NIST.
13. Dr. Michael Weir 2000-2002; University of Maryland Dental School.
14. Dr. Sheherazad Hartzell 1998-1999; US Navy.

INDEPENDENT STUDY STUDENTS

Danielle Jones (CU Denver) Spring 2017 "Approaches to functional nanogel synthesis".
Guangzhe Gao (MSEP) Spring 2016 "Photopolymerization-induced Phase Separation".
Nancy Sowan (MSEP) Spring 2016 "Application of Reversible Addition Fragmentation Chain Transfer (RAFT)".
Guangzhe Gao (MSEP) Fall 2015 "Application of functional step-growth nanoparticles as coatings".
Aidan Duggan (DLA) Fall 2014/Spring 2015, "Analysis of interphase/interface photopolymerization kinetics".
Connor Carroll (CU Boulder) Fall 2014, "Heterogeneous and phase-separated networks in filled resins".
Christina Uhlir (CU Boulder) Spring 2013, "Characterizing the Nanogel Network Response: A Foundation for Biomedical Research" – also the basis for her senior thesis, Fall 2013.
Whitney Setterberg (CU Boulder) Fall 2012, "Acid-Functionalized Nanogels as Precursors for High-Strength, Water-Compatible Polymer Networks".
Albert Hwang (CU Boulder) Fall 2012, "Real-time Coupling of UV-Vis and FT-NIR Spectroscopy".
Kristin Knigge, Summer 2009, "Factors Affecting Radical Dark Cure Behavior with Three-Component Photoinitiators".
Zach Lakeman, Spring 2008, "Surface Modification of Particulate Fillers".
Rami Foster, Fall 2007, "Interphase Characterization in Filled Polymer Composites".
Jeff Arthur (CU Boulder) Fall 2001, "Monitoring Gelation and Phase Separation in Photopolymerizations".
Qiaowei Chu (ChBE) Fall 2000, "Effect of Polymerizable Co-initiators on Photopolymerization".
Yan Lin (ChBE) Fall 2000, "Studies of Water Sorption in Monomer and Its Effect on Photopolymerization Using NIR Spectroscopy".

FACULTY ADVISOR FOR SCHOOL OF DENTAL MEDICINE SUMMER RESEARCH FELLOWSHIP PROGRAM

Kylee Fulton (joint with Devatha Nair) – 2024
Landrye Reber - 2024
Lauren Twombley – 2023
Natalie Anderson – 2022
Kyle Sorensen – 2021
Jade Vigil - 2019
Robert Bailey – 2018
Alexis Mascarenus - 2017
Andrew Tyus - 2016
Brandon Powell, Giselle Serrano (joint with Clif Carey) - 2015
Nikki Kumor – 2013
Jacob Ramirez - 2012

Han Yi, Darin Johnston, Chelsea Vraney - 2011
Zach Shelton - 2010
Andrew Foster - 2009
Nicholas Wilson - 2007

NON-CU STUDENT INTERNS
Diem Tran – Regis University – 2021-2022
Amanda Roemeling - Regis University – 2017-2018
Portia Cao – Regis University – 2016-2017
Andrew Tickle – Regis University – 2016-2017
Dana Janssen – Regis University – 2015-2016
Tammy Zhong – University of Denver – 2014-2016
Kristin Simboski – Regis University – 2014-2015
Sanam Setareh – University of Maryland – 2014 - 2016

REU (Research Experiences for Undergraduates) ADVISOR
Kyle Lampe (co-advised with Kristi Anseth), Summer 2003, "Degradable Photopolymers"

PRESENTATIONS *(no published abstract)*

1. 3D printing of dental restorations and prosthetics. Invited presentation at the Mini Dental School Seminar Series (virtual format) at the University of Minnesota School of Dentistry, October 15, 2024.

2. Use of photopolymerization across multiple 3D printing platforms. Invited presentation at Northern Lights Conference, Toronto, Canada, November 6, 2023.

3. Coaxing improved photopolymer performance from urethane acrylate resins and inks. Invited presentation at Photopolymerization Fundamentals Conference, Boulder, CO, September 22, 2023.

4. The Promise of 3D Printing – Dental Applications and Beyond? Invited presentation co-presented with Dr. David Gozalo at the 50th Anniversary of the University of Colorado School of Dental Medicine, Aurora, CO, September 15, 2023.

5. The dental application of novel high-performance 3D printed polymers. Invited presentation co-presented with Dr. Steven Sadowsky at the Academy of Prosthodontics, Naples, FL, May 5, 2023.

6. Revisiting redox initiation for high efficiency polymerization. Invited presentation at Henkel Corporation, Rocky Hill, CT, September 5, 2022.

7. Expanding current boundaries for 3D printing. Invited presentation at University of Iowa College of Dentistry and Dental Clinics, Iowa City, IA, October 19, 2021.

8. Highly efficient polymerization involving redox-assisted photoinitiation of one-part formulations with extensive dark cure. Virtual European Symposium of Photopolymer Sciences, June 11, 2021.

9. Dentistry as a driver for photo-based 3D printing. RadTech Fall Virtual Meeting, October 21, 2020.

10. The rapidly advancing intersection of 3D printing and digital dentistry. Keynote at the University of Minnesota School of Dentistry, Minneapolis, MN, March 6, 2020.

11. Stansbury lab update and preview to the new CU/3M engagement. 3M, St. Paul, MN, March 4, 2020.

12. Materials and processes to extend the scope and value of polymer-based 3D printing. Keynote at the Oregon Health and Science University School of Dentistry, February 3, 2020.

13. New building blocks for enhanced photopolymer performance. ALTANA Institute, Wesel, Germany, September 27, 2019.

14. Physically reinforced urethane (meth)acrylate networks as high strength/high toughness photopolymers. Photopolymer Fundamentals Meeting, Monterey, CA, September 17, 2019.

15. Photocuring in 3D printing. Ultradent Products, South Jordon, UT, August 13, 2019.

16. Balancing academic and entrepreneurial roles in the development of high-performance polymers for biomedical applications. Keynote at the 5th Annual San Antonio Military Health System and Universities Research Forum (SURF), San Antonio, TX, June 14, 2019.

17. Photocuring in 3D printing. Northern Lights Conference, Halifax, Canada, June 3, 2019.

18. Fast/deep photopolymerization in the tooth: perils and potential. Northern Lights Conference, Oslo, Norway, August 30, 2018.

19. Considerations in the photocuring of dental adhesives. Northern Lights Conference, Halifax, Canada, June 19, 2017.

20. Exposure reciprocity: is this a valid concept? Northern Lights Conference, Halifax, Canada, November 4, 2016.

21. Improved understanding of simple and not-so-simple photopolymerization reactions through real-time analytical techniques. Photopolymerization past, present and future - Estes Park, CO, October 6, 2016.

22. Approaches to high strength, water-compatible polymer networks. European Symposium of Photopolymer Science, Leipzig, Germany, September 13, 2016.

23. Making dense photopolymer networks with little or no monomer. American Chemical Society, Philadelphia, PA, August 22, 2016.

24. Photopolymer network formation and alteration using functional nanogels (Haraeus Noblelight UV Technical Seminar, Tokyo, Japan, April 22, 2016.

25. Functional nanogels applied to materials development. Composites at Lake Louise, Lake Louise, Alberta, Canada, November 10, 2015.

26. Polymeric materials and structures applied to additive processing. Academy of Dental Materials, Lahaina, Maui, HI, October 10, 2015.

27. Speeding up the delivery process: How does fast curing with high irradiance lights alter polymer network structure and properties of resin-based materials vs. curing with lights of moderate or low irradiance? Symposium on Light Sources in Dentistry, Dalhousie University, Halifax, Canada, June 25, 2015.

28. Comprehensive analysis of photoinitiator/monomer consumption: Towards smart photopolymer design. 3rd European Symposium of Photopolymer Science, Vienna, Austria. September 11, 2014.

29. New resin composite formulations and choice of initiator in terms of the reaction rate, depth of cure and color. Symposium on Light Sources in Dentistry, Dalhousie University, Halifax, Canada, May 29, 2014.

30. Interphase design to control stress development in polymer/polymer and polymer/silica composites. Composites at Lake Louise, Lake Louise, Alberta, Canada, November 6, 2013.

31. Coupled near-IR and UV/Vis to assess efficiencies of initiation and polymerization. 22nd European Dental Materials Conference, Birmingham, UK, August 29, 2013.

32. New initiation strategies to extend the applications of photopolymerization. Symposium on Photopolymerization, Changzhou, China, July 9, 2013.

33. Use of reactive nanogels to make and modify polymer networks. Beijing University of Chemical Technology, Beijing, China, July 5, 2013

34. Advances in Polymer Chemistry. IADR Dental Materials Research Workshop, King's College, London, UK, December 10, 2012.

35. How resin chemistry and composite formulation affect the photocuring process. First Annual International Symposium on Light Sources in Dentistry, Dalhousie University, Halifax, Canada, October 11, 2012.

36. Functional nanogels as photopolymer modifiers and as precursors to polymeric networks. European Symposium of Photopolymer Science, Torino, Italy, September 5, 2012.

37. Nanogels as a basis for network construction. Polymer Networks Group, Jackson Hole, WY, August 14, 2012.

38. Alteration of photopolymers through prepolymer inclusion. Photopolymerization Fundamentals Conference, Breckenridge, CO, June 29, 2011.

39. Recent progress in photopolymerization of dental materials. Dentsply/Caulk, Milford, DE, March 29, 2011.

40. Kinetics of radical-based photopolymerizations: A consideration of the conversion-dependent evolution of polymer properties. CooperVision, Pleasanton, CA, September 8, 2010.

41. New developments for control of polymerization shrinkage and stress. 46th Meeting of the Brazilian Dental Materials Group, Buzios, Rio de Janeiro, Brazil, July 29, 2010.

42. Fundamentals of photopolymerization. 46th Meeting of the Brazilian Dental Materials Group, Buzios, Rio de Janeiro, Brazil, July 29, 2010.

43. Novel denture tooth materials. Ivoclar, Amherst, NY, February 8, 2010.

44. Design and characterization of low shrinkage, low stress dental restoratives. Department of Endodontics, Prosthodontics and Operative Dentistry, University of Maryland Dental School, Baltimore, MD, December 1, 2009.

45. Overview of dimer acid chemistry: Low polymerization shrinkage and shrinkage stress. Septodont Mindshare Meeting, Miami, FL, November 6, 2009.

46. Selection of monomers and photo-processing conditions to control the structure and properties of heterogeneous polymers. Photopolymerization Fundamentals Conference, Breckenridge, CO, June 22, 2009.

47. Nanogels as prepolymer fillers and reactive macromers. Confi-Dental/Septodont, Lewisville, CO, October 14, 2008.

48. New developments of materials and characterization techniques applied to photopolymerization. 3M/ESPE Seefeld, Germany, October 6, 2008.

49. Use of well designed polymers and polymerization methods to address challenges in dental materials. Keynote talk in Dental Materials/Polymer Chemistry session at IADR Meeting, Toronto, Canada. July 3, 2008.

50. Recent advances in polymer design and polymer characterization techniques. Beijing University of Chemical Technology, Beijing, China, June 20, 2008.

51. Structural control of heterogeneous polymers prepared by photopolymerization-induced phase separation. PC2008 Conference, Hefei, China, June 18, 2008.

52. Advances in resin composite materials and bonding techniques. University of Colorado School of Dental Medicine, Faculty Development Seminar. Aurora, CO, June 12, 2008.

53. New analytical and materials science approaches to dental composite materials. LSU Dental School, New Orleans, LA April 17, 2008.

54. Controlled formation of polymer/polymer interfaces: Nanogels/macromers from free radical polymerizations. 3M, St Paul, MN April 15, 2008.

55. Optical property monitoring during photopolymerization of composites and phase separating polymers. NIST/CU Research Symposium, Westminster, CO, March 2007.

56. Compositionally heterogeneous networks formed by photopolymerization-induced phase separation. Photopolymerization Fundamentals Conference, Breckenridge, CO, June 25, 2007.

57. New CU chemistry in dental composite restoratives. Alpha-Omega Winter Meeting, Denver, CO, March 7, 2007.

58. Benefits of combined dynamic characterization techniques applied to photopolymerization reactions. American Dental Association Health Foundation at NIST, Gaithersburg, MD, March 11, 2007.

59. Developing new chemistries for polymeric dental materials. Keynote talk in Dental Materials/Polymer Chemistry session at IADR Meeting, Brisbane, Australia. June 30, 2006.

60. Degradable tissue engineering scaffolds with heterogeneous polymeric morphologies. Seminar for ADA/NIST Biomaterials Group, Gaithersburg, MD, October 2005.

61. Manipulation of polymer structure and properties based on photoprocessing controls. Photopolymerization Fundamentals Conference, Breckenridge, CO, June 28, 2005.

62. Evaluation of polymerization shrinkage strain and stress in resin-based dental restoratives. Dentsply/Caulk Summer Clinician Fellowship, Lake George, NY, August 13, 2004.

63. New materials and characterization techniques for dental resins and composites. Portland Composites Symposium, Oregon Health and Science University, Portland, OR, June 17, 2004.

64. Photocurable dental composites: new materials approaches and characterization techniques. Henkel Technologies, Radiation Curing Workshop, Rocky Hill, CT, March 31, 2004.

65. Biomaterials research at the University of Colorado Dental School. University of Connecticut School of Dental Medicine, Farmington, CT, March 30, 2004.

66. Design and analysis of photocurable biomaterials. Department of Chemical Engineering, University of Iowa, Iowa City, Iowa, February 6, 2003.

67. Photopolymerization kinetics from a molecular perspective. Controversies in polymerization of light-activated polymer matrix composites symposium. International Association for Dental Research Meeting, Chiba, Japan, June 27, 2001.

68. New polymers designed for use as dental materials. Korean Academy of Conservative Dentistry, Seoul National University, April 17, 2001.

69. Development of expanding monomers for dental restoratives. College of Dentistry, Seoul National University, Seoul, Korea, April 17, 2001

70. More stable dental polymers through minimized polymerization shrinkage and reduced water sorption. Japanese Society for Dental Materials and Devices, Tokyo, Japan, April 27, 2000.

71. Effect of monomer structure on reactivity. Fukuoka Dental College, Fukuoka, Japan, April 24, 2000.

72. Near infrared spectroscopy for the analysis of dental polymers. Tokyo Medical and Dental University, Tokyo, Japan, April 20, 2000.

73. Structure-property evaluation of photocured homopolymers from commercial and experimental dimethacrylates. International Symposium on Advanced Materials with Biomedical Applications, National Institute of Standards and Technology, Gaithersburg, MD, June 8, 1999.

74. Homopolymerization studies of new fluorinated dimethacrylate monomers. Fluoropolymers Symposium. American Chemical Society, Division of Polymer Chemistry, Boston, MA, August, 1998.

75. Considerations in the development of semi-fluorinated dental resins and composites. Dental Polymers, Composites and Adhesives Symposium, American Chemical Society, Division of Polymer Chemistry, Las Vegas, NV, September 10, 1997.

76. Evaluation of cross-linkable double ring-opening monomer and oligomer systems. The Science of Adhesion; Gordon Conference, Tilton, NH, August, 1996.

77. Current Dental Materials Research at NIST. American Society of Mechanical Engineers, Applied Mechanics Division and Materials Division Meeting at Johns Hopkins University, Biomaterials Symposium, June, 1996.

78. Dental resins based on alternative monomers and polymerization pathways. Advances in Materials Science: New Approaches and Developments Symposium. International Association for Dental Research Meeting, San Francisco, CA, March, 1996.

79. Photocured composites based on dimethacrylate monomers of varied fluorine content. Macromolecular Secretariat Composites Symposium, American Chemical Society, Division of Polymer Chemistry, Anaheim, CA, April, 1995.

80. Ring-opening polymerization and its use in dentistry. Lunch and Learn Seminar at the American Association for Dental Research Meeting, San Antonio, TX, March, 1995.

81. Polymers and cyclopolymers from highly fluorinated monomers and oligomers. American Chemical Society, Division of Polymer Chemistry, Biennial Symposium, San Juan, Puerto Rico, November, 1994.

82. Recent advances in the ring-opening polymerization of spiro orthocarbonates. Advances in Polymerization and High Performance Materials; 16th Biennial Symposium of American Chemical Society, Division of Polymer Chemistry, Palm Springs, CA, November, 1992.

83. Ring-opening polymerization of a methacrylate-substituted spiro orthocarbonate. Polymers of Biological and Biomedical Significance Symposium, American Chemical Society, Division of Polymer Chemistry, Washington, DC, August, 1992.

84. Synthesis and polymerization of difunctional and multifunctional monomers capable of cyclopolymerization. William J. Bailey Memorial Symposium, American Chemical Society, Division of Polymer Chemistry, Washington, DC, August 26, 1990.

85. Evaluation of spiro orthocarbonate monomers capable of polymerization with expansion as ingredients in dental composite-materials. Progress in Biomedical Polymers Symposium, American Chemical Society, Division of Polymeric Materials: Science and Engineering, Los Angeles, CA, September 27, 1988.

86. Measuring and managing photopolymerization shrinkage, Photopolymerization Fundamentals 2002 Meeting, Breckenridge, CO, June 7, 2002

87. Development of fluorinated resins as matrix materials for improved composites. National Institute of Standards and Technology, Polymers Division Seminar, October 3, 1996.

88. Overview of research in the Dental and Medical Materials Group at NIST. American Association for Dental Research, Open House for Dental Students, National Institute of Standards and Technology, March, 1995.

89. Control of polymerization shrinkage with unconventional monomers: Ring opening of spiro orthocarbonates and cyclopolymerization. National Institute of Standards and Technology, Polymers Division Seminar, November, 1993.

90. Polymerization studies of methacrylate-substituted spiro orthocarbonate monomers. Volume change during polymerization symposium at the South East Regional Meeting-Mid-Atlantic Regional Meeting, American Chemical Society, Crystal City, VA, December, 1992.

91. New polymers to chew on; Improved dental composites. University of Colorado School of Dentistry Student Research Group, UCDHSC, Aurora, CO, December 2, 2005.

92. Advances in dental biomaterials. CU Bioengineering Center-NIST Bioengineering Teleconference, UCDHSC Denver, CO, December 1, 2005.

93. Hybrid resins for dental composites: Nano-scale heterogeneous polymers. Dentsply-Caulk, Milford, DE. November 18, 2005.

94. Development of new resins for dental restoratives. Confi-Dental Products, Westminster, CO, November 2, 2005.

95. Polymeric biomaterials from degradable hydrogels to permanent dental filling materials. University of Connecticut School of Dental Medicine, Farmington, CT, March 30, 2004.

96. Controlled swelling and degradation of pH-responsive hydrogels. Colorado Alliance for Bioengineering, BioExpo, Aurora, CO, December 4, 2002.

97. Biomaterials program at University of Colorado School of Dentistry. Fitzsimons Redevelopment Authority, Fitzsimons Fourteeners, Aurora, CO, February 28, 2002.

98. Designing new polymers for biomaterials applications. University of Colorado Health Sciences Center, School of Dentistry, Research Day presentation, February 7, 2001.

99. Ethyl α-hydroxymethylacrylate: an isomeric analog of HEMA. Colorado Alliance for Bioengineering, BioExpo, Aurora, CO, December 6, 2000.

100. Designing polymers to address needs in biomaterials. University of Colorado, Department of Chemical Engineering, Boulder, CO, October 19, 2000.

101. Development of dental resins based on expanding monomers. University of Missouri Dental School, Kansas City, MO, April 14, 1998.

102. New polymers for use in dental materials. University of Colorado, Department of Chemical Engineering Department, Boulder, CO, March 9, 1998.

103. New monomers for dental material applications. Esstech, Essington, PA, May 16, 1997.

104. Alternative polymers for use in dental materials. Institute of Materials Science, University of Connecticut, Storrs, CT, March 28, 1997.

105. Designing monomers to minimize polymerization shrinkage. AT&T Bell Labs/Lucent Technologies, Murray Hill, NJ, February 3, 1997.

106. Photoinitiated cyclopolymerization of polyfunctional acrylic monomers. Hercules Research Center, Wilmington, DE. October, 1994.

107. Use of double ring opening and cyclopolymerization techniques to improve dental materials. Department of Polymer Science, University of Southern Mississippi, June, 1994.

108. Reduced polymerization shrinkage through monomer design. Institute of Polymer Science, University of Akron, April, 1994.

109. Synthesis and ring-opening polymerization of spiro orthocarbonates. 3M Dental Product Laboratory, St. Paul, MN, September, 1993.

COMMITTEE APPOINTMENTS

Dental School

2021	Search committee for Director, Center for Oral Disease Prevention and Population Health Research (chair)
2021	Search committee
2020	Search committee for Senior Associate Dean of Academic Affairs and Innovation (member)
2019	Search committee for SDM Academic Dean (member)
2018 – present	Professionalism committee (member)
2017 – present	Executive committee (member)
2017 – present	Working group to revise Promotion &Tenure documents
2017 – present	Institutional Effectiveness Committee (member)
2017 - present	Credentialing Committee (member)

2016 – present	Credentialling committee (member)
2015	Search committee for Associate Dean for Diversity and Inclusion (chair)
2015 – present	Faculty Appointment, Promotion, Tenure and Post-Tenure Review Subcommittee (chair)
2013 - 2015	Committee to revise Promotion and Tenure documentation (co-chair)
2013 – present	Strategic Leadership Team (member)
2012/15;2020/present	Accreditation Standard 6 Research Programs Committee (chair)
2012 – present	Space Committee (member)
2011 - 2015	Dean's Review Committee (chair)
2011 – present	Research Committee (chair)
2011	Search committee for Department of Craniofacial Biology Grants Manager (member)
2010 – present	Executive Committee (member)
2010	Search committee for Chair Craniofacial Biology (chair)
2010	Search committee for Associate Dean for Finance, Budget and Strategic Projects (member)
March 2008 – 2011	(member)
May 2007 - 2009	Accreditation Committee - Research Programs (member)
2006	Craniofacial Biology Faculty Search Committee (chair)
2003 -2005	Facilities and Administrative Costs Waiver Committee (member)
2002 - present	Research Committee (chair as of 1/09)

Chemical & Biological Engineering

2019	Graduate student preliminary exam committees (member on 3; chair on 1)
2018	Graduate student preliminary exam committees (member on 3; chair on 1)
2017	Graduate student preliminary exam committees (member on 4; chair on 1)
2016	Graduate student preliminary exam committees (member on 3; chair on 1)
2015	Graduate student preliminary exam committees (member on 4; chair on 1)
2014	Graduate student preliminary exam committees (member on 6; chair on 2)
2013	Graduate student preliminary exam committees (member on 4; chair on 1)
2012	Graduate student preliminary exam committees (member on 6; chair on 1)
2011	Graduate student preliminary exam committees (member on 6)
2010-2011	Building move committee (member)

2010	Graduate student preliminary exam committees (member on 3, chair on 3)
2009	Bioengineering Degree Committee (member)
2009	Graduate student preliminary exam committees (member on 4)
2008	Graduate student preliminary exam committees (member on 5)
2008	Graduate recruitment committee (member)
2007	Faculty Search Committee (member)
2007	Graduate student preliminary exam committees for 8 students (7 as member; 1 as chair)
2006	Graduate student preliminary exam committees (member on 3)
2005	Graduate student preliminary exam committees (member on 2)
2001– present	Graduate student thesis committees – approximately 6 per year

Material Science and Engineering Program

2019	Graduate student preliminary exam committees (member on 3)
2018	Graduate student preliminary exam committees (member on 2)
2017	Graduate student preliminary exam committees (member on 2)
2016	Graduate student preliminary exam committees (member on 2)

University

2021	NIH FIRST grant steering committee (member)
2021	Strategic Innovation working group (member)
2020 – present	Covid Official
2020 – 2021	Anschutz-Boulder Collaboration
2019	Search committee for Vice-Chancellor for Research (member)
2019 - present	Anschutz - Boulder Research Collaboration: Faculty Advisory Group (member)
2019	Search committee for Vice-Chancellor for Faculty Affairs (member)
2009 – 2011	CAPT Center Executive Board (member)
2008 – present	Clinical Research Resources and Facilities Oversight Committee
2007 - 2008	Discovery, Creativity and Innovation Task Force (member)
2002 - 2008	Research Park Advisory Committee (member)
2002	Advisory Board for Strategic Planning and Intellectual Property Policy
2001 – 2006	Bioengineering Steering Committee (member)

National/International

2020 – 2022	Immediate Past-President, Academy of Dental Materials
2019 - present	Abstract reviewer for the Dental Materials Group – Polymer Chemistry Section, International Association for Dental Research
2018 – 2020	President, Academy of Dental Materials
2016 – 2018	Vice-President, Academy of Dental Materials
2015 – 2016	President, Dental Materials Group of IADR (largest group in IADR)

2014 – 2016	Secretary and Fellowship Chair, Academy of Dental Materials
2014 – 2015	President-elect of the Dental Materials Group of IADR – Group Program Chair for the DMG at the 2015 Boston IADR Meeting
2013 - 2014	Vice-President of the Dental Materials Group of IADR
2012 – 2014	Executive Board Member of the Academy of Dental Materials
2010 - 2014	IADR Souder Award committee (chair in 2014)
2010	External evaluator, Graduate Program in Dental Materials at Ohio State University College of Dentistry
2010	Program Chair, International Association for Dental Research, Dental Materials Group, Polymeric Materials – Properties and Performance
2007- 2014, 2021, 2022	Abstract reviewer, American/International Association for Dental Research, Dental Materials Group, Polymer Chemistry Section
2004, 2006	Co-organizer and Chair for Polymer Chemistry Division symposia at the American Chemical Society: Polymers in Dental Materials (Fall 2004) and Polymeric Dimensional Change and Residual Stress (Spring 2006)
2002, 2006, 2008, 2009, 2011-2022	Program Chair, International Association for Dental Research, Dental Materials Group, Polymeric Materials - Polymer Chemistry Section

CU Boulder graduate thesis committee member in the Department of Chemical and Biological Engineering (courtesy faculty), Materials Science and Engineering Program (affiliated faculty), Biomedical Engineering Program (affiliated faculty) for:

Claire Niemet (advisor – Christopher Bowman) current
Brittany Thompson (advisor – Stephanie Bryant) current
Adam Dobson (advisor – Christopher Bowman) Graduated with PhD, 2023
Juan Hernandez (advisor – Christopher Bowman) Graduated with PhD, 2022
Joshua Kamps (advisor – Christopher Bowman) Graduated with PhD, 2022
Nicholas Bongiardina (advisor – Christopher Bowman) Graduated with PhD, 2022
Archish Muralidharan (advisors – Stephanie Bryant and Robert McLeod) Graduated with PhD, 2021
Jason Silver (advisor – Kristi Anseth) Graduated with PhD, 2021
John Hergert (advisor Robert McLeod) Graduated with PhD, 2021
Xiance Wang (advisor – Christopher Bowman) Graduated with PhD, 2021
Katelyn Long (advisor – Christopher Bowman) Graduated with PhD 2020
Benjamin Richardson - (advisor – Kristi Anseth) Graduated with PhD, 2020
Alex Caldwell (advisor – Kristi Anseth) Graduated with PhD, 2020
Leila Saleh (advisor – Stephanie Bryant) Graduated with PhD, 2020
Dillon Love (advisor – Christopher Bowman) Graduated with PhD, 2019
Marvin Alim (advisor – Christopher Bowman) Graduated with PhD, 2019
Dawei Zhang (advisor – Christopher Bowman) Graduated with PhD, 2019

Nancy Sowan (advisor – Christopher Bowman) Graduated with PhD, 2019
Xinpeng Zhang (advisor – Christopher Bowman) Graduated with PhD, 2018
Katherine Lewis (advisor, Kristi Anseth)
Han Byul Song (advisor, Christopher Bowman) Graduated with PhD, 2018
Chen Wang (advisor, Christopher Bowman) Graduated with PhD, 2016
Eftalda Becka (advisor, Christopher Bowman) Graduated with PhD, 2015
Gayla Berg (advisor – Christopher Bowman) Graduated with PhD, 2016
Abeer Alzahrani (advisor, Christopher Bowman) Graduated with PhD 2015
Ian Campbell (advisor – Mark Stoykovich)
Balaji Sridhar (MD/PhD, advisor – Kristi Anseth), Graduated with PhD, 2015
Navakanth Gandavarapu (advisor – Kristi Anseth) Graduated with PhD, 2013
Devatha Nair (advisor – Christopher Bowman/Robin Shandas) Graduated with PhD, 2011
Sheng Ye (advisor – Christopher Bowman) Graduated with PhD, 2011
Heeyoung Park (advisor – Christopher Bowman) Graduated with PhD, 2011
Megan Cole (advisor – Christopher Bowman) Graduated with PhD, 2011
Brian Adzima (advisor – Christopher Bowman) Graduated with PhD, 2011
Raveesh Shenoy (advisor – Christopher Bowman) Graduated with PhD, 2011
Cole DeForest (advisor – Kristi Anseth) Graduated with PhD, 2011
Neven Steinmetz (advisor – Stephanie Bryant) Graduated with PhD, 2011
Mark Tibbitt (advisor – Kristi Anseth) Graduated with PhD, 2011
Alex Aimetti (advisor - Kristi Anseth) Graduated with PhD, 2010
McKinley Lawson (advisor – Kristi Anseth/Christopher Bowman) Graduated with PhD, 2008
Jeff Arthur (advisor – Kristi Anseth) Graduated with PhD, 2009
Idalis Villanueva (advisor – Stephanie Bryant) Graduated with PhD, 2009
Vaibhav Khire (advisor – Christopher Bowman) Graduated with PhD, 2008
April Kloxin (advisor – Kristi Anseth/Christopher Bowman) Graduated with PhD, 2010
Chelsea Salinas (advisor – Kristi Anseth) Graduated with PhD, 2007
Ben Fairbanks (advisor – Kristi Anseth) Graduated with PhD, 2010
Jacquelyn Carioscia (advisor – Christopher Bowman) Graduated with PhD, 2006
Amber Rydholm (co-advised by Christopher Bowman and Kristi Anseth) Graduated with PhD, 2006
Harini Kalambi (advisor - Christopher Bowman) Graduated with PhD in 2006
Andrew Watkins (advisor – Kristi Anseth) Graduated with PhD in 2006
Sirish Reddy (advisor - Christopher Bowman) Graduated with PhD in 2006
Charles Nuttelman (advisor – Kristi Anseth) Graduated with PhD, 2005
Hui Lu (advisor - Christopher Bowman), Graduated with PhD, 2004
Eric Beckel (advisor - Christopher Bowman), Graduated with PhD, 2004
Penny Martens (advisor - Kristi Anseth) Graduated with PhD, 2003
Stephanie Bryant (advisor - Kristi Anseth) Graduated with PhD, 2003
Allison O'Brien (advisor - Christopher Bowman) Graduated with PhD, 2002
Tara Lovestead (advisor - Christopher Bowman) Graduated with PhD, 2002
Kathryn Berchtold (advisor - Christopher Bowman) Graduated with PhD, 2001
Lale Lovell (advisor - Christopher Bowman), Graduated with PhD, 2000

Department of Bioengineering University of Colorado Denver
Graduate thesis committee member for:
Amin Famili (advisor – Robin Shandas)
Kiran Dyamenahalli (advisor – Robin Shandas)

Department of Mechanical Engineering University of Colorado Denver
Graduate co-advisor (with Atousa Plaseied) for Winsean Lin; Graduated with MS, 2011
Graduate co-advisor (with Atousa Plaseied) for Dianabasi Etuk

Department of Chemistry, University of Colorado Denver
Graduate thesis committee member for Setareh Azarnoush; graduated with MS, 2011

Awards to dental student and other advisees
Simon Monley (DS3): received best dental poster award at the 2023 Anschutz Campus Annual Research Forum for his presentation of High Strength, High Toughness 3D Printable Urethane Denture Base Formulations.

KangMin Kim (grad student, Chemistry): received the 2019 first-place Paffenbarger Award from the Academy of Dental Materials in Jackson Hole, WY; received the RadLaunch Award at the RadTech meeting in Orlando, FL, March 2020.

Robert Bailey (DSII): received the 2019 third-place Paffenbarger Award from the Academy of Dental Materials in Jackson Hole, WY.

Bruna Fronza (DDS/PhD grad student): received the 2017 first-place Paffenbarger Award from the Academy of Dental Materials in Nuremberg, Germany.

Jacob Ramirez (DSII): received AADR Student Travel Bloc Grant to present at the 2013 IADR as DS1.

Petros Yoon (DS: runner-up, ADA/DENTSPLY Student Clinician Research Program for "Redesigning Water Compatible Dental Adhesive Resins"; NIH/NIDCR Summer Training Internship in Bethesda, MD 2014; received the Howard Cherne Memorial Scholars Award for 2012-2013 from the Colorado Chapter of ARCS as DSII; received the AADR Student Fellowship Award in 2013 as DSII.

Christopher Walker (DSI): third place, 2011 ADA/DENTSPLY Student Clinician Research Program for "Modifications in Dental Adhesives by the Addition of Nanoscale Polymeric Particles". Received the Academy of Dental Materials Award.

Rafael Moraes (DDS/PhD grad student) from Piracicaba School of Dentistry in Brazil doing the research portion of his PhD at CU; winner of the 2009 Unilever/Hatton Senior Basic Science South American Divisional Award.

Nicholas Wilson (DSI-IV): runner up, 2009 ADA/DENTSPLY Student Clinician Research Program for "Dimethacrylate Network Development in the presence of Chain-Transfer Agents"; Sue Kintzele Scholar 2009-2010 from the Colorado Chapter of ARCS; 2010 National Best Student Table Clinic Award from the Academy of Operative Dentistry.

Demitrios Syrpes (DSII): runner up, 2002 ADA/DENTSPLY Student Clinician Research Program for "Monomer Reactivity and Polymeric Network Formation in Composite Dental Restoratives".

SOCIETY/PROFESSIONAL ORGANIZATIONS

2022-2024	Selection Committee for the Steve Bayne Mid-Career Award from the IADR Dental Materials Group
2020-present	Selection Committee for the Raphael Bowen Award from the Academy of Dental Materials
2020-2022	Immediate Past-President, Academy of Dental Materials
2018-2020	President, Academy of Dental Materials
2016-2018	Vice-President, Academy of Dental Materials
2016-2017	Immediate Past-President, Dental Materials Group of IADR
2015-2016	President, Dental Materials Group of IADR
2014-2016	Secretary, Academy of Dental Materials
2014-2015	Vice-President, Dental Materials Group of IADR
2012-2014	Academy of Dental Materials Executive Board, Member-at-Large
2007 – present	American Dental Education Association
2005 - present	Academy of Dental Materials
2000 - present	American Association for Dental Research - Colorado Section President 2002-2005; 2007 - 2010 Councilor 2005-2006; 2010-2012, 2015-2018, 2020-2021
2000 – present	American Chemical Society - Colorado Section
2000 - 2005	Colorado Alliance for Bioengineering Executive Board Member
1998 – present	IADR Dental Materials Group
1991-2000	American Association for Dental Research - Washington, DC Section Councilor 1997-2000 President 1996-1997
1994 – present	American Chemical Society Division of Polymeric Materials: Science and Engineering
1987 - present	American Chemical Society Division of Polymer Chemistry
1983 - present	International Association for Dental Research (IADR)
1983 - 2000	American Chemical Society - Washington, DC Section
1980 - present	American Chemical Society

ACADEMIC REVIEW ACTIVITIES

Editorial Board Member, 3D printing (Dental Tribune International)	2021-present
Editorial Board Member, JADA Foundational Science	2021-present
Editorial Board Member, Dental Materials	2010-present
Editorial Board Member, Polymers for Advanced Technologies	2000-present
Editorial Board Member, Journal of Applied Oral Science	2007-present
Reviewer for Dept of Defense, DEPSCoR program	2008
Reviewer, Wellcome Trust	1999-2000, 2012
Reviewer/Member (ad hoc), NIH Oral, Dental and Craniofacial Sciences (formerly: Oral Biology and Medicine)	1997-present
Reviewer, NIH Small Business Innovation Research	1996-2002
Reviewer, NIST Advanced Technology Program	1992-2000
Reviewer, National Science Foundation	1988-1998

Manuscript Reviewer for:

- Acta Biomaterialia
- Biomaterials
- Carbohydrate Polymers
- Chemistry of Materials
- Composite Science and Technology
- Critical Reviews in Oral Biology and Medicine
- Dental Materials, Encyclopedia of Polymer Science and Technology
- European Journal of Oral Science
- European Polymer Journal
- Journal of Applied Polymer Science
- Journal of Biomaterials Science
- Journal of Biomedical Materials Research
- Journal of Combinatorial Chemistry
- Journal of Composite Materials
- Journal of Dental Research
- Journal of Dentistry
- Journal of Materials Science
- Journal of Photochemistry and Photobiology
- Journal of Polymer Research
- Journal of Polymer Science
- Journal of Prosthodontics
- Journal of Rheology
- Macromolecular Chemistry and Physics
- Macromolecular Materials and Engineering
- Macromolecular Reaction Engineering
- Macromolecules
- Nuclear Instruments and Methods in Physics Research

Polymer
Polymer International
Polymers for Advanced Technologies
Reactive and Functional Polymers
Soft Matter
Vibrational Spectroscopy

NIH STUDY SECTION PARTICIPATION

ZRG1MOSSD10 (Co-Chair)	March 2021
Special Emphasis Panel ZDE1 NB 03 M	June 2019
ZRG1MOSSD10 (SBIR/STTR)	March 2019
Special Emphasis Panel/Scientific Review Group 10 ZDE1 NB (03) M	June 2019

CONSULTANTSHIPS

University of South Dakota School of Mines and Technology for development of dental resins (Hao Fong, PI; NIDCR)	2009-2011
SLS Hybrid Ceramic for development of improved dental materials	2007-present
Envisiontec, Inc. for development of photolithographic materials and suitable analytical characterization techniques	2005-2008
Bioplant R&D for development of delivery devices for in-situ curable degradable polymeric biomaterials	2005-2009
University of Oregon Health and Science University for synthesis and characterization of degradable polymers on an R21 (Mitchell, PI)	2005-2011
American Dental Association Health Foundation Center of Excellence for Materials Science Research	1994-1999

EXTERNAL PROGRAM/FACULTY EVALUATIONS

Faculty promotion review, University of Michigan School of Dentistry	2013, 2021
Program evaluation, The Ohio State College of Dentistry	2014