

# SILVIYA PETROVA ZUSTIAK

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## EDUCATION

- 2004 - 2009 **Ph.D.**, Department of Chemical and Biochemical Engineering, University of Maryland Baltimore County (UMBC), Baltimore, MD
- 1997 - 2002 **BS/MS**, Department of Electrical Engineering, Technical University, Sofia, Bulgaria

## POSITIONS AND AFFILIATIONS

- 2021 – Present **Scientific Advisory Board Member**, Buswell Biomedical LLC, St Louis, MO
- 2020 – Present **Associate Professor** Secondary Appointment, Department of Pharmacology and Physiology, St. Louis University Medical School, St Louis, MO
- Jan – Aug 2020 **Visiting Professor**, Center for Engineering MechanoBiology (CEMB), Washington University, St. Louis, MO
- 2019 – Present **Member**, Institute of Clinical and Translational Sciences, Washington University, St. Louis, MO
- 2019 – Present **Executive Leadership Committee Member**, Center for Neuroscience, Saint Louis University, St. Louis, MO
- 2018 – Present **Member**, Siteman Cancer Center, Washington University, St. Louis, MO
- 2018 – Present **Co-director**, Institute for Drug and Biotherapeutic Innovation (IDBI), SLU
- 2018 – Present **Associate Professor**, Biomedical Engineering, St. Louis University, St. Louis, MO
- 2017 – Present **Member**, Musculoskeletal Research Center, Washington University, St Louis, MO
- 2017 – 2020 **Ad-hoc Graduate Faculty**, Department of Chemical Engineering, Michigan Technological University, Houghton, MI
- 2014 – 2019 **Adjunct Assistant Professor**, Department of Chemical and Biological Engineering, Missouri University of Science and Technology - Rolla, MO
- 2013 – 2018 **Assistant Professor**, Department of Biomedical Engineering, St. Louis University, St. Louis, MO
- 2010 – 2012 **Postdoctoral Fellow**, Laboratory of Integrative and Medical Biophysics, NICHD/NIH, Bethesda, MD
- 2005 – 2010 **Research Assistant**, Department of Chemical & Biochemical Engineering, UMBC, Baltimore, MD
- 2001 – 2002 **Research Assistant**, Department of Electrical Engineering, Technical University, Sofia, Bulgaria

## PROFESSIONAL ORGANIZATIONS

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| Sigma Xi, The Scientific Research Honor Society  | 2019-present     |
| American Institute of Chemical Engineers (AIChE) | 2007-2018        |
| Biomedical Engineering Society (BMES)            | 2014-present     |
| Biophysical Society (BPS)                        | 2011-2015        |
| Society for Biomaterials (SfB)                   | 2009, 2014, 2019 |
| Materials Research Society (MRS)                 | 2008             |

## HONORS AND AWARDS

- 2019 **Keynote speaker**, “Directed and enhanced neurite outgrowth following exogenous electrical stimulation on carbon nanotube-hydrogel composites”, Annual Technical Meeting of the Society of Engineering Science, St Louis, MO
- 2018 **Department of Athletics Straight A Luncheon Faculty Honoree**, invited by student athlete Allyson Stanley
- 2018 **Saint Louis University Scholarly Works Award** for a junior faculty member (1 awarded per year)
- 2017 Nomination: **Outstanding Faculty**, Association of Parks College Students, SLU, St Louis, MO
- 2016 Nomination: **Outstanding Faculty**, Association of Parks College Students, SLU, St Louis, MO
- 2015 **Editor’s Choice**: Manuscript published in JOMJ
- 2015 **Most Impactful Person (MIP)** certification of recognition by a graduating senior, SLU, St Louis, MO
- 2015 Nomination: **Outstanding Faculty**, Association of Parks College Students, SLU, St Louis, MO
- 2015 **Outstanding Parks Graduate Faculty Award**, SLU, St Louis, MO
- 2014 **Department of Athletics Straight A Luncheon Faculty Honoree**, invited by student athlete Colleen Cole
- 2014-15 **KEEN Faculty**, KEEN – Kern Entrepreneurial Education Network
- 2013 **Feature Article**: manuscript in Tissue Engineering, Part B
- 2014 **Top-Read Article**: manuscript in Tissue Engineering, Part B
- 2013 **Best Poster Award**, Functional Analysis and Screening Technologies (FAST) Conference: Engineering Functional 3D Tissue Models, Boston, MA
- 2011 **Travel Grant**: AIChE Women’s Initiative Committee
- 2011 **Fellows Award for Research Excellence (FARE)**, NIH
- 2011 Abstract selected for an **oral presentation** at the NICHD Annual Retreat (6 out of 75 fellows)
- 2009 Abstract selected for **Mini-talk Oral Presentation** session at the Gordon Research Conference: Biomaterials: Biocompatibility/Tissue Engineering
- 2007 **First prize poster award** by mentee Robert Reeves at the Undergraduate Research Consortium in the Chemical and Biological Sciences, UMBC
- 1998-01 **Stipend for academic excellence** from Technical University, Sofia, Bulgaria

## HONORS AND AWARDS TO RESEARCH MENTEES

- 2020 **Parks College Graduate Fellowship** awarded to MS student Eya Ferchichi
- 2019 **Student Paper Award, Bronze Level** awarded to MS students Allison Clancy for her poster presentation at the annual SES meeting, St. Louis, MO, October 13-16
- 2019 **Donald & Nora Manahan Scholarship & Research Fund** awarded to PhD student Saahil Sheth
- 2019 **Parks College Graduate Fellowship** awarded to MS student Brannan Hutchinson
- 2019 **Parks College Graduate Assistantship** awarded to PhD student Samuel Stealey
- 2019 **Outstanding PhD Graduate Student Award** from Parks College of Engineering, Aviation and Technology to Saahil Sheth
- 2019 **Honorable Mention, NSF Graduate Research Fellowship Program** to PhD student Samuel Stealey
- 2019 **Best Poster Award, Engineering Cells and Their Microenvironments SIG, Society for Biomaterials Annual Conference** to graduate student Sana Syed
- 2018 **Award for Excellence in Research** to STARS student Arko Chatterjee
- 2018 **Best Poster Award, Third Place** to PhD student Lindsay Hill, Biological Sciences Category, Graduate Research Symposium, SLU, St Louis, MO
- 2017 **Abstract selected for an oral presentation at the Graduate Student Award Session**, AIChE Annual Meeting, Minneapolis, MN; presenter – PhD student Mozhdah Imaninezhad
- 2017 **Parks College Graduate Scholarship Award** to PhD student Saahil Sheth

- 2017 **Outstanding Innovative Research Award** to undergraduate researcher Alexandra Blanco, STLAURS, St Louis, MO (a single award for the whole symposium)
- 2017 **Best Poster Award, Second Place** to undergraduate researcher Dzhuliya Vasileva, Biomedical Engineering category, STLAURS, St Louis, MO
- 2017 **Dissertation Fellowship** to PhD student Mozhdeh Imaninezhad by Saint Louis University
- 2016 **Partnership of Research Institution's Award for Excellence in Research** to STARS student Rohit Lalit Chouhan
- 2016 **Parks College Graduate Scholarship Award** to PhD student Saahil Sheth
- 2016 **Parks College Graduate Scholarship Award** to PhD student Mozhdeh Imaninezhad
- 2016 **Grand Challenge Scholar** award to undergraduate researcher Erin Canning
- 2016 **Oliver L. Parks Award** to undergraduate lab alumna Colleen Cole
- 2016 **Honorable Mention, Barry Goldwater Scholarship** to undergraduate researcher Dzhuliya Vasileva
- 2015 **Outstanding BME Senior Award** to undergraduate researcher Kristin Kalinowski
- 2015 **Saint Louis University Leadership Honoraria** to Master's student Sana Syed
- 2015 **Nora Manahan Scholarship** to undergraduate researcher Anirudh Guduru
- 2015 **BMES Annual Conference Travel Award** to PhD student Mozhdeh Imaninezhad
- 2015 Membership for **Alpha Sigma Nu, the Jesuit Honor Society** for PhD student Lindsay Hill
- 2015 **Barta Graduate Scholarship** to PhD student Mozhdeh Imaninezhad by Parks College, SLU, St Louis, MO
- 2015 **Best Poster Award, Second Place** to undergraduate researcher Dzhuliya Vasileva, Undergraduate Physical Sciences Category, Annual Sigma Xi Research Symposium, SLU, St Louis, MO
- 2015 **SLU Graduate Diversity Fellowship** to graduate student Lindsay Hill (4 out of 15)
- 2013 **Challenge Travel Grant** by SLU Women's Commission to undergraduate researcher Kristin Kalinowski

## PEER-REVIEWED PUBLICATIONS

(Current as of January 1, 2021; h-index – 18, i10-index - 27)

“\*” – designates corresponding author

“#” – designates research mentee as an author

### *Published or in press*

1. #S. M. Kroger, #L. Hill, #E. Jain, #A. Stock, P. J. Bracher, F. He, \***S. P. Zustiak**, “Design of Hydrolytically Degradable Polyethylene Glycol Crosslinkers for Facile Control of Hydrogel Degradation”, Macromolecular Bioscience, 2020, 20(10), 2000085 (IF: 3.85)
2. #M. Choi, #A. Blanco, #S. Stealey, X. Duan, N. Case, S. Sell, M.F. Rai, \***S.P. Zustiak**, “Micro-clotting of Platelet-Rich Plasma upon Loading in Hydrogel Microspheres Leads to Prolonged Protein Release and Slower Microsphere Degradation”, Polymers, 2020, 12(8), 1712 (IF: 3.426)
3. #E. Jain, #M. Flanagan, #S. Sheth, #S. Patel, Q. Gan, B. Patel, \*A. Montano, \***S. P. Zustiak**, “Biodegradable polyethylene glycol hydrogels for sustained release and enhanced stability of rhGALNS enzyme”, Drug Delivery and Translational Research, 2020, 1-12 (IF: 3.111)
4. J. Peters, L. Vest, M. Schuelke, **S. P. Zustiak**, A. F. Hall, S. McBride-Gagy, “MicroCT Vascular Network Analysis Program: Development, Validation and Comparison to Manufacturer Software”, Journal of Orthopaedic Research, 2020, 38(6), 1340-1350 (IF: 3.414)
5. #S. Sheth, E. Barnard, B. Hyatt, \*M. Rathinam, \***S. P. Zustiak**, “Predicting Drug Release from Degradable Hydrogels Using Fluorescence Correlation Spectroscopy and Mathematical Modelling”, Frontiers in Bioengineering and Biotechnology, 2019, 7, 410 (IF: 5.122)

6. #E. Jain, #A. Blanco, N. Chinzei, L.J. Sandell, N. Case, S.A. Sell, \*M.F. Rai, \***S.P. Zustiak**, “Sustained-released platelet-rich plasma from polyethylene glycol hydrogels exerts beneficial effects on chondrocytes”, Journal of Orthopaedic Research, 2019, 37 (11), 2401-2410 (IF: 3.414)
7. #M. Imaninezhad, #L. Hill, G. Kolar, #K. Vogt, \***S. P. Zustiak**, “Templated hydrogels for spheroid and aggregate cell culture”, Bioconjugate Chemistry, 2019, 30, 34-46 (IF: 4.818)
8. #M. Imaninezhad, J. Schober, D. Griggs, P. Ruminski, I. Kuljanishvili, \***S. P. Zustiak**, “Cell attachment and spreading on carbon nanotubes is mediated by integrin binding”, Frontiers in Bioengineering and Biotechnology, 2018, 6, 129 (IF: 5.122)
9. N. Ziemkiewicz, M. Talovic, J. Madsen, #L. Hill, R. Scheidt, A. Patel, G. Haas, M. Marcinczyk, **S. P. Zustiak**, K. Garg, “Laminin-111 functionalized polyethylene glycol hydrogels support myogenic activity in vitro”, Biomedical Materials, 2018, 13(6), 065007 (IF: 2.897)
10. #M. Imaninezhad, K Pemberton, F. Xu, #K. Kalinowski, #R. Berra, \***S. P. Zustiak**, “Directed and enhanced neurite outgrowth following exogenous electrical stimulation on carbon nanotube-hydrogel composites”, Journal of Neural Engineering, 2018, 15(5), 056034 (IF: 3.415)
11. #J. Bruns, S. McBride-Gagyi \***S. P. Zustiak**, “Injectable cell-adhesive polyethylene glycol cryogel scaffolds: independent control of cryogel microstructure and composition”, Macromolecular Materials and Engineering, 2018, 303 (10), 1800298 (IF: 3.038)
12. H. Huang, #S. Sheth, X. Jiang, #E. Jain, \***S. P. Zustiak**, \*L. Yang, “A whispering gallery mode resonator sensor for in situ measurements of hydrogel gelation”, Optics Express, 2018, 26(1), 51-62; (IF: 3.356)
13. M. Reimer, E. Denby, **S. P. Zustiak**, \*J. Schober, “Ras GAP-related C-terminal domain-dependent localization and tumorigenic activities of IQGAP1 in melanoma cells”, Plos One, 2017, 12(12), e0189589; (IF: 2.766)
14. #S. Syed, J. Schober, #A. Blanco, \***S. P. Zustiak**, “Morphological adaptations in breast cancer cells as a function of prolonged passaging on compliant substrates”, Plos One, 2017, 12(11), e0187853; (IF: 2.766)
15. M. Reimer, **S. P. Zustiak**, #S. Sheth \*J. M. Schober, “Intrinsic response towards physiologic stiffness is cell-type dependent”, Cell Biochemistry and Biophysics, 2017, 76(1-2), 197-208 (IF: 2.380)
16. #E. Jain, #S. Sheth, A. Dunn, \***S. P. Zustiak**, \*S. Sell, “Sustained release of multicomponent platelet-rich plasma proteins from hydrolytically degradable PEG hydrogels”, Journal of Biomedical Materials Research: Part A, 2017, 105(12), 3304-3314; (IF: 3.231)
17. #S. Sheth, #E. Jain, K. Polito, \*S. Sell, \***S. P. Zustiak**, “Storage stability of biodegradable polyethylene glycol microspheres”, Materials Research Express, 2017, 4(10), 105403; (IF: 1.151)
18. #S Sheth, #E. Jain, #A. Karadaghy, #S. Syed #H. Stevenson, \***S. P. Zustiak**, “UV dose governs UV-polymerized polyacrylamide hydrogel modulus”, International Journal of Polymer Science, 2017 (IF: 1.718)

***INVITED – Special Edition on “The Frontier of Biobased Polymers: Synthesis, Characterization, Application and Sustainability Assessment”***

19. T. Knobloch, S. E. M. Abadi, #J. Bruns, **S. P. Zustiak**, \*G. Kwon, “Development of an injectable hydrogel for encapsulation of islets to treat streptozotocin-induced diabetes in mice”, Biomedical Physics & Engineering Express, 2017, 3(3); (IF: new journal)
20. #A. S. Qayyum, #E. Jain, G. Kolar, Y. Kim, S. Sell, \***S. P. Zustiak**, “Design of electrohydrodynamic sprayed polyethylene glycol hydrogel microspheres for cell encapsulation”, Biofabrication, 2017, 9(2), 025019; (IF: 6.838)
21. Y. Wang, #D. Vasileva, \***S. P. Zustiak**, \*I. Kuljanishvili, “Raman spectroscopy enabled investigation of carbon nanotube quality upon dispersion in aqueous environments”, Biointerphases, 2017, 12(1), 011004; (IF: 2.677)
22. #E. Jain, #L. Hill, #E. Canning, \*S. Sell, \***S. P. Zustiak**, “Control of gelation, degradation and physical properties of polyethylene glycol hydrogels through the chemical and physical identity of the crosslinker”, Journal of Materials Chemistry B, 2017, 5, 2679-2691; (IF: 4.776)

*Manuscript featured in Advances in Engineering, Ottawa, Canada*

23. #F. Ordikhani, #S. Sheth, \***S. P. Zustiak**, “Polymeric particle-mediated therapies to treat spinal cord injury”, International Journal of Pharmaceutics, 2017, 516(1-2), 71-81; (IF: 3.649)
24. #M. Imaninezhad, \*I. Kuljanishvili, \***S. P. Zustiak**, “A two-step method for transferring single-walled carbon nanotubes onto a hydrogel substrate”, Macromolecular Bioscience, 2017, 11(3), 1600261; (IF: 3.850)
25. #Y. Chehrehghanianzabi, \***S. P. Zustiak**, “Fluorophore-polymer complexation studied by fluorescence correlation spectroscopy”, Macromolecular Research, 2016, 24(11), 995-1002; (IF: 1.767)
26. #N. Ahmed, J. Schober, #L. Hill, \***S. P. Zustiak**, “Custom multiwell plate design for rapid assembly of photo-patterned hydrogels”, Tissue Engineering Part C, 2016, 22(6), 543-551; (IF: 2.638)
27. #F. Ordikhani, \***S. P. Zustiak**, \*A. Simchi, “Surface modifications of titanium implants by multilayer bioactive coatings with drug delivery potential: antimicrobial, biological, and drug release studies”, Journal of the Minerals, Metals, and Materials Society (JOMJ), 2016, 68(4), 1100-1108; (IF: 2.145)  
*INVITED – Special Edition on “Biomaterials for Healthcare”*
28. P. Donovan, #Y. Chehrehghanianzabi, \*M. Rathinam, \***S. P. Zustiak**, “Homogenization theory for the prediction of obstructed solute diffusivity in polymer solutions”, PlosOne, 2016, 11(1), e0146093; (IF: 2.766)
29. **S. P. Zustiak**, C. Medina, S. Dadhwal, S. Steczina, #Y. Chehrehghanianzabi, #A. Ashraf, P. Asuri, “Three-dimensional matrix stiffness and adhesive ligands affect cancer cell response to toxins”, Biotechnology & Bioengineering, 2016, 113(2), 443-452; (IF: 4.481)
30. #F. Ordikhani, \*Y. Kim, \***S. P. Zustiak**, “The role of biomaterials in cancer stem cells enrichment and behavior”, Journal of the Minerals, Metals, and Materials Society (JOMJ), 2015, 67 (11), 2543-2549; (IF: 2.145)  
*INVITED – Special Edition on “Biomaterials: Surfaces and Biointerfaces: Part II”*  
*Editor’s choice for November 2015*
31. #K. Shah, #D. Vasileva, #A. Karadaghy, \***S. P. Zustiak**, “Development and characterization of polyethylene glycol-carbon nanotube hydrogel composite”, Journal of Materials Chemistry B, 2015, 3, 7950-7962; (IF: 4.776)  
*INVITED - Special Edition on “Bio-inspired and Natural Materials”*
32. #E. Jain, K. Scott, \***S. P. Zustiak**, \*S. Sell, “Fabrication of polyethylene glycol-based hydrogel microspheres through electrospraying”, Macromolecular Materials and Engineering, 2015, 300(8), 823-835; (IF: 3.038)
33. M. A. Rezaenia, A. Rahideh, B. A. Hamedani, D. E. M. Bosak, **S. P. Zustiak**, \*T. Korakianitis, “Numerical and in vitro investigation of a novel mechanical circulatory support device installed in the descending aorta”, Artificial Organs, 2015, 39(6), 502-513; (IF: 2.403)
34. \***S. P. Zustiak**, “The role of matrix compliance on cell responses to drugs and toxins: towards predictive drug screening platforms”, Macromolecular Bioscience, 2015, 15(5), 589-599; (IF: 3.850)  
*INVITED Review Article*
35. #S. Syed, #A. Karadaghy, \***S. P. Zustiak**, “Development of polyacrylamide-based multiwell stiffness assay”, Journal of Visualized Experiments (JoVE), 2015, 97, e52643; (IF: 1.325)  
*INVITED Methods Article*
36. \***S. P. Zustiak**, R. Nossal, D. Sackett, “Multiwell stiffness assay for the study of cell responsiveness to cytotoxic drugs”, Biotechnology & Bioengineering, 2014, 111(2), 396-403; (IF:4.481)
37. **S. P. Zustiak**, S. Pubill, A. Ribeiro, \*J. B. Leach, “Hydrolytically degradable poly(ethylene glycol) hydrogel scaffolds as a cell delivery vehicle: characterization of PC12 cell response”, Biotechnology Progress, 2013, 29(5), 1255-1264; (IF: 1.947)
38. **S. P. Zustiak**, Y. Wei, \*J. B. Leach, “Protein-hydrogel interactions in tissue engineering: mechanisms and applications”, Tissue Engineering Part B: Reviews, 2013, 19(2), 160-171; (IF: 6.512)

*Feature Article in Tissue Engineering Part B: Reviews April 2013 Issue.*

*Top-read Article in Tissue Engineering, April 2014*

39. **\*S. P. Zustiak**, J. Riley, H. Boukari, H. A. Gandjbakhche, R. Nossal, “Effects of Multiple Scattering on Fluorescence Correlation Spectroscopy Measurements of Particles Moving within Optically Dense Media”, Journal of Biomedical Optics, 2012, 17(12), 125004-125004; (IF: 2.859)
40. **S. P. Zustiak**, R. Nossal, \*D. Sackett, “Hindered Diffusion in Polymeric Solutions Studied by Fluorescence Correlation Spectroscopy”, Biophysical Journal, 2011, 101, 255-264; (IF: 3.632)
41. **S. P. Zustiak**, \*J. B. Leach, “Characterization of Protein Release from Hydrolytically Degradable Poly(ethylene glycol) Hydrogels”, Biotechnology & Bioengineering, 2011, 108, 197-206; (IF: 4.481)
42. **S. P. Zustiak**, \*J. B. Leach, “Hydrolytically Degradable Poly(ethylene glycol) Hydrogel Scaffolds with Tunable Degradation and Mechanical Properties”, Biomacromolecules, 2010, 11, 1348-1357; (IF: 5.246)
43. **S. P. Zustiak**, H. Boukari, \*J. B. Leach, “Solute Diffusion and Interactions in Cross-linked Poly(ethylene glycol) Hydrogels Studied by Fluorescence Correlation Spectroscopy”, Soft Matter, 2010, 6, 3609-3618; (IF: 3.889)
44. **S. P. Zustiak**, R. Durbal, \*J. B. Leach, “Influence of Cell-adhesive Peptide Ligands on Poly(ethylene glycol) Hydrogel Physical, Mechanical and Transport Properties”, Acta Biomaterialia, 2010, 6, 3404-3414; (IF: 6.319)
45. **S. Petrova**, Y. Kostov, K. Jeffris, \*G. Rao, “Optical Ratiometric Sensor for Alcohol Measurements”, Analytical Letters, 2007, 40(3), 715-727; (IF: 1.200)
46. A. Pandelova, **S. Petrova**, \*A. Neykov, “Experimental Research of a Hybrid Biosensor for Ecological Purposes”, Biotechnology & Biotechnological Equipment, 2003, 17(1), 187-193

**Book Chapters**

1. **\*S. P. Zustiak**, #S. Sheth, #M. Imaninezhad, “Chapter 12: Pharmacological therapies and factors delivery for spinal cord injury (SCI) regeneration”, Spinal Cord Injury Repair Strategies: A Window on Regenerative Medicine Multidisciplinary Approaches, Editor-in-chief Profs. Giuseppe Perale and Filippo Rossi, Woodhead Publishers - Elsevier, New Jersey, 2019
2. #M. Imaninezhad, #E. Jain, **\*S. P. Zustiak**, “Cell microencapsulation in polyethylene glycol hydrogel microspheres using electrohydrodynamic spraying”, Organoids: Stem Cells, Structure and Function, Springer: Methods in Molecular Biology, Editor-in-chief: Kursan Turksen, 2017
3. **\*S. P. Zustiak**, “Chapter 7. Tailoring Hydrogel Adhesiveness to Cells, Proteins, and Bacteria”, Volume 1: Fundamentals of Hydrogels, World Scientific Publishing Company, Editor-in-chief Profs. Ali Khademhosseini and Utkan Demirci, World Scientific Publishing Co., New Jersey, 2016
4. **\*S. P. Zustiak**, “17. Hydrolytically degradable polyethylene glycol (PEG) hydrogel: synthesis, gel formation, and characterization”, Neuromethods: Extracellular Matrix, Humana Press, Editor-in-chief Prof. Jennie B Leach and M Elizabeth Powell, Springer Science and Business Media, New York, 2015

**Under review**

1. #K. Vogt, L. Aryan, #S. Stealey, \*A. Hall, **\*SP Zustiak**, “Microfluidic Fabrication of Imageable and Resorbable Polyethylene Glycol Microspheres for Catheter Embolization”, submitted to JBMRA (IF: 3.525)
2. #J. Bruns, **\*S. P. Zustiak**, “Hydrogel-based spheroid models of glioblastoma for drug screening applications”, submitted to Missouri Medicine, July/August 2021 Issue (IF: 0.35)  
*INVITED for Theme Issue on “SLU Henry and Amelia Nasrallah Center for Neuroscience”*
3. #L. Hill, #J. Bruns, **\*S. P. Zustiak**, “Hydrogel matrix presence and composition influences drug responses of encapsulated glioblastoma spheroids”, in revision for Acta Biomaterialia (IF: 7.242)  
*INVITED for Special Issue on “Biomaterials for Personalized Disease Models”*
4. #S. Stealey, A. Gaharwar, N. Pozzi, **\*S. P. Zustiak**, “Development of Nanosilicate-Hydrogel Composites for Sustained Delivery of Charged Biopharmaceuticals”, in revision for ACS Materials & Interfaces (IF: 8.758)

### ***Conference proceedings***

1. #E. Jain, #S. Sheth, S. Patel, M. Flanagan, Q. Gan, S. A. Sell, A. M. Montano, \***S. P. Zustiak**, “Injectable microgels development for sustained GALNS enzyme replacement therapy for Morquio syndrome type A”, Molecular Genetics and Metabolism, 2017, 120(1-2), S70; (IF: 3.769)
2. #M. Imaninezhad, \*I. Kuljanishvili, \***S. P. Zustiak**, “A novel method for transferring aligned single-walled carbon nanotubes on a hydrogel for nerve regeneration applications”, (*full paper*), AICHE Symposia Proceedings, Annual Fall Meeting, Salt Lake City, UT, November 2015
3. P. Donovan, #Y. Chehrehghanianzabi, \*M. Rathinam, \***S. P. Zustiak**, “Experimental and Theoretical Approaches to the Study of Probe Diffusion in Macromolecular Solutions”, Biophysical Journal, 2015, 108(2), 159a; (IF: 3.972)
4. K. Ramamoorthi, #Y. Chehrehghanianzabi, \***S. P. Zustiak**, \*P. Asuri, “Role of 3D matrix stiffness and matrix adhesions in regulating the response of human cancer cells to cytotoxic compounds”, AICHE Symposia Proceedings, (*full paper*), Annual Fall Meeting, Atlanta, GA, October 2014
5. \***S. P. Zustiak**, #D. Ferguson, R. Nossal, D. Sackett, “High-throughput stiffness assay for the study of cancer cell susceptibility to anti-cancer drugs”, AICHE Symposia Proceedings, (*full paper*), 2012 Annual Fall Meeting, Pittsburg, PA, October 2012
6. **S. P. Zustiak**, R. Nossal, \*D. Sackett, “Diffusion and binding of RNase A in dextran polymeric solutions studied by fluorescence correlation spectroscopy”, Biophysical Journal, 2011, 100(3), 309a; (IF: 3.972)
7. **S. Petrova**, \*J. B. Leach, “Development of a novel hydrolytically degradable PEG hydrogel with tunable degradability and protein release”, MRS Symposia Proceedings, 2008 Annual Fall Meeting, Boston, MA, December 2008

### **INTELLECTUAL PROPERTY FILINGS**

1. Provisional patent: **S. P. Zustiak**, “Biocompatible crosslinkers for controlled degradation of polymer hydrogels”, U.S. Patent Application Serial No. 62/990,761, July 2020
2. Patent: E. Jain, K. Scott, S. Sheth, \***S. P. Zustiak**, \*S. A. Sell “Fabrication of hydrogel microsphere delivery vehicles through electrospraying and timed gelation”, US 9,968,558 5-15-18
3. Patent: A. Montano, E. Jain, **S. P. Zustiak**, “Delivering enzyme using an injectable hydrogel depot”, US20190127726A1
4. Patent: N. Ahmed, \***S. P. Zustiak**, “Custom multiwell plate design for rapid assembly of photo-patterned hydrogels”, US10725382B2
5. Provisional patent: \***S. P. Zustiak**, M. Imaninezhad, I. Kuljanishvili, “A novel method of transferring single-walled carbon nanotubes on a hydrogel”, U.S. Patent Application Serial No. 62/281,468; SLU Ref No: 15-032, January 2016
6. Provisional patent: Y. Kostov, **S. Petrova**, G Rao, “Optical Alcohol Sensor”, Provisional Application 60/720, 444. UMBC Ref. No. 2482YK, September 2005

### **INVITED SEMINARS / GUEST LECTURES / WORKSHOP INSTRUCTOR**

1. **SP Zustiak**, “Hydrogels for drug screening and protein delivery applications”, Seminar, Department of Chemical Engineering, Howard University, Washington, DC, March 15, 2021
2. **SP Zustiak**, “Hydrogels for drug screening and protein delivery applications”, Seminar, Department of Chemical Engineering, Michigan Technological University, Houghton, MI, October 2, 2020
3. **SP Zustiak**, “Hydrogels for drug screening and protein delivery applications: focus on glioblastoma”, Seminar, Guy Genin’s Research Group, Department of Mechanical Engineering and Material’s Science, Washington University, St Louis, MO, January 22, 2020
4. **SP Zustiak**, “Hydrogels for drug screening and protein delivery applications: focus on glioblastoma”, Seminar, Neurosurgery Grand Rounds, Saint Louis University School of Medicine, St Louis, MO, November 6, 2019

5. **SP Zustiak**, “Hydrogels for drug screening and protein delivery applications”, Seminar, Michael Holtzman’s Research Group, Department of Medicine, Washington University, St Louis, MO, May 7, 2019
6. **SP Zustiak**, “Hydrogels for drug screening and protein delivery applications”, Seminar, Department of Chemical and Petroleum Engineering, University of Kansas, Lawrence, KS, April 8, 2019
7. **SP Zustiak**, “Hydrogels for drug screening and protein delivery applications”, Seminar, Department of Biomedical Engineering, the Institute for Materials Science and Engineering, and the NSF Center for Engineering MechanoBiology at Washington University in St Louis, MO, March 18, 2019
8. **SP Zustiak**, “Hydrogel cell scaffolds as in vitro models for drug screening applications”, Seminar, Department of Biochemistry and Molecular Biology, SLU, St Louis, MO, December 3, 2018
9. **SP Zustiak**, “Biomaterial-based in vitro models for drug screening applications”, Seminar, Department of Chemical and Biochemical Engineering, UMBC, Baltimore, MD, March 12, 2018
10. **SP Zustiak**, “Hydrogels for tissue engineering and drug screening applications”, Seminar, Department of Biomedical Engineering, University of Miami, Miami, FL, December 13, 2017
11. **SP Zustiak**, “Hydrogels for tissue engineering and drug screening applications”, Seminar, Department of Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL, September 12, 2017
12. **SP Zustiak**, “Hydrolytically degradable PEG hydrogels for biologics delivery”, Seminar, Department of Chemistry, Saint Louis University, St Louis, MO, September 8, 2017
13. **SP Zustiak**, “Hydrogels for tissue engineering and drug screening applications”, Seminar, Lori Setton’s Research Group, Department of Biomedical Engineering, Washington University, St Louis, MO, June 6, 2017
14. **SP Zustiak**, “In-vitro hydrogel-based multicellular spheroid models”, Seminar, Summer BME Seminar Series, Department of Biomedical Engineering, St. Louis University, St. Louis, MO, June 23, 2016
15. **SP Zustiak**, “Principles of Fluorescence Correlation Spectroscopy, Fluorescence Cross-Correlation Spectroscopy, and Photon Counting Histogram”, Workshop Instructor, “Principles of Fluorescence Techniques Workshop”, Urbana-Champaign, IL, April 4-7, 2016
16. **SP Zustiak**, “Hydrogel Biomaterials for Soft Tissue Engineering Applications”, Seminar, Center for World Health and Medicine, Edward A. Doisy Research Center, Saint Louis University, St Louis, MO, March 10, 2016
17. **SP Zustiak**, “Hydrogels for drug screening and drug delivery applications”, Seminar, Department of Chemical Engineering, Howard University, Washington DC, June 24, 2015
18. **SP Zustiak**, “Hydrogels for drug screening and drug delivery applications”, Seminar, Sigma Aldrich, St Louis, MO, May 12, 2015
19. **SP Zustiak**, “Fluorescence Correlation Spectroscopy for the study of diffusion in hydrogel solutions and networks: implications in drug discovery and drug delivery”, Seminar, Department of Chemistry, SLU, St Louis, MO, October 31, 2014
20. **SP Zustiak**, “Hydrogels for drug screening and drug delivery applications”, Seminar, Department of Chemical and Biochemical Engineering, MST, Rolla, MO, October 8, 2014
21. **SP Zustiak**, “The role of cell-matrix interactions on drug screening: towards building predictive drug screening platforms”, Seminar, Department of Pharmaceutical Sciences, SIUE, Edwardsville, IL, February 2014
22. **SP Zustiak**, “Diffusion in complex environments studied by Fluorescence Correlation Spectroscopy”, Seminar, invited by Elliot Elson, Department of Biochemistry and Molecular Biophysics, Washington University, School of Medicine, St Louis, MO, February 2013
23. **SP Zustiak**, “Hydrogels”, Guest Lecture for “Animal and Human Tissue Culture” Bio-Trac course, FAES, NIH, Bethesda, MD, May 2012
24. **SP Zustiak**, “Poly(ethylene glycol) Hydrogel as a Tunable Scaffold for Neural Tissue Engineering”, Soft Matter Seminar, Department of Physics, Georgetown University, Washington, DC, April 2011



25. **SP Zustiak**, JB Leach, “Hydrolytically Degradable Poly(ethylene glycol) Hydrogel as a Tunable Scaffold for Neural Tissue Engineering”, Program in Physical Biology Seminar Series, NIH, Bethesda, MD, December 2010
26. **S Petrova**, “Why chemical engineering”, National Society of Black Engineers Meeting, UMBC, December 2005

**Annual guest lecture: SP Zustiak**, “Hydrogel biomaterials for tissue engineering and drug screening applications”, Guest Lecture, BME 1000: Introduction to Biomedical Engineering class, Department of Biomedical Engineering, SLU, St. Louis, MO, October, 2013-18

## MEDIA APPEARANCES / INTERVIEWS

Interviewed for Research Institute Video, September 2020

Featured in SOM alumni Grand Rounds Magazine, Fall 2020 issue at <https://www.slu.edu/medicine/grand-rounds/index.php>

Alumna Mozhdah Imaninezhad interviewed and featured in the Parks Graduate Summer 2020 Newsletter

Interviewed for SLU Research Video about Drug Discovery, March 2019

## PRESENTATIONS AT SCIENTIFIC MEETINGS

*#Designates presenting author*

*\*Designates corresponding author*

### *Oral Presentations from SLU*

1. \*,**SP Zustiak**, “Hydrogel-based multicellular spheroid models of glioblastoma for drug screening applications”, Ozark Biomedical Initiative Future of Cancer Care Summit, Virtual, November 14, 2020
2. #J Bruns, S McBride-Gagyi, **\*SP Zustiak**, “Injectable Cell-Adhesive Polyethylene Glycol Cryogel Scaffolds”, World Biomaterials Congress, Glasgow, Scotland, May 19-24, 2020
3. #,**SP Zustiak**, “Hydrogels for drug screening and protein delivery applications: focus on glioblastoma”, (Oral), Cancer Group Mini Symposium, SLU, St Louis, MO, January 24, 2019

### *Invited oral presentation*

4. #PU Joshi, M Schroder, B Jones, S Kroger, S Kriz, M Weiss, G Escalante-Corbin, **SP Zustiak**, \*CL Heldt, “Optimization Opportunities of Virus Purification in Different Modes of Aqueous Two-Phase System”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Orlando, FL, November 2019
5. #,**SP Zustiak**, M Imaninezhad, K Pemberton, F Xu, K Kalinowski, “Directed and enhanced neurite outgrowth following exogenous electrical stimulation on carbon nanotube-hydrogel composites”, (Oral), Annual Technical Meeting of the Society of Engineering Science (SES), St Louis, MO, October 13-15, 2019

### *KEYNOTE speaker*

6. #J Bruns, S McBride-Gagyi, **\*SP Zustiak**, “Injectable Cell-Adhesive Polyethylene Glycol Cryogel Scaffolds”, (Oral), Annual Technical Meeting of the Society of Engineering Science (SES), St Louis, MO, October 13-15, 2019
7. #L Hill, M Imaninezhad, G Kolar, K Vogt, **\*SP Zustiak**, “Hydrogel-based in vitro Glioblastoma Spheroid Models”, (Oral), Annual Technical Meeting of the Society of Engineering Science (SES), St Louis, MO, October 13-15, 2019
8. S Syed, A Blanco, #J Schober, **\*SP Zustiak**, “Morphological Adaptations in Breast Cancer Cells as a Function of Prolonged Passaging on Compliant Substrates”, (Oral), Annual Technical Meeting of the Society of Engineering Science (SES), St Louis, MO, October 13-15, 2019
9. #L Hill, M Imaninezhad, J Ortlund, J Conley, **\*SP Zustiak**, “Hydrogel-based in vitro Glioblastoma Spheroid Models”, (Oral), Society for Biomaterials (SfB) Annual Meeting, Seattle, WA, April 2019

10. #L Aryan, K Vogt, \*A Hall, \***SP Zustiak**, “Resorbable Radiopaque Microspheres for Catheter Embolization using Microfluidics”, (Oral), Institute for Biological Engineering (IBE), Annual Meeting, St Louis, MO, April 2019
11. #S Stealey, C Wall, S Sheth, N Pozzi, \***SP Zustiak**, \*N Case, “Exploration of extracellular macromolecular crowding effects on protein diffusion and interactions via Fluorescence Correlation Spectroscopy”, (Oral), Institute for Biological Engineering (IBE), Annual Meeting, St Louis, MO, April 2019
12. #K Vogt, M Imaninezhad, D Vasileva, M McQuilling, \***SP Zustiak**, “A Simple Microfluidic Device for the Production of Monodisperse Hydrogel Microspheres”, (Oral), Institute for Biological Engineering (IBE), Annual Meeting, St Louis, MO, April 2019
13. #M Choi, A Blanco, X Duan, N Case, S Sell, M Farooq Rai, \***SP Zustiak**, “Fabrication and characterizations of hydrogel microspheres for sustained delivery of platelet-rich plasma for the treatment of osteoarthritis”, (Oral), Institute for Biological Engineering (IBE), Annual Meeting, St Louis, MO, April 2019
14. M Imaninezhad, L Hill, #J Conley, J Ortlund, \***SP Zustiak**, “Templated Macroporous Polyethylene Glycol Hydrogels for Spheroid and Aggregate Cell Culture”, (Oral), Institute for Biological Engineering (IBE), Annual Meeting, St Louis, MO, April 2019
15. #N Schaper, B Hutchinson, \***SP Zustiak**, \*I Kuljanishvili, “Designing new nano-bio-composite materials using CNTs and ZnO hybrid interfaces and hydrogel environments for biomedical applications”, (Oral), Institute for Biological Engineering (IBE), Annual Meeting, St Louis, MO, April 2019
16. #B Hutchinson, M Imaninezhad, F Xu, I Kuljanishvili, \***SP Zustiak**, “Carbon-nanotube-polyethylene glycol nanocomposite biomaterials as neural substrates”, (Oral), Institute for Biological Engineering (IBE), Annual Meeting, St Louis, MO, April 2019
17. #,\*S McBride-Gagy, J Peters, **SP Zustiak**, A Hall, “MicroCT Vascular Network Analysis Program: Validation and Comparison to Manufacturer Software”, (Oral), Orthopaedic Research Society Annual Meeting, Austin, TX, February 2019
18. #M Choi, A Blanco, E Jain, S Sheth, S Sell, \***SP Zustiak**, “Injectable Microspheres for Sustained Release of Platelet-Rich Plasma to Treat Osteoarthritis”, (Oral), Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, October 2018
19. #N Ziemkiewicz, M Talovic, L Hill, R Scheidt, J Madsen, A Patel, G Haas, M Marcinczyk, **SP Zustiak**, \*K. Garg, “PEGylated laminin hydrogels for skeletal muscle regeneration”, (Oral), Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, October 2018
20. #A Blanco, E Jain, N Chinzei, N Case, S Sell, MF Rai, \***SP Zustiak**, “Sustained-Release Platelet-Rich Plasma from Polyethylene Glycol Hydrogels Exerts Beneficial Effects on Chondrocytes”, (Oral) , Wound Healing Symposium, St Louis, MO, May 2018
21. #S Sheth, SH Huang, #E Jain, X Jiang, \*L Yang, \***SP Zustiak**, “Whispering Gallery Mode Resonator Sensor for in situ Measurements of Hydrogel Gelation”, (Oral), Graduate Student Association Research Symposium, St Louis, MO, April 27, 2018
22. #M Imaninezhad, G Kolar, \***SP Zustiak**, “Fabrication of Polyethylene Glycol-Based Templated Macroporous Hydrogels for Cell Encapsulation”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Minneapolis, MN, October 2017
23. E Jain, S Sheth, N Chinzei, N Case, LJ Sandell, SA Scott, MF Rai, #,\***SP Zustiak**, “PEG Hydrogels with Tunable Biodegradation Rate for Sustained Delivery of Platelet-Rich Plasma for Treatment of Osteoarthritis”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Minneapolis, MN, October 2017
24. AS Qayyum, E Jain, G Kolar, SA Sell, #,\***SP Zustiak**, “Design of electrohydrodynamic sprayed polyethylene glycol hydrogel microspheres for cell encapsulation”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Minneapolis, MN, October 2017

25. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, "A Two-Step Method for Transferring Single Wall Carbon Nanotubes Onto a Hydrogel Substrate", (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Minneapolis, MN, October 2017  
*Abstract selected for an oral presentation at the Graduate Student Award Session*
26. AS Qayyum, E Jain, G Kolar, SA Sell, #\***SP Zustiak**, "Design of electrohydrodynamic sprayed polyethylene glycol hydrogel microspheres for cell encapsulation", (Oral), Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ, October 2017
27. E Jain, S Sheth, N Chinzei, N Case, LJ Sandell, SA Scott, MF Rai, #\***SP Zustiak**, "PEG Hydrogels with Tunable Biodegradation Rate for Sustained Delivery of Platelet-Rich Plasma for Treatment of Osteoarthritis", (Oral), Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ, October 2017
28. #M Imaninezhad, G Kolar, \***SP Zustiak**, "Fabrication of Polyethylene Glycol-Based Templated Macroporous Hydrogels for Cell Encapsulation", (Oral), Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ, October 2017
29. #M Imaninezhad, K Kalinowski, R Bera, \***SP Zustiak**, "A custom device for electrical stimulation of hydrogel-encapsulated nerve cells: effect of hydrogel stiffness and conductivity", (Oral), Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ, October 2017
30. #E Jain, Y Chehreghanianzabi, S Patel, M Flanagan, Qi Gan, S Sell, A Montano, \***SP Zustiak**, "Development of GALNS enzyme replacement therapy based on injectable microgels", (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, CA, November, 2016
31. #E Jain, S Sheth, K Polito, A Dunn, S Sell, \***SP Zustiak**, "Temporally Controlled Release of Platelet-Rich Plasma from PEG Microgels with Tunable Biodegradation", (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, CA, November, 2016
32. #\***JG Bledsoe**, **SP Zustiak**, "Encouraging curiosity, connections and the creation of value in a materials/biomaterials sequence: part 1: Materials Science", (Oral), Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, October 2016
33. #E Jain, S Sheth, K Polito, E Canning, K Scott, S Sell, \***SP Zustiak**, "Temporally Controlled Release of Platelet-Rich Plasma from Biodegradable PEG Microgels", (Oral), Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, October 2016
34. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, "Stamping aligned single-walled carbon nanotubes on a PEG hydrogel for neural regeneration", (Oral), Graduate Student Association Symposium, SLU, St Louis, MO, April 2016
35. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, "Stamping aligned single-walled carbon nanotubes on a PEG hydrogel for neural regeneration", (Oral), Midwest Regenerative Medicine Meeting, Monticello, IL, April 2016
36. #\***SP Zustiak**, SEM Abadi, G Kwon, "An injectable hydrogel for islet encapsulation to treat streptozotocin-induced diabetes in mice", (Oral), Midwest Regenerative Medicine Meeting, Monticello, IL, April 2016  
*Invited oral presentation*
37. #E Jain, Y Chehreghanianzabi, M Flanagan, S Sell, A Montano, \***SP Zustiak**, "Development of GALNS enzyme replacement therapy based on injectable microgels", (Oral), Midwest Regenerative Medicine Meeting, Monticello, IL, April 2016
38. #E Jain, S Sheth, K Polito, KM Scott, E Canning, SA Sell, \***SP Zustiak**, "Injectable Polyethylene Glycol Microgels for Platelet Rich Plasma Delivery for Treatment of Knee Osteoarthritis", (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City, UT, November, 2015
39. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, "A Novel Method of Transferring Aligned Single-Walled Carbon Nanotubes on a Hydrogel for Nerve Regeneration Applications", (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City, UT, November, 2015

40. A Ashraf, S Tilson, A Branyi, Y Kim, #\***SP Zustiak**, “In-Vitro Hydrogel-based Multicellular Cancer Spheroid Models”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City, UT, November, 2015
41. Y Chehreghanianzabi, P Donovan, M Rathinam, #\***SP Zustiak**, “Homogenization Theory For The Prediction Of Solute Diffusion In Macromolecular Solutions”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City, UT, November, 2015
42. #E Jain, K Scott, S Sheth, S Sell, \***SP Zustiak**, “Injectable and hydrophilic nanoporous microgels with tunable degradation and controlled delivery of platelet derived growth factors”, (Oral), St. Louis Institute of Nanoscience and Nanomedicine (SLINN), St Louis, MO, November 2014
43. K Ramamoorthi, W Clifton, #\***SP Zustiak**, P Asuri, “Role of matrix stiffness in regulating response of human cancer cells to cytotoxic compounds”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Atlanta, GA, November, 2014
44. #\***SP Zustiak**, K Kalinowski, J Schober, K Ramamoorthi, P Asuri, “Substrate Stiffness Affects Cell Responsiveness to Cytotoxic Compounds”, (Oral), Society for Biomaterials (SfB) Annual Meeting, Denver, CO, April 2014
45. #\***SP Zustiak**, “Substrate stiffness affects cancer cell responsiveness to cytotoxic drugs”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, CA, November, 2013

#### ***Poster Presentations from SLU***

1. FZ Tegou, D Velluto, FG Badillo, A Bayer, **SP Zustiak**, \*A Tomei, “Immunoengineered CCL21 and Beta Cell Antigen Hydrogel Platform to Induce Tolerance in Type 1 Diabetes”, Society for Biomaterials Annual Meeting, April 21-24, 2021, Chicago, IL
2. E Ferchichi, S Syed, J Schober, \***SP Zustiak**, “Mechanical cell adaptation and memory on compliant substrates”, (lighting talk), CEMB Mechanobiology Symposium, January 28, 2021, Virtual
3. J Bruns, L Hill, \***SP Zustiak**, “Hydrogel-based in vitro Glioblastoma Spheroid Models”, Henry and Amelia Nasrallah Center for Neuroscience Neuroday Symposium, November 1, 2020, St Louis, MO
4. #S Stealey, AK Gaharwar, N Pozzi, \***SP Zustiak**, “Nanosilicate Hydrogel Composites for Sustained Protein Delivery: Effect of Buffer and Protein Charge”, Henry and Amelia Nasrallah Center for Neuroscience Neuroday Symposium, November 1, 2020, St Louis, MO
5. J Bruns, L Hill, \***SP Zustiak**, “Hydrogel-based in vitro Glioblastoma Spheroid Models”, Biomedical Engineering Society 2020 Annual Meeting, October 14-17, 2020, San Diego, CA
6. #S Stealey, AK Gaharwar, N Pozzi, \***SP Zustiak**, “Nanosilicate Hydrogel Composites for Sustained Protein Delivery: Effect of Buffer and Protein Charge”, Biomedical Engineering Society 2020 Annual Meeting, October 14-17, 2020, San Diego, CA
7. #J Bruns, L Hill, \***SP Zustiak**, “Hydrogel-based in vitro Glioblastoma Spheroid Models”, World Biomaterials Congress, Glasgow, Scotland, May 19-24, 2020
8. B Hyatt, \*M Rathinam, #S Sheth, **SP Zustiak**, “A Reaction-Diffusion PDE Model for Predicting Solute Release”, Annual Undergraduate Research and Creative Achievement Day, UMBC, Baltimore, MD, April 22-29 2020
9. J Krebs, S Stealey, **SP Zustiak**, \*N Case, “Development of a Carrageenan-based Hydrogel Confinement Approach to Enhance In Vitro Collagen Deposition”, Regenerative Medicine Workshop, Charleston, SC, March 2020
10. N Schaper, #B Hutchinson, **SP Zustiak**, \*I Kuljanishvili, “Designing nano-biocomposite materials using CVD grown CNTs and ZnO nanostructures for hybrid interfaces and hydrogel environments with future biomedical applications”, APS Physics Meeting, Denver, CO, March, 2020
11. #S Ruesing, \***SP Zustiak**, “Impact of Hydrogel Confinement on Protein Structure for Sustained Drug Delivery”, First Annual Schmidt STEM and Healthcare Research Conference, St. Louis, MO, November 15, 2019

12. #S Stealey, \***SP Zustiak**, “Sustained Protein Release from Laponite Nanocomposite Hydrogels”, Henry and Amelia Nasrallah Center for Neuroscience Research Symposium, St Louis, MO, November 1, 2019
13. #B Hutchinson, M Imaninezhad, N Schaper, F Xu, I Kuljanishvili, \***SP Zustiak**, “Carbon nanotube-polyethylene glycol nanocomposite biomaterials as neural substrates”, Henry and Amelia Nasrallah Center for Neuroscience Research Symposium, St Louis, MO, November 1, 2019
14. #A Clancy, D Chen, L Hill, A Timperman, \***SP Zustiak**, “Biomaterial-based microfluidic platform as in vitro drug screening platforms”, Henry and Amelia Nasrallah Center for Neuroscience Research Symposium, St Louis, MO, November 1, 2019
15. S Kroger, L Hill, E Jain, P Bracher, #\***SP Zustiak**, “Design of Biocompatible Crosslinkers for Tuning the Degradation of Poly(ethylene Glycol) Hydrogels”, (Poster), Annual Technical Meeting of the Society of Engineering Science (SES), St Louis, MO, October 13-15, 2019
16. #A Clancy, #L Hill, D Chen, N Xia, A Timperman, \***SP Zustiak**, “Biomaterial-based microfluidic platform for drug screening applications”, (Poster), Annual Technical Meeting of the Society of Engineering Science (SES), St Louis, MO, October 13-15, 2019  
*Best Poster Award*
17. #S Sheth, E Barnard, Ben Hyatt, M Rathinam, \***SP Zustiak**, “Predicting Drug Release from Degradable Hydrogels Using Fluorescence Correlation Spectroscopy”, (Poster), Biomedical Engineering Society BMES Annual Meeting, Philadelphia, PA, October 16-19, 2019
18. S Kroger, L Hill, E Jain, P Bracher, #\***SP Zustiak**, “Design of Biocompatible Crosslinkers for Tuning Hydrolytic Degradation of Polyethylene Glycol Hydrogels”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, October 16-19, 2019
19. M Imaninezhad, L Hill, K Vogt, J Conley, J Ortlund, #\***SP Zustiak**, “Hydrogel-based In Vitro Glioblastoma Spheroid Models”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, October 16-19, 2019
20. K Vogt, #L Aryan, R Ray, \*AF Hall, \***SP Zustiak**, “Fabrication of Radiopaque Resorbable Hydrogel Beads via Microfluidics for Catheter Embolization Applications”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, October 16-19, 2019
21. #MH Choi, A Blanco, E Jain, S Sheth, S Sell, and \***SP Zustiak**, “Injectable Microspheres for Sustained Release of Platelet-Rich Plasma to Treat Osteoarthritis”, (Poster), Wound Healing Symposium, St. Louis, MO, May 1, 2019
22. #A Blanco, #E Jain, N Chinzei, N Case, SA Sell, MF Rai, \***SP Zustiak**, “Sustained-released platelet-rich plasma from polyethylene glycol hydrogels exerts beneficial effects on chondrocytes”, (Poster), Wound Healing Symposium, St. Louis, MO, May 1, 2019
23. #J Bruns, S McBride-Gagy, \***SP Zustiak**, “Injectable and Cell-Adhesive Polyethylene Glycol Cryogel Scaffolds: Independent Control of Cryogel Microstructure and Composition”, (Poster), Sigma Xi Research Symposium, St. Louis, MO, May 7, 2019
24. #A Clancy, #L Hill, A Timperman, \***SP Zustiak**, “Biomaterial-based microfluidic platform as an in vitro glioblastoma disease model for drug screening applications”, (Poster), Sigma Xi Research Symposium, St. Louis, MO, May 7, 2019
25. #B Hutchinson, #M Imaninezhad, F Xu, I Kuljanishvili, \***SP Zustiak**, “Carbon-nanotube-polyethylene glycol nanocomposite biomaterials as neural substrates”, (Poster), Sigma Xi Research Symposium, St. Louis, MO, May 7th, 2019
26. #B Hutchinson, #M Imaninezhad, F Xu, I Kuljanishvili, \***SP Zustiak**, “Carbon-nanotube-polyethylene glycol nanocomposite biomaterials as neural substrates”, (Poster), Graduate Student Association Research Symposium, St Louis, MO, April 27, 2019
27. #S Kroger, #L Hill, #E Jain, \***SP Zustiak**, “Modulating the Chemical Structure of Crosslinkers to Control Degradation of Poly(ethylene Glycol) Hydrogels”, (Poster), Graduate Student Association Research Symposium, St Louis, MO, April 27, 2019

28. #A Blanco, #E Jain, N Chinzei, N Case, SA Sell, MF Rai, \***SP Zustiak**, “Sustained-released platelet-rich plasma from polyethylene glycol hydrogels exerts beneficial effects on chondrocytes”, (Poster), Society for Biomaterials (SfB) Annual Meeting, Seattle, WA, April 2019
29. #S Kroger, #L Hill, \***SP Zustiak**, “Design of Biocompatible Crosslinkers for Tuning Hydrolytic Degradation of Polyethylene Glycol Hydrogels”, (Poster), Society for Biomaterials (SfB) Annual Meeting, Seattle, WA, April 2019  
*Selected for a Rapid Fire Oral Presentation*
30. #S Sheth, E Barnard, M Rathinam, \***SP Zustiak**, “Fluorescence Correlation Spectroscopy for the Measurement and Prediction of Drug Release from Degradable Hydrogels”, (Poster), Society for Biomaterials (SfB) Annual Meeting, Seattle, WA, April 2019
31. #S Syed, #A Blanco, J Schober, \***SP Zustiak**, “Morphological Adaptations in Breast Cancer Cells as a Function of Prolonged Passaging on Compliant Substrates”, (Poster), Society for Biomaterials (SfB) Annual Meeting, Seattle, WA, April 2019  
*Engineering Cells and Their Microenvironments (ECTM) SIG poster award*
32. #M Choi, #A Blanco, X Duan, N Case, S Sell, M Farooq Rai, \***SP Zustiak**, “Fabrication and characterizations of hydrogel microspheres for sustained delivery of platelet-rich plasma for the treatment of osteoarthritis”, (Poster), Musculoskeletal Research Center Winter Symposium, St Louis, MO, February 2019
33. L Vest, J Peters, **SP Zustiak**, A Hall, S McBride-Gagy, “MicroCT Vascular Network Analysis Program: Validation and Comparison to Manufacturer Software”, (Poster), Musculoskeletal Research Center Winter Symposium, St Louis, MO, February 2019
34. #S Sheth, #E Jain, K Polito, \*S Sell, \***SP Zustiak**, “Storage Stability of Biodegradable Polyethylene Glycol Microspheres”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, October 2018
35. #S Sheth, SH Huang, #E Jain, X Jiang, \*L Yang, \***SP Zustiak**, “Whispering gallery mode resonator sensor for in situ measurements of hydrogel gelation”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, October 2018
36. #L Hill, #S Syed #J Ortlund, \***SP Zustiak**, “Hydrogel-based in vitro Glioblastoma Spheroid Models”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, October 2018
37. #S Kroger, #L Hill, #A Stock #E Jain, \***SP Zustiak**, “Design of Biocompatible Crosslinkers for Tuning Hydrolytic Degradation of Polyethylene Glycol Hydrogels”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, October 2018
38. #A Blanco, #E Jain, N Chinzei, N Case, S Sell, MF Rai, \***SP Zustiak**, “Sustained-Release Platelet-Rich Plasma from Polyethylene Glycol Hydrogels Exerts Beneficial Effects on Chondrocytes”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, October 2018
39. #K Vogt, #M Imaninezhad, #D Vasileva, M McQuilling, \***SP Zustiak**, “A Simple Microfluidic Device for Production of Monodisperse Hydrogel Microspheres”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, October 2018
40. #M Imaninezhad, G Kolar, \***SP Zustiak**, “Templated Polyethylene Glycol Hydrogels for Spheroid Cell Culture”, (Poster), Gordon Research Conference: STEEM, Andover, NH, July 2018
41. #M Choi, #A Blanco, #E Jain, #S Sheth, S Sell, \***SP Zustiak**, “Injectable Microspheres for Sustained Release of Platelet-Rich Plasma to Treat Osteoarthritis”, (Poster), Wound Healing Symposium, St Louis, MO, May 2018
42. #L Hill, #A Qayyum, \***SP Zustiak**, “Hydrogel-based in vitro Glioblastoma Spheroid Models”, (Poster), Graduate Student Association Research Symposium, St Louis, MO, April 27, 2018  
*Best Poster Award, Third Place*

43. #H Choi, #A Blanco, #K Vogt, \*SP Zustiak, “Microgel fabrication device for delivery of platelet-rich-plasma to treat knee post-traumatic osteoarthritis”, (Poster), Graduate Student Association Research Symposium, St Louis, MO, April 27, 2018
44. #M Imaninezhad, K Kalinowski, R Bera, \*SP Zustiak, “A custom device for electrical stimulation of hydrogel-encapsulated nerve cells: effect of hydrogel stiffness and conductivity”, (Poster), American Institute of Chemical Engineers (AIChE) Annual Meeting, Minneapolis, MN, October 2017
45. #\*SP Zustiak, S Sell, G Gaudette, “A Template for Multi-Disciplinary Team-Based Problem Solving, Design, and Assessment: Application in Biomedical Engineering”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ, October 2017
46. #M Imaninezhad, I Kuljanishvili, \*SP Zustiak, "A Two-Step Method for Transferring Single Wall Carbon Nanotubes Onto a Hydrogel Substrate", (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ, October 2017
47. #S Sheth, E Jain, SA Sell, \*SP Zustiak, “Tunable and biodegradable microgels for temporarily controlled delivery of platelet-rich plasma”, (Poster), ORS Midwest Musculoskeletal Workshop, St Louis, MO, July 2017
48. A Blanco, E Jain, N. Chinzei, N Case, LJ Sandell, SA Sell, MF Rai, #\*SP Zustiak, “Sustained-released platelet-rich plasma from polyethylene glycol hydrogels exerts beneficial effects on chondrocytes”, (Poster), ORS Midwest Musculoskeletal Workshop, St Louis, MO, July 2017
49. #S Sheth, E Jain, SA Sell, \*SP Zustiak, “Tunable and biodegradable microgels for temporarily controlled delivery of platelet-rich plasma”, (Poster), Musculoskeletal Regenerative Medicine and Biology Meeting, St Louis, MO, May 2017
50. #A Blanco, E Jain, N. Chinzei, N Case, LJ Sandell, SA Sell, MF Rai, \*SP Zustiak, “Sustained-released platelet-rich plasma from polyethylene glycol hydrogels exerts beneficial effects on chondrocytes”, (Poster), Musculoskeletal Regenerative Medicine and Biology Meeting, St Louis, MO, May 2017
51. #M Imaninezhad, G Kolar, \*SP Zustiak, “Fabrication of polyethylene glycol-based template macroporous hydrogels for cell encapsulation”, (Poster), Sigma Xi Symposium, SLU, St Louis, MO, April 2017
52. #E Buckles, #C Gloss, #K Vogt, D Vasileva, M Imaninezhad, \*SP Zustiak, “A microfluidic device for the production of small and uniform microspheres”, (Poster), Sigma Xi Symposium, SLU, St Louis, MO, April 2017
53. #D Vasileva, K Shah, \*SP Zustiak, “Development of carbon nanotube hydrogel composites”, (Poster), Sigma Xi Symposium, SLU, St Louis, MO, April 2017
54. #A Blanco, E Jain, N Case, MF Rai, SA Sell, \*SP Zustiak, “Effect of sustained-release platelet-rich plasma from polyethylene glycol hydrogels on chondrocytes”, (Poster), St Louis Area Undergraduate Research Symposium (STLAURS), St Louis, MO, April 2017  
*Outstanding Innovative Research Award*
55. #S Kroger, L Hill, E Jain, A Stock, \*SP Zustiak, “Design of biocompatible crosslinkers for tuning the degradation of polyethylene glycol hydrogels”, (Poster), St Louis Area Undergraduate Research Symposium (STLAURS), St Louis, MO, April 2017
56. #D Vasileva, K Shah, \*SP Zustiak, “Development of carbon nanotube hydrogel composites”, (Poster), St Louis Area Undergraduate Research Symposium (STLAURS), St Louis, MO, April 2017  
*Best Poster Award, Second Place*
57. #E Buckles, #C Gloss, #K Vogt, D Vasileva, M Imaninezhad, \*SP Zustiak, “A microfluidic device for the production of small and uniform microspheres”, (Poster), St Louis Area Undergraduate Research Symposium (STLAURS), St Louis, MO, April 2017
58. #J Bruns, \*SP Zustiak, “Injectable Cell-Adhesive Polyethylene Glycol Cryogel Scaffolds”, (Poster), Society for Biomaterials, Minneapolis, MN, April, 2017

59. #S Sheth, E Jain, S Sell, \***SP Zustiak**, “Tunable and Biodegradable PEG Microgels for Temporarily Controlled Delivery of Platelet-Rich Plasma”, (Poster), Society for Biomaterials, Minneapolis, MN, April, 2017
60. #S Syed, J Schober, \***SP Zustiak**, “Conditioning Cells to the Compliance of the Soft Underlying Substrate”, (Poster), Society for Biomaterials, Minneapolis, MN, April, 2017
61. #M Imaninezhad, G Kolar, \***SP Zustiak**, “Fabrication of Polyethylene Glycol-Based Templated Macroporous Hydrogels”, Society for Biomaterials, Minneapolis, MN, April 2017
62. #M Imaninezhad, \***SP Zustiak**, “Carbon Nanotubes-Hydrogel Composites for Neural Tissue Engineering Applications”, (Poster), Society for Biomaterials, Minneapolis, MN, April, 2017
63. #L Hill, #A Qayyum, \***SP Zusitak**, “Hydrogel-Based *in vitro* Glioblastoma Spheroid Model”, (Poster), Society for Biomaterials, Minneapolis, MN, April, 2017
64. E Jain, S Sheth, S Patel, M Flanagan, Q Gan, SA Sell, #,\* AM Montano, \***SP Zustiak**, “Injectable microgels development for sustained GALNS enzyme replacement therapy for Morquio syndrome type A”, 13<sup>th</sup> Annual WORLD Symposium, San Diego, CA, February 2017
65. #E Jain, S Sheth, SA Sell, \***SP Zustiak**, “Temporally Controlled Release of Platelet-Rich Plasma from PEG Microgels with Tunable Biodegradation Rate and Size”, (Poster, Faculty candidate), American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, CA, Nov 13-18, 2016
66. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, “A one-step method for transferring single wall carbon nanotubes onto a hydrogel substrate for biomedical applications”, (Poster), American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, CA, November, 2016
67. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, “Carbon Nanotubes-Hydrogel Composites for Neural Tissue Engineering Applications”, (Poster), Midwest BME Regional Conference, Urbana-Champaign, IL, November 4, 2016
68. #S Syed, J Schober, \***SP Zustiak**, “Conditioning of MDA-MB-231 Cells to Micro-Environmental Cues on Soft Polyacrylamide Gels”, (Poster), Midwest BMES Regional Conference, Urbana-Champaign, IL, November 2016
69. #S Sheth, E Jain, K Polito, S Sell, \***SP Zustiak**, "Storage Stability of Biodegradable Polyethylene Glycol Microspheres", (Poster), Midwest Regional Biomedical Engineering Conference, University of Illinois, Urbana-Champaign, IL, November, 2016
70. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, “Carbon Nanotubes-Hydrogel Composites for Neural Tissue Engineering Applications”, (Poster), Neuroscience Research Symposium, St. Louis, MO, November 4, 2016
71. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, “Carbon Nanotubes-Hydrogel Composites for Neural Tissue Engineering Applications”, (Poster), St. Louis Regional Materials Network Meeting, St. Louis, MO, October 2016
72. #S Syed, J Schober, \***SP Zustiak**, “Conditioning Cancer Cells to the Compliance of the Underlying Substrate”, (Poster), St. Louis Regional Materials Network Meeting, St. Louis, MO, October 2016
73. #E Jain, S Sheth, SA Sell, \***SP Zustiak**, “Temporally Controlled Release of Platelet-Rich Plasma from Biodegradable PEG Microgels”. (Poster: Meet the Faculty Candidate) Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, Oct 5-8, 2016
74. #S Kroger, A Stock, L Hill, E Jain, \***SP Zustiak**, “Design of Biocompatible Chemical Crosslinkers for Tuning the Degradation in Polyethylene Glycol Hydrogels”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, October 2016
75. #,\***SP Zustiak**, JG Bledsoe, “Encouraging curiosity, connections and the creation of value in a materials/biomaterials sequence: part II: Biomaterials”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, October 2016



76. #S Sheth, E Jain, K Polito, SA Sell, \***SP Zustiak**, “Influence of storage conditions on the physical properties and protein release of polyethylene glycol hydrogel microspheres”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, October 2016
77. #L Hill, A Ashraf, \***SP Zustiak**, “Hydrogel-based in vitro glioblastoma spheroid models”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, October 2016
78. #\***SP Zustiak**, A Ashraf, L Hill, “In-vitro hydrogel-based multicellular cancer spheroid models”, (Poster), GRC: Signal Transduction by Engineered Extracellular Matrices, Biddeford, ME, June 2016
79. #P Donovan, Y Chehreghanianzabi, \*M Rathinam, \***SP Zustiak**, “Homogenization theory for the prediction of obstructed diffusivity in macromolecular solutions”, (Poster), SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, May 2016
80. #E Jain, Y Chehreghanianzabi, M Flanagan, S Sell, A Montano, \***SP Zustiak**, “Development of injectable microgels for GALNS enzyme replacement therapy”, (Poster), Pediatric Science Day, SLU, St. Louis, MO, April 2016
81. #Y Wang, D Vasileva, \***SP Zustiak**, \*I Kuljanishvili, “Raman spectroscopy based quality control of carbon nanotubes-polymer composites for biomedical applications”, (Poster), St. Louis Area Undergraduate Research Symposium, St Louis, MO, April, 2016
82. #D Vasileva, K Shah, \***SP Zustiak**, “Development and characterization of polyethylene glycol-carbon nanotube hydrogel composite”, (Poster), St. Louis Area Undergraduate Research Symposium, St Louis, MO, April 23, 2016
83. #S Syed, J Schober, \***SP Zustiak**, “Conditioning cancer cells to the compliance of the underlying substrate”, (Poster), Sigma Xi Symposium, Saint Louis University, St Louis, MO, April, 2016
84. #D Vasileva, K Shah, \***SP Zustiak**, “Development and characterization of polyethylene glycol-carbon nanotube hydrogel composite”, (Poster), Sigma Xi Symposium, Saint Louis University, St Louis, MO, April, 2016
85. #L Hill, N Ahmed, J Schober, \***SP Zustiak**, “Custom multiwell plate design for rapid assembly of photo-patterned hydrogels”, (Poster), Sigma Xi Symposium, Saint Louis University, St Louis, MO, April, 2016
86. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, “Aligned single-walled carbon nanotubes on a PEG hydrogel fabricated by stamping for neural regeneration”, (Poster), Sigma Xi Symposium, Saint Louis University, St Louis, MO, April, 2016
87. #S Sheth, E Jain, K Polito, E Canning, K Scott, S Sell, \***SP Zustiak**, “Injectable nanoporous microspheres with tunable degradation rates for protein drug delivery”, (Poster), Sigma Xi Symposium, Saint Louis University, St Louis, MO, April, 2016
88. #S Syed, A Martin, J Schober, N Case, \***SP Zustiak**, “The effect of long term conditioning on the adaptive properties of MDA-MB-231 cells on soft polyacrylamide gels”, (Poster), Graduate Student Association Symposium, SLU, St Louis, MO, April 2016
89. #S Syed, A Martin, J Schober, N Case, \***SP Zustiak**, “The effect of long term conditioning on the adaptive properties of MDA-MB-231 cells on soft polyacrylamide gels”, (Poster), Midwest Regenerative Medicine Meeting, Monticello, IL, April 2016
90. #L Hill, N Ahmed, J Schober, \***SP Zustiak**, “Custom multiwell design for rapid assembly of photo-patterned hydrogels”, (Poster), Midwest Regenerative Medicine Meeting, Monticello, IL, April 2016
91. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, “Stamping aligned single-walled carbon nanotubes on a PEG hydrogel for neural regeneration”, (Poster), Midwest Regenerative Medicine Meeting, Monticello, IL, April 2016  
*Selected for a 3 min poster teaser oral presentation*
92. #S Sheth, E Jain, K Polito, E Canning, K Scott, S Sell, \***SP Zustiak**, “Injectable nanoporous microspheres with tunable degradation rates for protein drug delivery”, (Poster), Midwest Regenerative Medicine Meeting, Monticello, IL, April 2016

93. #E Jain, Y Chehrehghanianzabi, M Flanagan, S Sell, A Montano, \***SP Zustiak**, “Development of GALNS enzyme replacement therapy based on injectable microgels”, (Poster), Midwest Regenerative Medicine Meeting, Monticello, IL, April 2016  
*Selected for an oral presentation*
94. #F Ordikhani, A Simchi, \***SP Zustiak**, “Surface modifications of titanium implants by multilayer bioactive coatings with drug delivery potential: antimicrobial, biological, and drug release studies”, (Poster), St. Louis Institute of Nanoscience and Nanomedicine (SLINN), St Louis, MO, December 2015
95. #E Jain, S Sheth, K Polito, E Canning, K Scott, S Sell, \***SP Zustiak**, “Injectable nanoporous microgels with tunable degradation rates for protein drug delivery”, (Poster), St. Louis Institute of Nanoscience and Nanomedicine (SLINN), St Louis, MO, December 2015
96. #D Vasileva, K Shah, \***SP Zustiak**, “Development and characterization of polyethylene glycol-carbon nanotube hydrogel composite”, (Poster), St. Louis Institute of Nanoscience and Nanomedicine (SLINN), St Louis, MO, December 2015
97. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, “Aligning carbon nanotubes onto a hydrogel substrate for neural tissue engineering applications”, (Poster), St. Louis Institute of Nanoscience and Nanomedicine (SLINN), St Louis, MO, December 2015
98. #Y Chehrehghanianzabi, \***SP Zustiak**, “Study of polyethylene-glycol-Atto complex formation by fluorescence correlation spectroscopy”, (Poster), St. Louis Institute of Nanoscience and Nanomedicine (SLINN), St Louis, MO, December 2015
99. M Reimer, **SP Zustiak**, #.\*J Schober, “A mouse melanoma cell line maintains inherit response towards physiologic stiffness”, (Poster), American Society for Cell Biology (ASCB) Annual Meeting, San Diego, CA, December 2015
100. #J Bruns, SEM Abadi, \***SP Zustiak**, \*G Kwon, “Development of an injectable hydrogel for encapsulation of islets to treat streptozotocin-induced diabetes in mice”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, October 2015
101. #.\***SP Zustiak**, S Sell, G Gaudette, “A Template for Multi-Disciplinary Team-Based Problem Solving, Design, and Assessment: Application in Biomedical Engineering”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, October 2015
102. #.\***SP Zustiak**, G Bledsoe, “Encouraging Curiosity, Connections and the Creation of Value in a Materials/Biomaterials Sequence: Part II Biomaterials”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, October 2015
103. #.\*G Bledsoe, **SP Zustiak**, “Encouraging Curiosity, Connections and the Creation of Value in a Materials/Biomaterials Sequence: Part I Materials Science”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, October 2015
104. A Ashraf, S Tilson, A Branyi, Y Kim, #.\***SP Zustiak**, “Hydrogel-based Multicellular Cancer Spheroid Models for Drug Screening Applications”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, October 2015
105. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, “A Novel Method of Transferring Aligned Single-Walled Carbon Nanotubes on a Hydrogel for Nerve Regeneration Applications”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, October 2015  
*Graduate Travel Award Winner*
106. #S Syed, R Bera, N Case, \***SP Zustiak**, “Conditioning MDA-MB-231 Cells to Microenvironmental Cues”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, October 2015
107. #Y Chehrehghanianzabi, P Donovan, M Rathinam, \***SP Zustiak**, “Homogenization Theory For The Prediction Of Solute Diffusion In Macromolecular Solutions”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, October 2015
108. #D Vasileva, \***SP Zustiak**, “Development of carbon nanotube hydrogel composites”, (Poster) Sigma Xi Symposium, Saint Louis University, St Louis, MO, April, 2015.

***Best Poster Award***

109. #S Syed, \***SP Zustiak**, “Conditioning cells to microenvironmental cues”, (Poster) Sigma Xi Symposium, Saint Louis University, St Louis, MO, April, 2015.
  110. #M Imaninezhad, \***SP Zustiak**, “A Novel Development of a Droplet Generator Set-up for the Fabrication of Monodisperse Poly(ethylene glycol) Microspheres”, (Poster) Sigma Xi Symposium, Saint Louis University, St Louis, MO, April, 2015.
  111. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, “A Novel Method of Transferring Aligned Single-Walled Carbon Nanotubes on a Hydrogel for Biomedical Applications”, (Poster) IMSE Facilities & Materials Research showcase, Washington University, St. Louis, MO, May, 2015.
  112. #K Shah, D Vasileva, \***SP Zustiak**, “Carbon nanotube/polyethylene glycol hydrogel composite as an in vitro model for neural tissue engineering”, (Poster), Graduate Student Association Symposium, SLU, St Louis, MO, April 2015
  113. #N Ahmed, A Karadaghy, H Stevenson, \***SP Zustiak**, “Design of a custom multiwell platform for the simple and rapid preparation of polyacrylamide stiffness assay”, (Poster), Graduate Student Association Symposium, SLU, St Louis, MO, April 2015
  114. #M Imaninezhad, I Kuljanishvili, \***SP Zustiak**, “A novel method for transferring aligned single walled carbon nanotubes on a hydrogel for biomedical applications”, (Poster), Graduate Student Association Symposium, SLU, St Louis, MO, April 2015
  115. #Y Chehrehghanianzabi, P Donovan, M Rathinam, \***SP Zustiak**, “Experimental and theoretical approaches to the study of probe diffusion in macromolecular solutions”, (Poster), Graduate Student Association Symposium, SLU, St Louis, MO, April 2015
  116. #P Donovan, Y Chehrehghanianzabi, \*M Rathinam, \***SP Zustiak**, “Experimental and theoretical approaches to the study of probe diffusion in macromolecular solutions”, (Poster), Biophysical Society 59<sup>th</sup> Annual Meeting, Baltimore, MD, February 2015
  117. #Y Chehrehghanianzabi, \***SP Zustiak**, “Study of single molecule diffusion in complex media by fluorescence correlation spectroscopy”, (Poster), St. Louis Institute of Nanoscience and Nanomedicine (SLINN), St Louis, MO, November 2014
  118. #K Shah, R Wang, I Kuljanishvili, \***SP Zustiak**, “Patterned carbon nanotube/polyethylene glycol hydrogel composites for use in neural tissue engineering applications”, (Poster), St. Louis Institute of Nanoscience and Nanomedicine (SLINN), St Louis, MO, November 2014
  119. #D Vasileva, K Shah, \***SP Zustiak**, “Development of carbon nanotube hydrogel composites for in-vitro model”, (Poster), St. Louis Institute of Nanoscience and Nanomedicine (SLINN), St Louis, MO, November 2014
  120. #D Vasileva, K Shah, \***SP Zustiak**, “Development of carbon nanotube hydrogel composites”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, October 2014
  121. #K Scott, E Jain, \***SP Zustiak**, \*S Sell, “Optimization of parameters influencing polyethylene glycol microsphere fabrication using electrospraying”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, October 2014
- Undergraduate travel award winner***
122. #S Sheth, E Jain, S Sell, \***SP Zustiak**, “Estimating the controlled release of PRP components encapsulated in biodegradable PEG hydrogels”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, October 2014
  123. #S Syed, \***SP Zustiak**, “Conditioning cell to microenvironmental cues”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, October 2014
  124. #A Karadaghy, H Stevenson, \***SP Zustiak**, “Comparative analysis of chemical and photochemical crosslinking of polyacrylamide gels”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, October 2014

125. #J Redington, E Jain, S Sell, \***SP Zustiak**, “Determination of variables affecting degradation of polyethylene glycol hydrogels”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, October 2014
126. #N Ahmed, H Stevenson, A Karadaghy, \***SP Zustiak**, “Design of a custom multiwell platform for the simple and rapid preparation of polyacrylamide stiffness assay”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, October 2014
127. #K Shah, D Vasileva, \***SP Zustiak**, “Carbon nanotube/polyethylene glycol hydrogel composite as an *in vitro* model for neural tissue engineering”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, October 2014
128. #E Jain, K Scott, S Sheth, \***SP Zustiak**, \*S Sell, “Electrosprayed polyethylene glycol hydrogel microspheres for platelet rich plasma delivery in knee osteoarthritis”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, October 2014
129. #\***SP Zustiak**, A Ashraf, A Branyi, Y Kim, “Hydrogel-based multicellular cancer spheroid models for drug screening applications”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, October 2014
130. #K Shah, \***SP Zustiak**, “Carbon Nanotube/Hydrogel Composites as Neural Cell Scaffolds”, (Poster), Graduate Student Association Symposium, SLU, St Louis, MO, April 2014
131. #\***SP Zustiak**, K Kalinowski, N Ahmed, C Cole, “Effect of stiffness and dimensionality on cancer cell responsiveness to cytotoxic drugs”, (Poster), Functional Analysis and Screening Technologies, Boston, MA, October 2013  
*Best Poster Award*
132. #K Kalinowski, \***SP Zustiak**, “The role of dimensionality on cancer cell response to cytotoxic drugs”, (Poster), Biomedical Engineering Society (BMES) Annual Meeting, Seattle, WA, September 2013
133. #\***SP Zustiak**, K Kalinowski, N Ahmed, C Cole, “Substrate stiffness affects cancer cell responsiveness to cytotoxic drugs”, (Poster), Gordon Research Conference: Biomaterials & Tissue Engineering, Holderness, NH, July 2013

#### ***Presentations from NIH***

1. #D Ferguson, **SP Zustiak**, R Nossal, D Sackett, “Development of a Polyacrylamide-Based Stiffness Assay for “High-Throughput” Drug Testing”, (Poster), Annual Biomedical Research Conference for Minority Students (ABRCMS), San Jose, CA, November 2012
2. #**SP Zustiak**, R Nossal, D Sackett, “High-throughput stiffness assay for the study of cancer cell susceptibility to anti-cancer drugs”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Pittsburg, PA, October 2012
3. #D Ferguson, **SP Zustiak**, R Nossal, D Sackett, “Development of a Polyacrylamide-Based Stiffness Assay for “High-Throughput” Drug Testing”, (Poster), National Institute of Health (NIH) Summer Research Program Poster Day, Bethesda, MD, August 2012
4. #**SP Zustiak**, R Nossal, “Effects of Scattering on Fluorescence Correlation Spectroscopy Measurements of Diffusion in Complex Media”, (Poster), Predictive Functional Tissue Models, Boston, MA, November, 2011
5. #**SP Zustiak**, R Nossal, D Sackett, “Hindered Diffusion in Polymeric Solutions Studied by Fluorescence Correlation Spectroscopy”, (Poster), NIH Research Festival, Bethesda, MD, October 2011
6. #**SP Zustiak**, R Nossal, D Sackett, “A Fluorescence Correlation Spectroscopy Study of Hindered Probe Diffusion in Complex Media”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Minneapolis, MN, October 2011
7. #J Taylor, **SP Zustiak**, R Nossal, D Sackett, “Development of Poly(ethylene Glycol)-Collagen 3D Scaffolds”, (Poster), 14th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences at UMBC, Baltimore, MD, October 2011

8. #J Taylor, R Nossal, D Sackett, **SP Zustiak**, “Development of Poly(ethylene Glycol)-Collagen 3D Scaffolds”, (Poster), National Institute of Health (NIH) Summer Research Program Poster Day, Bethesda, MD, August 2011
9. #**SP Zustiak**, R Nossal, D Sackett, “Hindered Diffusion in Polymeric Solutions Studied by Fluorescence Correlation Spectroscopy”, (Oral), National Institute of Child and Human Development (NICHD) Annual Retreat, Airlie Center, VA, May 2011
10. #**SP Zustiak**, R Nossal, D Sackett, “Hindered Diffusion in Polymeric Solutions Studied by Fluorescence Correlation Spectroscopy”, (Poster), Biophysical Society Annual Meeting, Baltimore, MD, March 2011

#### ***Presentations from UMBC***

11. #A Ribeiro, D Hughes, H Gaifem, **SP Zustiak**, JB Leach, “Hydrolytically Degradable Poly(Ethylene Glycol)-Laminin Hydrogel Scaffolds for Neural Progenitor Cell Delivery”, (Poster), Society for Biomaterials (SfB) Annual Meeting, Orlando, FL, April 2011
12. #**SP Zustiak**, JB Leach, “Hydrolytically Degradable Poly(ethylene glycol) Hydrogel as a Tunable Scaffold for Neural Tissue Engineering”, (Oral), American Institute of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City, UT, November 2010
13. #**SP Zustiak**, R Nossal, D Sackett, “Diffusion and Binding of RNase A in Dextran Polymeric Solutions Studied by Fluorescence Correlation Spectroscopy”, (Oral), AIChE Annual Meeting, Salt Lake City, UT, November 2010
14. #**SP Zustiak**, R Nossal, D Sackett, “Diffusion and Binding of RNase A in Dextran Polymeric Solutions Studied by Fluorescence Correlation Spectroscopy”, (Poster), NIH Research Festival, Bethesda, MD, October 2010
15. #**SP Zustiak**, JB Leach, “Hydrolytically Degradable Poly(ethylene Glycol) Hydrogel as a Tunable Scaffold for Neural Tissue Engineering”, (Oral), Biomedical Engineering Society (BMES) Annual Meeting, Austin, TX, October 2010
16. #RG Durbal, **SP Zustiak**, JB Leach, “Influence of Adhesive Ligand on Mechanical Properties on Polyethylene Glycol Hydrogels”, (Poster), Undergraduate Research and Creative Achievement Day at UMBC, Baltimore, MD, April 2010
17. #S Pubill, **SP Zustiak**, JB Leach, “Poly(ethylene glycol) Hydrogels as an *in-vitro* Model for Neural Tissue Engineering”, (Poster), Undergraduate Research and Creative Achievement Day at UMBC, Baltimore, MD, April 2010
18. #**SP Zustiak**, JB Leach, “Probing Hydrogel Transport Properties and Dynamic Micro-Structure with Fluorescence Correlation Spectroscopy”, (Oral), AIChE Annual Meeting, Nashville, TN, November 2009
19. #**SP Zustiak**, JB Leach, “Hydrolytically Degradable Poly(ethylene glycol) Hydrogel as a Tunable Scaffold for Neural Tissue Engineering”, (Poster), AIChE Annual Meeting, Nashville, TN, November 2009
20. #**SP Zustiak**, JB Leach, “Application of a Novel Neural Tissue Scaffold to Quantitatively Correlate the Dynamics of Polymer Structure and Neurobiological Function”, (Oral), AIChE Annual Meeting, Nashville, TN, November 2009
21. #**SP Zustiak**, JB Leach, “Application of a Novel Neural Tissue Scaffold to Quantitatively Correlate the Dynamics of Polymer Structure and Neurobiological Function”, (Poster), Gordon Research Conference (GRC) in Biomaterials, Plymouth, NH, July 2009
22. #**SP Zustiak**, JB Leach, “Application of a Novel Neural Tissue Scaffold to Quantitatively Correlate the Dynamics of Polymer Structure and Neurobiological Function”, (Oral), GRC in Biomaterials, Plymouth, NH, July 2009
23. #**SP Zustiak**, H Boukari, JB Leach, “Probing Hydrogel Transport Properties and Micro-Structure”, (Poster), SfB Annual Meeting, San Antonio, TX, April 2009

24. #**S Petrova**, JB Leach, “Development of a Hydrolytically Degradable PEG Hydrogel with Tunable Degradability and Solute Release”, (Oral), Materials Research Society (MRS) Annual Meeting, Boston, MA, December 2008
25. #**S Petrova**, JB Leach, “Development of a Hydrolytically Degradable PEG Hydrogel with Tunable Degradability and Solute Release”, (Oral), AICHe Annual Meeting, Philadelphia, PA, November 2008
26. #N Maharaj, **S Petrova**, JB Leach, “Protein Diffusion from Poly(Ethylene Glycol) Vinyl Sulfone Scaffolds”, (Poster), Undergraduate Research Consortium in the Chemical and Biological Sciences, UMBC, April 2008
27. #**S Petrova**, JB Leach, ”Star Poly(Ethylene Glycol) Vinyl Sulfone Hydrogel as a Tunable Scaffold for Tissue Engineering”, (Oral), AICHe Annual Meeting, Salt Lake City, Utah, November 2007
28. #R Reeves, **S Petrova**, JB Leach, “Characterizing the Properties of Polymeric Tissue Engineering Scaffolds”, (Poster), Undergraduate Research Consortium in the Chemical and Biological Sciences, UMBC, October 2007, **First Prize Award**
29. #**S Petrova**, C Guarraia, E Voss, C Plachez, E Powell, JB Leach, “Neurite outgrowth and integrin signaling pathways in 3D systems”, (Poster), GRC in Tissue Engineering, Plymouth, NH, July 2007
30. #JB Leach, **S Petrova**, JN Lakins, K Johnson, J Leight, V Weaver, “Force-Dependent Mammary Morphogenesis and Malignancy in a Tunable 3D Model System”, (Poster), American Society for Cell Biology Annual Meeting, San Diego, CA, December 2006
31. #M Seck, **S Petrova**, JB Leach, “Tissue Engineering Scaffolds: Design and Physicochemical Characterization of Hydrogels as Synthetic Extracellular Matrix”, (Poster), A Look Ahead Conference, UMBC, November 2006
32. #JB Leach, R Reeves, **S Petrova**, JN Lakins, V Weaver, "Engineered 3D Models to Study Force-Dependent Cell Response in Soft Tissues", (Poster), BMES Annual Meeting, Chicago, IL, October 2006
33. #**S Petrova**, Y Kostov, G Rao, “Optical ratiometric sensor for alcohol measurements”, (Poster), Pittcon, Orlando, Florida, March 2006

## FUNDING

### *Active Grants/Contracts*

1. “Mechanisms of Nanosilicate-Protein Interactions and Complex Formation”, \$7,000, IDBI Seed Grant, Dates: 01/01/2021 – 09/30/2021, **Role – PI**
2. “The Role of Matrix Properties and Drug Penetration on Glioblastoma Spheroid Drug Responsiveness”, \$10,000, Henry and Amelia Nasrallah Center for Neuroscience Research Seed Award, Dates: 01/01/2021 – 12/31/2021, **Role - PI**
3. “Assessment and rubric development for advanced BME elective courses: combined emphasis on technical-based and professional-based components”, \$2,500, Inclusive Practice Grant, Reinert Center for Transformative Teaching and Learning, SLU, Dates: 01/01/2021 – 12/31/2021, **Role – co-PI** (PI: N Case)
4. “Immunomodulatory biomaterials for musculoskeletal trauma”, \$10,000, Institute for Drug and Biotherapeutic Innovation, SLU, Dates: 07/01/2020 – 06/30/2021, **Role: co-I**, (PI: Koyal Garg)
5. “Institute for Drug and Biotherapeutic Innovation”, Saint Louis University Research Institute, Dates: 12/01/2019 – 12/31/22, **Role – Co-Director** (Executive team: John Tavis, Marvin Meyers, John Kennell, David Griggs, and Silviya P Zustiak)
6. 1R01AR075773: “Promoting Muscle Regeneration through Adipose Signaling”, \$86,643, R01, NIH, Dates: 07/01/2022 – 06/30/2024, **Role – co-I** (PI: Gretchen Meyer)
7. “MRI: Acquisition of a scanning laser Doppler vibrometer”, \$274,850, National Science Foundation, Dates: 09/01/2019 – 08/31/2022; **Role – collaborator** (Lead PI: Jenna Gorlewicz)
8. “MRI: Acquisition of a confocal microscopy system for biology, biochemistry and engineering research and education”, \$431,811, National Science Foundation, Dates: 09/01/2019 – 08/31/2022; **Role – co-PI** (Lead PI: Daniel Warren)

### ***Grant Proposals in Review***

1. “MRI: Acquisition of Dynamic Mixed Gas Sorption Analyzer-Mass Spectrometer to Enable Advanced Separation, Sensing, and Catalysis Research”, National Science Foundation, Dates: 09/01/2021 – 08/31/2024; **Role – collaborator** (Lead PI: Fateme Rezaei)
2. “Hydrogel platform to induce formation of lymph node-like stromal reticula for tolerance induction in autoimmune diabetes”, \$231,133, Parent R01, National Institutes of Health, Dates: 07/01/2020 – 06/30/2025; **Role – co-I; subcontract PI** (PI: Alice Tomei)
3. PR201822 “Regenerative and rehabilitative therapies for musculoskeletal trauma”, \$3 million, DoD, CDMRP Peer Reviewed Medical Research Program (PRMRP), Dates: 07/01/2021 – 06/30/2025, **Role – co-I** (PI: Koyal Garg)
4. T32GM141602 “Pharmacological Sciences Training Grant”, National Institutes of Health, \$1,461,450, Dates: 07/01/2021-06/30/2026, **Role – Preceptor** (PIs: Terrance Egan, Gina Yosten, John Walker)

### ***Completed Grants/Contracts***

1. “Engineering and Characterizing Novel Nanoscale Platforms with Carbon Nanotube/ZnO Nanowire Heterostructures for Biomedical Applications”, \$25,000, SLU PRF, Dates: 04/01/19 – 09/30/20, **Role – co-I** (PI: Irma Kuljanishvili)
2. “Program in Cancer Prevention and Targeted Therapy”, SLU Big Idea, Phase I, \$10,000, Dates: 2018, **Role – Key faculty** (PIs: Ratna Ray, Adrian Di Bisceglie, Ranjit Ray, Jacki Kornbluth)
3. NSF CBET 1818906, “Driving forces in aqueous two-phase systems for vaccine development”, \$40,000, National Science Foundation, Dates: 05/01/2018 – 10/31/2019, **Role – co-I** (PI: Caryn Heldt)
4. “Toward development of a resorbable, radiopaque, drug eluting embolic agent for prostate cancer”, \$20,000, Interdisciplinary Health Sciences Research Grant Program, Dates: 09/01/2018 – 08/31/2019; **Role – co-PI** (Lead PI: Andy Hall)
5. “rhGALNS enzyme delivery using injectable polyethylene glycol hydrogel depots”, \$25,000, “Fleur de Lis”, Department of Pediatrics, Saint Louis University, Dates: 07/01/2017 – 06/30/2019; **Role – co-PI** (PI: Adriana Montano)
6. “Nanotechnology and Nanomaterials through STEM and Entrepreneurship”, \$5,000, KEEN Program Transformation Grants, Dates: 07/01/2018 – 06/30/2019, **Role – PI** (Multiple PIs: Silviya Zustiak, Chi Hou Lei, Irma Kuljanishvili, Jeff Ma)
7. “Interdisciplinary Center for Innovation in Minimally Invasive Medicine”, \$3,000, SLU Big Idea, Phase I, Dates: 2018, **Role – Key faculty** (PIs: Andrew Hall, Keith Pereira)
8. “Materials in Medicine”, \$10,000, SLU Big Idea, Phase I, Dates: May 2017 – January 2018, **Role – Key faculty** (PIs: Scott Martin, Scott Sell, Ryan McCulla)
9. “Institute for Integrated Nanoscience Research and Innovations in Education (INRIE)”, \$3,000, SLU Big Idea, Phase I, Dates: 2018, **Role – Key faculty** (PIs: Irma Kuljanishvili, Paul Jelliss, Kenneth Herold, Sridar Condoor)
10. “Exploration of extracellular macromolecular crowding effects on procollagen and BMP-1 diffusion and interactions: towards enhancing matrix deposition by cells”, \$1,000, SLU, Spark Microgrant, Dates: 05/15/2018 – 08/15/2018, **Role – co-PI** (PI: Natasha Case)
11. “The role of novel topographic carbon nanotube (CNT) composites on neural growth and regeneration”, \$1,500, SLU, Materials in Medicine Seed Funding, Dates: 07/15/2018 – 10/15/2018, **Role –PI** (Multiple PI: Silviya P Zustiak and Fenglian Xu)
12. “Shifting the search for cancer cure: hydrogel spheroid models for glioblastoma stem cell enrichment and therapy testing”, \$25,000, President’s Research Fund, Saint Louis University, Dates: 04/01/2017 – 09/30/2018; **Role – PI**
13. “Transcriptome analysis of hydrogel-encapsulated glioblastoma multicellular spheroids”, \$12,300, Health Sciences Research Opportunity, Saint Louis University, Dates: 06/01/2017 – 05/31/2018; **Role – PI**

14. "Treatment of osteoarthritis via sustained delivery of PRP using microgel device", \$50,000, Clinical and Translational Research Funding Program, Barnes-Jewish Hospital Foundation & WU Institute of Clinical and Translational Sciences, Dates: 07/01/2017 – 06/30/2018; **Role – co-PI** (PI: Muhammad Farooq Rai)
15. "Preparation and mechanical characterization of FocalSeal-L (PEG) microspheres: towards synovial fluid replacement", \$11,397, Biopsy Sciences, Clearwater, FL, Research Contract, Dates: 07/01/2017 – 01/01/2018; **Role - PI**
16. "A study of neural growth and regeneration on topographic carbon nanotube (CNTs)-hydrogel scaffolds", new application, \$1,000, Spark Microgrant, SLU, Dates: 08/15/2017 – 11/15/2017; **Role – co-PI**, (PI: Fenglian Xu)
17. "Laminin-111 functionalized hydrogel to restore regenerative capacity in aged skeletal muscle", \$1,000, Spark Microgrant, Saint Louis University, Dates: 02/01/2017 – 05/01/2017; **Role – co-PI** (PI: Koyal Garg)
18. "Novel carbon nanotube-hydrogel nanocomposite scaffolds for neural growth and regeneration", \$1,000, Spark Microgrant, Saint Louis University, Dates: 02/15/2017 – 05/15/2017; **Role – PI**
19. "Kern Entrepreneurial Engineering Network Institutional Grant", Kern Entrepreneurial Engineering Network (KEEN), \$250,000, Dates: 07/01/15 – 08/31/2016; **Role – key personnel** (PI: Sridhar Condoor)
20. "Curricular innovations for incorporating entrepreneurial mindset", Kern Entrepreneurial Engineering Network (KEEN), \$250,000, Dates: 07/01/14 – 12/31/2015; **Role – key personnel** (PI: Sridhar Condoor)
21. "A template for multi-disciplinary team-based problem solving, design, and assessment", \$48,959, Kern Entrepreneurship Engineering Network (KEEN), Dates: 01/01/2015 – 08/31/2015; **Role - PI** (Multiple PIs: Scott Sell and Silviya P Zustiak)
22. "The Role of Three-Dimensional Matrix Stiffness on Cancer Cell Responsiveness to Chemotherapeutics", \$10,000, Stroble Awards in the Health Sciences, Saint Louis University, Dates: 07/01/2014 – 06/30/2015; **Role – PI**
23. "Effect of matrix properties on cancer cell responsiveness to cytotoxic compounds: towards predictive drug screening platforms", \$25,000, Presidents' Research Fund, Saint Louis University, Dates: 10/01/2013 – 09/30/2014; **Role – PI**

## PROFESSIONAL DEVELOPMENT SYMPOSIUMS, COURSES AND WORKSHOPS

1. "National Effective Teaching Institute - Online (NETI-3C)", (Workshop), Purdue University, West Lafayette, IN, July 30-31, 2020
2. "Every Semester Needs a Plan", (Workshop), National Center for Faculty Development & Diversity, SLU, St. Louis, MO, April 22, 2019
3. "The Path to SBIR/STTR Funding", (Panel discussion), WashU, St Louis, MO, February 19, 2018
4. "Fall 2017 Intensive Grantsmanship Workshop", SLU, St. Louis, MO, October 23-24, 2017
5. "NSF CAREER Workshop", (a series of 6 workshops), SLU, St Louis, MO, March – June 2017
6. "R01/R21 Challenge", (a series of 6 workshops), SLU, St Louis, MO, March – June 2017
7. "BMES-NSF Grant Writing Special Session", (Session), Minneapolis Convention Center, Minneapolis, MN, October 7, 2016
8. "Mini Roadshow for Research", (Symposium), SLU, St Louis, September 7, 2016
9. "Finding Funding", (Workshop), SLU, St Louis, MO, August 25, 2016
10. "SBIR/STTR Road Tour", (Workshop), WashU, St Louis, MO, August 18, 2016
11. "National Science Foundation CAREER Awards Walk-Through", (Workshop), SLU, St Louis, MO, June 23, 2016
12. "NSF Career Proposal Writing" (Workshop), The Westin, St. Louis, MO, March 20-22, 2016
13. "Summer STEM Faculty Institute on Teaching" (Workshop), St Louis, MO, June 9-11, 2015
14. "A Scientific and Historical Perspective of BME" – a retirement celebration for Cecil W. Thomas, founding member of BME at SLU, St Louis, MO, April 19, 2015



15. “Cancer Research Symposium” (Symposium), Donald Danforth Plant Science Center, St Louis, MO, May 1, 2015
16. “Shaping Entrepreneurial Engineers” (Workshop), KEEN Foundation, Saint Louis University, St Louis, MO, August 18-21, 2014
17. “Integrating Curriculum with Entrepreneurial Mindset (ICE)” (Workshop), KEEN Foundation, University of New Haven, CT, June 2-6, 2014
18. “A STEM Educations Researcher’s Forum: Models, Challenges, Opportunities for Collaborative Solutions”, (Symposium), SIUE, Edwardsville, IL, April 1 2013
19. “Doing Real Work, Not Homework”, (Teaching Workshop), NIH, Bethesda, MD, March 2012
20. “Scientists Teaching Science”, (Short course), NIH, Bethesda, MD, March - May 2011
21. “Writing and Publishing a Scientific Paper”, (Short course), NIH, Bethesda, MD, September - October 2010
22. “NICHD Grantsmanship”, (Workshop), NIH, Bethesda, MD, July, 2010
23. “Introduction of Grant Writing I: Demystifying the NIH Grant review Process”, (Workshop), NIH, Bethesda, MD, June, 2010
24. “Advances in Tissue Engineering”, (Workshop), Rice University, Houston, TX, August 2006

## TEACHING

### **Instructor**, SLU, St Louis, MO

- BME 4400: Biomaterials
- BME 4320/5320: Drug Delivery
- BME 4970: Independent Research I
- BME 4980: Independent Research II
- BME 5400: Tissue-Material Interfaces
- BME 5010: Research Analysis
- BME 5040: Technical Communication
- BME 501/503: Current Topics I
- BME 502/504: Current Topics II

### **Co-instructor**, NIH, Bethesda, MD

- Foundation for Advanced Education in the Sciences (FEAS) Graduate Course on “Regenerative Medicine”, Spring 2011, Fall 2011
- NICHD Post-baccalaureate course on “Becoming a Successful Scientist”, Fall 2011

### **Teaching Assistant**, Department of Chemical & Biochemical Engineering, UMBC, Baltimore MD

- Biochemical engineering laboratory – “Enzyme kinetics”, Spring 2006, 2007, 2008, 2009
- Process engineering economics & design, Spring 2005
- Introductory engineering science, Fall 2004

### **Teaching Assistant**, Department of Chemistry and Biochemistry, UMBC, Baltimore MD

- Introductory Chemistry Lab I, Spring 2008

## STUDENT RESEARCH SUPERVISIONS AND MENTORSHIP

### **High School Students from St. Louis Area (Community Service)**

#### Current

#### Alumni

1. Shibapriya (Tista) Mandal, Mary Institute and Saint Louis Country Day School, volunteer (Summer 2019)
2. Sriya Amruta Kosaraju, Marquette High School, STARS student (Summer 2019)
3. Nathan Loring Moy, Saint Francis High School, STARS student (Summer 2019)
4. Neha Bollam, Marquette Sr. High School, STARS student (Summer 2018)
5. Provo Chatterjee, Clayton High School, STARS student (Summer 2018)
6. Deepa Shukla, Parkway North High School, STARS student (Summer 2017)
7. Annie Grace Bryan, Kirkwood High School, STARS student (Summer 2017)
8. Jiyeon Lee, Missouri Academy of Science, Mathematics and Computing, STARS student (Summer 2016)
9. Rohit Lalit Chouhan, Mary Institute and Country Day School, STARS student (Summer 2016)
10. Lana Kuziez, Parkway West High School, STARS student (Summer 2015)
11. Julie Gauthier, Cor Jesu Academy, STARS student (Summer 2015)
12. Ryan Domalewski, Timberland High School, Independent Science Research Project (Fall 2014)
13. Cassidy Mundwiller, Timberland High School, Independent Science Research Project (Fall 2014)
14. Renee Al-Lozi, Parkway North High School, Independent Science Research – AP Biology (Fall 2014)

## Doctoral and Master's Graduate Students and Postdoctoral Fellows at SLU

### Current

1. Dhanashri Gaikwad (Non-thesis MS, Fall 2020 – anticipated 2022)
2. Anusha Kalla (Non-thesis MS, Fall 2020 – anticipated 2021)
3. Eya Ferchichi (PhD, Fall 2019 – anticipated 2024)
4. Joseph Bruns (PhD, Spring 2019 – anticipated 2021)
5. Samuel Stealey (PhD, Fall 2018 – anticipated 2023)
6. Paige Bogert (non-thesis MS, Fall 2018 – anticipated 2021)
7. Sam Reusing (PhD, Fall 2018 – anticipated 2023)

### Alumni

1. Brannan Hutchinson – **MS**, July 2020  
*Thesis:* Feasibility of using Nanocomposite Polyethylene Glycol hydrogels Containing Zinc oxide and/or Carbon Nanotubes as Neural Substrates
2. Allison Clancy – **MS**, July 2020  
*Thesis:* Hydrogel-based microfluidic device as a 3D in vitro drug screening platform
3. Lindsay Hill – **PhD**, July 2020  
*Dissertation:* Development of Hydrogel-based in vitro Glioblastoma Spheroid Models
4. Kyle Vogt – **MS**, March 2020  
*Thesis:* Fabrication of Radiopaque Resorbable Polyethylene Glycol Microspheres via Microfluidics for Catheter Embolization Applications
5. Jinming Liu – **Project MS**, May 2020
6. Saahil Sheth – **PhD**, December 2019  
*Dissertation:* Development, Characterization, and Application of a Biodegradable PEG-Based Delivery Device for the Sustained Release and Biopreservation of Protein Therapeutics
7. Hanna Choi – **MS**, July 2019  
*Thesis:* Physical Properties and Degradation Kinetics of Polyethylene Glycol Hydrogel Microspheres as a Function of Platelet-Rich Plasma Loading
8. Alexandra Blanco – **MS**, July 2019  
*Thesis:* Assessing the Feasibility of Platelet-Rich Plasma Therapy for Knee Osteoarthritis
9. Stephanie Kroger – **MS**, May 2019

*Thesis:* Design of Biocompatible Crosslinkers to Tune Degradation of Poly(ethylene glycol) Hydrogels

10. Mozhddeh Imani Nezhad – **PhD**, December 11<sup>th</sup> 2017  
*Dissertation:* Development of Hydrogel-Carbon Nanotube Composites and Templated Hydrogels for Neural Tissue Engineering Applications
11. Joseph Bruns, **BS/MS** – May 1<sup>st</sup>, 2017  
**SURE** student for summer 2015  
*Thesis:* Development of injectable cell-adhesive polyethylene glycol cryogel scaffolds
12. Dr. Era Jain - **Postdoctoral Fellow**, BME, Fall 2013 - Spring 2017  
*Current:* Assistant Professor in Biomedical Engineering, Syracuse University
13. Anisa Qayyum, **BS/MS** – July 19<sup>th</sup>, 2016  
*Thesis:* Fabrication of hydrogel glioblastoma spheroids
14. Sana Syed, **BS/MS** – July 20<sup>th</sup>, 2016  
*Thesis:* Conditioning cancer cells to the compliance of the substrate
15. Yasaman Chehrehganzabi, **MS** – April 29<sup>th</sup>, 2016  
*Thesis:* Study of diffusion in polymer solutions and networks by fluorescence correlation spectroscopy
16. Naveed Ahmed, **MS** – July 17<sup>th</sup>, 2015  
*Thesis:* Novel multiwell plate for high-throughput preparation of polyacrylamide gels for drug screening applications
17. Keval Shah, **MS** – May 14<sup>th</sup>, 2015  
*Thesis:* Carbon nanotube/polyethylene glycol hydrogel composite as an in vitro model for neural tissue engineering
18. Dr. Farideh Ordikhani – **Visiting Scholar**, BME, Spring 2015

## **Undergraduate Research Students at SLU**

### Current

1. Ether Dharmesh (BME, Fall 2020 – present)
2. Shabnam Nejat (BME, Fall 2020 – present)
3. Jahnvi Nadella (BME, Summer 2019 – present)
4. Deepa Shukla (Biostatistics, Fall 2019 – present)

### Alumni

1. Stephen Le Le (BME, Spring 2020)
2. John Ortlund (BME, Spring 2018 – Fall 2019)
3. Leigh-Ann Kesper (BME, Fall 2017 – Spring 2019)
4. Jessica Conley (BME, Summer 2017 – Summer 2019)
5. Chandana Kamaraj (BME, Spring 2017 – Spring 2018)
6. Shivani Senguttuvan (BME, Spring 2018)
7. Riya Zachariah (BME, Summer 2017)
8. Kyle Vogt (BME, Fall 2016 – Summer 2017)
9. Stephanie Kroger (BME, Summer 2016 – Summer 2017) – **SURE** student for summer 2016
10. Alexandra Blanco (BME, Spring 2016 – Summer 2017)
11. Dzhuliya Vasileva (BME, Summer 2014 – Summer 2017) – **SURE** student for summer 2014
12. Aaron Stock (BME, Summer 2015 – Summer 2016)
13. Mark Weber (BME, Spring 2015 – Spring 2016)
14. Erin Canning (BME, Fall 2014 – Spring 2016)
15. Sana Syed (BME, Fall 2013 - Fall 2014)
16. Kristin Kalinowski (BME, Spring 2013 – Spring 2015) – **SURE** student for summer 2013

17. Amin Karadaghy (Biology, Fall 2013-Fall 2015)
18. Peter Iliya (BME, Spring 2013 – Fall 2013)
19. Anirudh Guduru (BME, Fall 2013-Spring 2015)
20. Joseph Behrens (BME, Spring 2013)
21. Colleen Cole (BME, Fall 2013 – Fall 2014)
22. Hunter Stevenson (BME, Fall 2013 – Spring 2014)
23. Zachary Hawkins (BME, Summer 2013 – Spring 2014)
24. Saahil Sheth (BME, Fall 2013 - Spring 2015)
25. William Clifton (BME, Fall 2013 - Spring 2015)
26. Jenny Redington (Chemistry, Shorter University, Rome, GA, Summer 2014)

## **Graduate Student Guidance Committee Member**

### Current

1. Peter Genovese, BS/MS student in BME (Fall 2020 – anticipated 2022)
2. Shumeng Jiang, PhD student in Mechanical Engineering, Washington University in St Louis (Fall 2018 – anticipated 2022)
3. Zahra Ghassemi, PhD student in Chemical & Biochemical Engineering, UMBC, Baltimore MD (Fall 2018 – anticipated 2021)
4. Abigail Avila, PhD student in BME (Fall 2018 – anticipated 2022)
5. Flavia Zisi Tegou, PhD student in BME, University of Miami, FL (Fall 2019 – anticipated Spring 2021)
6. Lavanya Aryan, MS student in BME (Fall 2018 – anticipated 2020)
7. Natalia Ziemkiewicz, PhD student in BME (Fall 2018 – anticipated Fall 2023)
8. Jakeh Orr, PhD student in BME (Fall 2019 – anticipated Fall 2024)
9. Sana Syed, PhD student in BME (Fall 2016 – anticipated 2020)

### Alumni

1. Jih Heng Wu, MS student in EE and BME (Fall 2018 – Spring 2020)
2. Qi Chen, MS student in EE and BME (Fall 2018 – Spring 2020)
3. Andrew Dunn, PhD student in BME (Fall 2017 – Spring 2020)
4. Pratik Umesh Joshi, PhD student in Chemical Engineering, MTU, MI (Fall 2017 – Spring 2020)
5. Yue Dong, PhD student in BME (Fall 2017 – Spring 2020)
6. Joey Krebs, BS/MS student in BME (Fall 2017 – Fall 2019)
7. John Peters, BS/MS student in BME (Fall 2016 – Fall 2018)
8. Guangxin Hu, MS student in BME (Fall 2017 – Summer 2018)
9. Michael Bennett (PhD in Biochemistry, Fall 2017 – Spring 2018)  
*Current: Postdoctoral Fellow at National University of Ireland*
11. Niko Timofeew, MS student in BME (Fall 2014 – Summer 2016)  
*Current: Clinical Specialist at Medtronic*
12. Parin Kadakia, MS student in BME (Summer 2015 –Summer 2016)  
*Current: Senior Engineer at Baxter Healthcare*

## **Senior Design Projects at SLU**

1. A device for measuring piezoelectric properties of ZnO nanocomposite hydrogels – John Ortlund, Maria Talty, Chalmers Benson, (co-advisor – Dr. Garg), 2019/2020
2. Simplified co-culture to maximize hydrogel-cell interactions - Alexandra Blanco, 2017/18
3. Design of biocompatible crosslinkers for tuning the degradation of polyethylene glycol hydrogels – Stephanie Kroger, 2017/18

4. Device for the production of uniform hydrogel microspheres – Catherine Gloss, Emma Buckles, Kyle Vogt, 2016/17
5. A device for providing electrical stimulation to live nerve cells, Phase II - Molly Connelly, Daniel Olert, Faiz Bogis, Duaa Alrufaihi, 2015/16
6. Development of a degradable PEG hydrogel with tunable degradation and gelation kinetics - Aaron Stock, 2015/16
7. Development of a PEG cryogel - Joseph Bruns, 2015/16
8. Design and development of cell-adhesive polyacrylamide hydrogels - Sana Syed, 2014/15
9. Design of a novel method for the preparation of hydrogel encapsulated tumor spheroids - Anisa Ashraf, 2014/15
10. Electrical stimulation of live nerve cells - Kristin Kalinowski, Reethom Bera (Co-advisor – Dr. Yan Gai), 2014/15
11. A device for providing electrical stimulation to nerve cells - Chintan Shah, Sivateja Devarakonda, Kayla Eichers, 2013/14
12. Developing a multiwell plate biomaterial-based stiffness assay for testing cell-material interactions - Naveed Ahmed, 2013/14

### **Student Mentees at NICHD/NIH and UMBC**

1. Danielle Ferguson (NICHD, 2012); Project - Development of polyacrylamide-based stiffness assay for “high-throughput” drug testing
2. James Taylor (NICHD, 2011); Project - Development of collagen-poly(ethylene glycol) co-polymers as 3D scaffolds for cell growth and drug screening
3. Momar Seck (Master’s, CBE, 2006); Project - Design and physicochemical characterization of (polyethylene glycol)-peptide hydrogels as an extracellular matrix
4. Kimberly Jeffries (Master’s, CBE, 2006); Project – Optimization of optical ratiometric alcohol sensor: robustness of sensor assembly
5. Rohan Durbal (CBE, 2009); Project –Influence of adhesive ligands, such as RGDS, YIGSR, and IKVAV, on the mechanical properties on poly(ethylene glycol) hydrogels
6. Stephanie Pubill (CBE, 2008 – 2009); Project - Poly(ethylene glycol) hydrogels as an *in-vitro* model for neural tissue engineering; PC12 cells response
7. Nirvana Maharaj (CBE, 2008); Project - Protein diffusion from poly(ethylene glycol) hydrogel scaffolds
8. Robert Reeves (CBE, 2006 – 2008); Project – Development of a shear deformation method for measurement of Poisson’s ratio of poly(ethylene glycol) hydrogels

### **UNIVERSITY, COLLEGE, DEPARTMENTAL, AND OUTREACH SERVICE**

#### **College and University Service**

Winter 2020-present	<b>Member:</b> Parks College Diversity, Equity, and Inclusion (DEI) Council
Fall 2020-Spr 2020	<b>Member:</b> Physics Faculty Search Committee
Fall 2019-present	<b>Advisor:</b> BMES Faculty Advisor
Spring 2019	<b>Member:</b> Oliver Parks Award Committee
Spring 2019	<b>Reviewer:</b> Parks College Scholarships
Fall 2018	<b>Liaison:</b> Faculty180 Liaison for Parks College
Fall 2018-Spr 2019	<b>Chair:</b> Aviation Faculty Search Committee
Spring 2018	<b>Member:</b> Oliver Parks Award Committee
Fall 2017-present	<b>Senator:</b> Faculty Senate
Spring 2016	<b>Member:</b> Parks College Graduate Faculty and Student Award Committee
Fall 2015-Spr 2016	<b>Member:</b> Parks College Dean Search Committee, SLU, St. Louis, MO

Fall 2015-Spr 2017 **Member:** Parks Institutional Affairs Committee  
 Spring 2015 **Member:** Parks College Graduate Student Award Committee  
 Spring 2015 **Member:** Barta Graduate Scholarship Committee, SLU, St. Louis, MO  
 Spring 2015 **Participant:** Admitted Student Day  
 Spring 2015 **Judge:** Weekly Innovation Challenge (WIC), Parks, SLU, St Louis, MO  
 Spring 2014 **Member:** Parks College Graduate Faculty and Student Award Committee  
 Fall 2013-Sum 2016 **Marshal:** Student Marshal for Parks College  
 Fall 2013-Spr 2015 **Member:** Parks Graduate the Research Affairs Committee  
 Spring 2013 **Member:** Clare Boothe Luce Graduate Fellowship Award Committee  
 Spring 2013 **Member:** Oliver Parks Award Committee  
 Fall 2013,14,15 **Participant:** Opened lab for Select Saturday recruiting event  
 Spr 2013-Fall 2015 **Advisor:** Society for Women Engineers (SWE) SLU chapter

### Departmental Service

2020 **Coordinated a Program Level Review** for promotion and tenure for Koyal Garg  
 2019 **Coordinated a Program Level Review** for promotion and tenure for Andrew Hall and Yan Gai  
 Summer 2018-present **Graduate Program Coordinator:** BME Graduate Program  
 Fall 2016-present **Faculty coordinator:** organized travel for BME students to BMES Annual Meeting, Minneapolis, MN  
 Summer 2016 **Chair:** BME Instructor Search Committee  
 Summer 2016-present **Initiator and Coordinator:** BME Summer Seminar Series  
 Spring 2013-present **Student recruitment support:** one-on-one meetings with prospective and admitted students and families (~5-10 meetings per year)  
 Spring 2016 **Participant:** Freshmen lab tours at 'Open lab day'  
 Spring 2015 **Judge:** Start-up Presentations for Entrepreneurship Class, Instructor: Dr. Andrew Hall  
 Spring 2015, 16 **Judge:** BME Senior Design Poster Presentations  
 Fall 2014-2018 **Member:** BME Graduate Admissions Committee  
 Fall 2014 **Organizer:** 1st Annual BME Graduate Students Welcome event  
 Fall 2013-present **Faculty Mentor:** Undergraduate Student Faculty Mentor  
 Fall 2013-Spr 2014 **Member:** BME Faculty Search Committee  
 Fall 2013-Spr 2014 **Member:** BME Chair Search Committee

### Parks/BME Seminar series: speaker invitations and arrangements

Fall 2020 Dr. Danielle Benoit, Biomedical Engineering, University of Rochester, Rochester, NY  
 Dr. Mikail Berezin, Medical School, Washington University in St Louis, St Louis, MO  
 Spring 2020 Dr. Shreyas Rao, Chemical&Biological Engineering, University of Alabama, Tuscaloosa, AL  
 Dr. Aaron Timperman, Bioengineering, University of Illinois Urbana-Champaign, IL  
 Dr. Mikhail Berezin, Radiology, Washington Unviersity in St Louis, St Louis, MO  
 Fall 2019 Dr. Ratna Ray, Pathology, Saint Louis University School of Medicine, St Louis, MO  
 Dr. Spencer Lake, Biomedical Engineering, Washington University, St Louis, MO  
 Sum 2019 Dr. Luis Solorio, Biomedical Engineering, Purdue, West Lafayette, IN  
 Dr. Gretchen Meyer, Physical Therapy, Washington University, St Louis, MO  
 Spring 2019 Dr. Nathaniel Heusch, Biomedical Engineering, WashU, St Louis, MO  
 Dr. Jenny Robinson, Chemical and Biochemical Engineering, KU, Lawrence, KS  
 Fall 2018 Dr. Alessandro Vindigni, Biochemistry and Molecular Biology, SLU, St Louis, MO  
 Dr. Amit Pathak, Mechanical Engineering & Materials Science, WashU, St Louis, MO  
 Sum 2018 Dr. Zheng Yan, Chemical Engineering, University of Missouri, Columbia, MO  
 Dr. Chi Hou Lei, Mechanical Engineering, Saint Louis University, St Louis, MO

- Spring 2018 Dr. Kyle Lampe, Chemical Engineering, University of Virginia, Charlottesville, VA  
 Dr. Tamara Kinzer-Ursem, Biomedical Engineering, Purdue University, West Lafayette, IN  
 Dr. Princess Imoukhuede, Bioengineering, University of Illinois, Urbana-Champaign, IL
- Fall 2017 Dr. Giovanna Guidoboni, Electrical Engineering and Computer Science, University of Missouri, Columbia, MO  
 Dr. Lori Setton, Biomedical Engineering, Washington University, St Louis, MO
- Spring 2017 Dr. Caryn Heldt, Chemical Engineering, Michigan Technological University, Houghton, MI
- Fall 2016 Dr. Fateme Rezaei, Chemical and Biological Engineering, MST, Rolla, MO  
 Dr. Feglian Xu, Biology, Saint Louis University, St Louis, MO
- Sum 2016 Dr. Sara McBride-Gagy, Orthopedic Surgery, SLU, MO  
 Dr. Anna Allen, Biology, Howard University, Washington, DC  
 Dr. Sahin Kaya Ozdemir, Electrical Engineering, WashU, St Louis, MO
- Fall 2015 Dr. Yonghyun Kim, Chemical and Biological Engineering, UA, Tuscaloosa, AL  
 Dr. Sutapa Barua, Chemical and Biological Engineering, MST, Rolla, MO
- Spring 2015 Dr. Candan Tamerler, Mechanical Engineering, The University of Kansas, Lawrence, KS
- Fall 2014 Dr. Adriana Montano, Pediatrics, SLU Medical School, St Louis, MO
- Fall 2013 Dr. Bill Neumann, Pharmaceutical Sciences, SIUE, Edwardsville, IL  
 Dr. Joseph Schober, Pharmaceutical Sciences, SIUE, Edwardsville, IL
- Spring 2013 Dr. Dhara Patel, Pulmonary Medicine, WashU Medical School, St Louis, MO  
 Dr. Matt Zustiak, Senior Scientist, Gallus Biopharmaceuticals, St Louis, MO

### Outreach Service

- Spring 2019 **Featured Speaker:** Missouri College and Career Consultants 4th Annual Middle School STEAM Day (~500 girls), SLU, St Louis, MO, March 13, 2019
- Spring 2019 **Presenter, lab demonstrations:** Introduce a Girl to Engineering Day, Park College of Engineering, SLU, St Louis, MO, February 21, 2019
- Spring 2018 **Coordinator and representative:** Arranged and manned a SLU booth at the Innovation and Robotics Fair, Girl Scouts of Eastern Missouri, April 26, 2018
- Spring 2018 **Presenter:** Introduce a Girl to Engineering Day, Park College of Engineering, SLU, St Louis, MO, February 20, 2018
- Spring 2017 **Panelist:** Expanding Your Horizons in Mathematics and Science Conference for 7-10 grade girls, Saint Louis University, St Louis, MO, March
- Spring 2016 **Presenter:** Introduce a Girl to Engineering Day, Park College of Engineering, SLU, St Louis, MO, February 23, 2016
- Spring 2016 **Panelist:** Expanding Your Horizons in Mathematics and Science Conference for 7-10 grade girls, Saint Louis University, St Louis, MO, March
- Spring 2015 **Panelist:** Expanding Your Horizons in Mathematics and Science Conference for 7-10 grade girls, Saint Louis University, St Louis, MO, March 10, 2015
- Spring 2015 **Guest:** Introduce a Girl to Engineering Day, Park College of Engineering, Aviation and Technology, SLU, St Louis, MO, February 26, 2015
- Spring 2014 **Panelist:** Expanding Your Horizons in Mathematics and Science Conference for 7-10 grade girls, Saint Louis University, St Louis, MO March 11, 2014
- Spring 2014 **Panelist:** Research-Oriented Academic Career, NICHD/NIH Fellows Retreat, Bethesda, MD, April 21, 2014
- Spring 2013 **Seminar speaker:** Engineering Seminar Class, St. Charles Community College, St. Peters, MO, September 18 2013
- Spring 2013 **Panelist:** Expanding Your Horizons in Mathematics and Science Conference for 7-10 grade girls, St Louis Community College – Meramac, St Louis, MO March 13, 2013

## PROFESSIONAL SERVICE

### Reviewer for Funding Agencies

- 2021 Grant Review Panel: Combat Readiness-Medical Research Program (CRRP), **DoD** – Feb 3-4
- 2020 Grant Review Panel: Support for Competitive Research (SCORE) review panel, **NIGMS/NIH** – July 18
- 2020 Grant Review Panel: “Bioengineering, Surgery, Anesthesiology, and Trauma”, **NIH** – March 18
- 2019 Ad-hoc Grant Reviewer for the National Science Centre (**NSC**), Poland, SONATA BIS competition – December 22
- 2019 Grant Review Panel: Support for Competitive Research (SCORE) review panel, **NIGMS/NIH** – October 11
- 2019 Ad-hoc Grant Reviewer for the Medical Research Council, United Kingdom – June 25
- 2019 Grant Review Panel: Support for Competitive Research (SCORE) review panel, **NIGMS/NIH** – June 28
- 2018 Ad-hoc Grant Reviewer for Biosciences for the Future, Wiltshire, United Kingdom – December 3
- 2018 Ad-hoc Grant Reviewer for the Beaumont Faculty Development Fund, internal **SLU** grant – August
- 2017 Ad-hoc Grant Reviewer for the Nexus of Animal and Human Health Research Review, Kansas City Area Life Sciences Institute (**KCALSI**), October 16
- 2015 Grant Review Panel: “Unsolicited Biotechnology & Biochemical Engineering Panel”, **NSF**, CBET Division – December 10-11
- 2015 Grant Review Panel: Support for Competitive Research (SCORE) review panel, **NIGMS/NIH** – June 26
- 2014 Grant Review Panel: Support for Competitive Research (SCORE) review panel, **NIGMS/NIH** – June 26
- 2014 Grant Review Panel: Support for Competitive Research (SCORE) review panel, **NIGMS/NIH** – February 26
- 2013, 14, 18 Ad-hoc Grant Reviewer for President’s Research Fund, internal **SLU** grant
- 2011 Grant Review Panel: “Stem Cell, Tissue Engineering and Drug/Gene delivery”, National Science Foundation (**NSF**), CBET Division - December

### Journal Editorial/Review Boards

- 2020- **Editorial Board:** Pharmaceuticals, Pharmaceutical Technology section (*IF: 4.286*), MDPI Publisher
- 2014- **Review Editor:** Frontiers in Bioengineering and Biotechnology (*IF: 5.122*); Frontiers Publisher

### Reviewer for Scientific Journals (59 total, ~2 paper/month)

- 2020 PLoSOne (*IF: 2.870*)
- 2020 ACS Pharmacology & Translational Science (*IF: new journal*)
- 2020 Langmuir (*IF: 3.683*)
- 2019 ACS Applied Polymer Materials (new journal)
- 2019 Oncology Reports (*IF: 2.662*)
- 2019 Polymer (*IF: 3.483*)
- 2019 RSC Advances (*IF: 2.936*)
- 2018 ACS Applied Bio Materials (new journal)
- 2018 Science Advances (*IF: 11.51*)
- 2018 Tissue Engineering Part A (*IF: 3.508*)



2018 Colloids and Surfaces B: Interfaces (*IF: 3.994*)  
2018 Frontiers in Bioengineering and Biotechnology (*IF: 5.122*)  
2018 Frontiers in Oncology (*IF: 4.416*)  
2018 Computational and Structural Biotechnology (*IF: 4.148*)  
2018 Journal of Microencapsulation (*IF: 1.585*)  
2018 Cells Tissues Organs (*IF: 1.275*)  
2018 Journal of the Mechanical Behavior of Biomedical Materials (*IF: 2.57*)  
2018 Journal of Polymer Science, Part B (*IF: 3.830*)  
2018 Biochemistry & Analytical Biochemistry (*IF: 2.63*)  
2018 Advanced Materials (*IF: 19.791*)  
2018 Small (*IF: 8.315*)  
2017 Cancer Letters (*IF: 6.375*)  
2017 Frontiers in Materials (*IF: 2.008*)  
2017 Biotechnology and Bioengineering (*IF: 4.481*)  
2017 Journal of the Mechanical Behavior of Biomedical Materials (*IF: 3.110*)  
2017 Advanced Engineering Materials (*IF: 1.758*)  
2017 Biotechnology Progress (*IF: 2.167*)  
2017 Chemical Engineering Journal (*IF: 5.439*)  
2017 ACS Biomaterials Science & Engineering (*IF: 4.432*)  
2017 European Polymer Journal (*IF: 3.242*)  
2016 Biomaterials (*IF: 8.557*)  
2016 International Journal of Oncology (*IF: 3.025*)  
2016 Current Nanoscience (*IF: 0.934*)  
2016 Biomacromolecules (*IF: 5.750*)  
2016 Macromolecular Chemistry and Physics (*IF: 2.451*)  
2016 AIChE Journal (*IF: 2.748*)  
2016 Tissue Engineering – Part B: Reviews (*IF: 4.64*)  
2015 Macromolecular Rapid Communications (*IF: 4.608*)  
2015 Sensors (*IF: 2.245*)  
2015 Materials Today (*IF: 10.85*)  
2015 ACS Chemical Neuroscience (*IF: 4.362*)  
2015 Tissue Engineering - Part C: Methods (*IF: 4.64*)  
2015 Biomaterials Science (*IF: 3.831*)  
2015 Cellular and Molecular Bioengineering (*IF: 1.318*)  
2015 Annals of Biomedical Engineering (*IF: 3.195*)  
2015 Journal of the Minerals, Metals, and Materials Society (*IF: 1.757*)  
2014 Advanced Functional Materials (*IF: 13.5*)  
2014 Advanced Healthcare Materials (*IF: 5.79*)  
2014 Journal of Materials Chemistry B (*IF: 4.726*)  
2014 Micromachines (*IF: 1.286*)  
2013 Macromolecular Bioscience (*IF: 3.650*)  
2013 Journal of Biomaterials Science: Polymer Edition (*IF: 1.648*)  
2013 Acta Biomaterialia (*IF: 6.025*)  
2013 Journal of Visualized Experiments (JoVE) (*IF: 1.325*)  
2012 Soft Matter (*IF: 4.151*)  
2012 Journal of Biomedical Materials Research: Part A (*IF: 3.369*)  
2011 Journal of Controlled Release (*IF: 7.633*)  
2011 International Journal of Molecular Sciences (*IF: 2.339*)

2011 Macromolecular Theory and Simulations (*IF*: 1.793)

### **Sigma Xi Honor Society**

2020 President-Elect for Sigma Xi SLU Chapter

### **Biomedical Engineering Society (BMES)**

#### Abstract/Extended Abstract Reviewer

- 2019 “Biomaterials” track, BMES Annual Meeting, Philadelphia, PA
- 2018 “Cancer Technologies” track, BMES Annual Meeting, Atlanta, GA
- 2018 “Drug Delivery and Intelligent Systems” track, BMES Annual Meeting, Atlanta, GA
- 2017 “Biomaterials” track, BMES Annual Meeting, Phoenix, AZ
- 2017 “Biomedical Education” track, BMES Annual Meeting, Phoenix, AZ
- 2016 “Biomaterials” track, BMES Annual Meeting, Minneapolis, MN
- 2015 “Biomaterials” track, BMES Annual Meeting, Tampa, FL

#### Session Chair/Co-Chair (Session Moderator)

- 2019 “Biomaterials: Hydrogels IV” Platform Session, BMES Annual Meeting, Philadelphia, PA
- 2018 “Drug Delivery for Implants and Responsive Drug Delivery Systems”, Platform Session, BMES Annual Meeting, Atlanta, GA
- 2018 “Drug Delivery and Immunomodulation”, Platform Session, BMES Annual Meeting, Atlanta, GA
- 2018 “Micro/Nano Tools in Molecular Biology”, Platform Session, BMES Annual Meeting, Atlanta, GA
- 2017 “3D Printing and Advanced Biomaterial Manufacturing-II”, Platform Session, BMES Annual Meeting, Phoenix, AZ
- 2017 “Drug Delivering Biomaterials”, Platform Session, BMES Annual Meeting, Phoenix, AZ
- 2016 “Biomaterials for Immunoengineering I”, Platform Session, BMES Annual Meeting, Minneapolis MN
- 2015 “Biomaterial Scaffolds III”, Platform Session, BMES Annual Meeting, Tampa, FL

#### Mentor

- 2017 “Match-up Mentoring Program”, BMES Annual Meeting, Phoenix, AZ
- 2016 “Rapid Resume Review and Critique Workshop”, BMES Annual Meeting, Minneapolis, MN
- 2015 “Match-up Mentoring Program”, BMES Annual Meeting, Tampa, FL

### **American Institute for Chemical Engineers (AIChE)**

#### Session Chair/Co-chair (Abstracts Reviewer, Session Organizer and Moderator)

- 2017 “Biomaterials II: Platforms for Cell Encapsulation, Isolation and Diagnostics”, Platform Session, AIChE Annual Meeting, Minneapolis, MN
- 2017 “Biomaterials I: Instructive and Responsive Biomaterials”, Platform Session, AIChE Annual Meeting, Minneapolis, MN
- 2016 “Biomaterials: Graduate Student Award Session”, Platform Session, AIChE Annual Meeting, San Francisco, CA
- 2015 “Biomaterials: Graduate Student Award Session”, Platform Session, AIChE Annual Meeting, Salt Lake City, UT
- 2014 “Hydrogel Biomaterials I and II”, Platform Session, AIChE Annual Meeting, Atlanta, GA
- 2014 “Biomaterial-Cell Interactions in Tissue Engineering”, Platform Session, AIChE Annual Meeting, Atlanta, GA
- 2013 “Biobased Materials”, Platform Session, AIChE Annual Meeting, San Francisco, CA
- 2013 “Biomaterials II”, Platform Session, AIChE Annual Meeting

- 2013 “Biomaterials I”, Platform Session, AIChE Annual Meeting, San Francisco, CA
- 2012 “Spatially Patterned Biomaterials”, Platform Session, AIChE Annual Meeting, Pittsburg, PA
- 2011 “Hydrogel Biomaterials”, Platform Session, AIChE Annual Meeting, Minneapolis, MN
- 2011 “Hybrid Biomaterials”, Platform Session, AIChE Annual Meeting, Minneapolis, MN
- 2010 “Hybrid biomaterials”, Platform Session, AIChE Annual Meeting, Salt Lake City, UT
- 2010 “Advances in biomaterial evaluation”, Platform Session, AIChE Annual Meeting, Salt Lake City, UT
- 2009 “Gene delivery from tissue engineering scaffolds”, Platform Session, AIChE Annual Meeting, Nashville, TN
- 2009 “Injectable biomaterials”, Platform Session, AIChE Annual Meeting, Nashville, TN

Judge

- 2012 “Graduate student award session in nanomaterials”, Platform Session, AIChE Annual Meeting, Pittsburg, PA
- 2011 “Graduate student award session in nanomaterials”, Platform Session, AIChE Annual Meeting, Minneapolis, MN
- 2010 “Graduate student award session in nanomaterials”, Platform Session, AIChE Annual Meeting, Salt Lake City, UT

Invited Panelist

- 2009 “Women in Engineering: Graduate Student Panel”, AIChE Annual Meeting, Nashville, TN

**Society for Biomaterials (SfB)**

Abstract Reviewer

- 2019 “Synthetic Nanomaterials for Therapeutic Delivery”, SfB Annual Meeting, Seattle WA
- 2019 “Biomaterials for Therapeutic Drug Delivery”, SfB Annual Meeting, Seattle WA
- 2010 “Biomimetic materials for tissue engineering”, SfB Annual Meeting

**Society of Engineering (SES)**

Symposium Organizer and Chair

- 2019 “Biomaterial-based in-vitro disease models in drug and toxicology screening applications A”, Symposium organizer and chair, Society of Engineering Science Meeting, St Louis, MO, October 13-15
- 2019 “Biomaterial-based in-vitro disease models in drug and toxicology screening applications B”, Symposium organizer and chair, Society of Engineering Science Meeting, St Louis, MO, October 13-15

**Institute of Biological Engineering (IBE)**

Session Chair/Co-Chair (Session Organizer and Moderator)

- 2019 “Bionanotechnology” Platform Session, Institute of Biological Engineering Annual Conference, St Louis, MO, April 4-6
- 2019 Poster Judge, Institute of Biological Engineering Annual Conference, St Louis, MO, April

**Midwest Regional Conferences, Symposiums, Workshops**

Session Chair (Session Moderator)

- 2017 “Drug Delivery & Materials in Tissue Regeneration”, Platform Session, Musculoskeletal Regenerative Medicine and Biology Meeting, St. Louis, MO
- 2016 “Translational Regenerative Medicine”, Platform Session Moderator, Midwest Regenerative Medicine Conference, Monticello, IL

Abstract Reviewer

- 2017 ORS Midwest Musculoskeletal Workshop, St Louis, MO  
Poster Judge  
2017 ORS Midwest Musculoskeletal Workshop, St Louis, MO  
2016 St. Louis Area Undergraduate Research Symposium (STLAURS), St. Louis, MO  
2015 Sigma Xi Research Symposium, Saint Louis University, St Louis, MO

***Eunice Kennedy Shriver National Institute of Child Development (NICHD)***

- 2012 Invited Panelist: “Discover a career at the NIH”, University of Pittsburg students and faculty visit  
2012 Contributing editor: VFC Fellows Newsletter  
2012 Regular contributor: The NIH Catalyst: a publication about intramural research  
2012 Judge: NIH FARE 2013 Travel Award Competition  
2011 Member: NICHD Steering Committee  
2011 Poster Judge: 2011 NIH Spring Research Festival, Bethesda, MD  
2010 - 2012 Member: NICHD Fellows Committee  
2010 - 2012 Regular contributor: NICHD Fellows Newsletter

**UMBC Biochemical Engineering Graduate Students Organization (BioCheGS)**

- 2008 - 2009 President  
2008 - 2009 Web Master  
2007 - 2008 Vice President  
2006 - 2007 Historian/Secretary