Event Sponsors

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Texas Children’s Hospital, a not-for-profit health care organization, is committed to creating a healthier future for children and women throughout the global community by leading in patient care, education and research. Consistently ranked as the best children’s hospital in Texas, and among the top in the nation, Texas Children’s has garnered widespread recognition for its expertise and breakthroughs in pediatric and women’s health. The organization created the nation’s first HMO for children, has the largest pediatric primary care network in the country and a global health program that’s channeling care to children and women all over the world. Texas Children’s Hospital is affiliated with Baylor College of Medicine. For more information, go to www.texaschildrens.org.
Biomaterials Day Program

Morning Session

9:00-10:00 am  **Breakfast and Symposium Registration**  
Prefunction Space

10:00-10:15  **Opening Remarks, Jeffrey Jacot**  
Rice University

10:15-11:00  **Keynote Speaker, Kristi Anseth**  
University of Colorado, Boulder

  *Engineering hydrogel matrices: from tissue engineering to 4-D cell biology*

11:00-11:40  **Invited Speakers**

11:00-11:20  **William Cohn, Texas Heart Institute**  
The evolving role of additive manufacturing in the prototyping of complex medical devices

11:20-11:40  **Gang Bao, Rice University**  
Engineering imaging probes and molecular machines for nanomedicine

11:40-12:00 pm  **Student Rapid Fires I**

  - Charles Peak, Abstract No. 37
  - Joseph Pearson, Abstract No. 38
  - Sarah Stagg, Abstract No. 49
  - John Clegg, Abstract No. 16
  - Yang Gao, Abstract No. 19

Afternoon Session

12:00-1:00  **Luncheon**

1:00-1:40  **Student Poster Competition I, Prefunction Space**

1:40-2:40  **Invited Speakers**

1:40-2:00  **Tania Betancourt, Texas State University**  
Polymer-enabled nanomedicine: engineering nanostructures for diagnostic and therapeutic applications

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Rice University

A top-ranked bioengineering program

The Rice University Department of Bioengineering is a top-tier teaching and research program with a faculty committed to excellence in education and interdisciplinary, basic and translational research. Both our graduate and undergraduate programs are consistently ranked among the nation’s top 10 bioengineering programs.

Key to our success as an international leader in bioengineering is capitalizing on Rice’s location, which promotes the development of long-term strategic partnerships with experts in industry and academic and government institutions.

Rice is situated in the midst of one of the largest, most diverse cities in the nation. Our neighbors include the Texas Medical Center (TMC) and its member institutions. The TMC, which is the largest medical center in the world, is where much of Houston’s biotechnology industry is focused, and provides unlimited opportunities to expand our global reach and build unparalleled teaching and research programs that solve a broad spectrum of complex problems in science and medicine.

The BioScience Research Collaborative (BRC) is an innovative space where scientists and educators from Rice University and other Texas Medical Center institutions work together to perform leading research that benefits human medicine and health. More than just a building, it is an interdisciplinary, interinstitutional catalyst for new and better ways to collaborate, explore, learn and lead.
Student volunteers

Coordinator

Yang Gao, Ph.D. Candidate
Pediatric Cardiovascular Bioengineering Lab
Jeffrey Jacot, Adviser

Volunteers

Bagrat Grigoryan, Ph.D. Candidate
Miller Lab
Jordan Miller, Adviser

Samantha Paulsen, Ph.D. Candidate
Miller Lab
Jordan Miller, Adviser

Chris Tsao, Ph.D. Candidate
Pediatric Cardiovascular Bioengineering Lab
Jeffrey Jacot, Adviser

Biomaterials Day Program

Afternoon Session

Matteo Pasquali, Rice University
Biomedical applications of carbon nanotube fibers

Ennio Tasciotti, Houston Methodist Hospital
Biomimetic nanomaterials to overcome biological barriers in drug delivery and tissue engineering

Student Rapid Fires II

Johnny Lam, Abstract No. 28
Anna Means, Abstract No. 30
Ramanathan Yegappan, Abstract No. 7
Hojin Kim, Abstract No. 3
Rebekah Rodriguez, Abstract No. 8

Coffee Break and Student Poster Competition II

Invited Speakers

Kytai Nguyen, University of Texas at Arlington
Nanoscaffolds for drug delivery and vascular tissue engineering applications

Stefanie Biechlert, Bose Corporation
Design of an MRI-compatible bioreactor for mechanical stimulation and non-invasive imaging

Chong Xie, University of Texas at Austin
Towards minimally invasive neural probes

Sergey Shevkoplyas, University of Houston
Rapid, low-cost, paper-based assay for diagnosis of sickle cell disease

Awards Reception
Event Organizers

Jeffrey Jacot, Ph.D., is the director of the Pediatric Cardiac Bioengineering Laboratory at Texas Children’s Hospital and is an associate professor of bioengineering at Rice University. He works conjunction with collaborators to engineer reparative heart tissue using stem cells found in amniotic fluid grown on novel multilayered biomaterials. These tissues are designed to fix heart defects in infants, eliminating the need for heart transplants or multiple and complex surgeries.

Elizabeth Cosgriff-Hernandez, Ph.D., is an associate professor in the Department of Biomedical Engineering at Texas A&M University. She received her B.S. in biomedical engineering and Ph.D. in Macromolecular Science and Engineering from Case Western Reserve University in Cleveland, Ohio. Her research interests include biomaterial synthesis, structure-property relationships, cell-material interactions, musculoskeletal tissue engineering and biodegradation characterization.

Melissa Grunlan, Ph.D., is an associate professor of biomedical engineering at Texas A&M University. She is also a faculty member of the Department of Materials Science & Engineering. Her research is focused on developing new materials for medical devices and regenerative therapies, including: self-cleaning membranes for implanted biosensors, anti-fouling coatings and scaffolds for osteochondral and bone tissue healing.

Teja Guda, Ph.D., is an assistant professor in the Department of Biomedical Engineering and assistant director of the Center for Innovation Technology and Entrepreneurship at the University of Texas at San Antonio. His research focuses on developing biomaterials based synthetic grafts for orthopedic tissues, cell encapsulation platforms and biophysical conditioning for tissue regeneration.

Laura Suggs, Ph.D., is an associate professor at the University of Texas, Austin. Her research program is in the area of biologically active materials and their use and behavior in cardiovascular tissue engineering and cancer research. She works to better understand molecular and cellular mechanisms during processes such as vasculogenesis and tumor cell invasion as well as the structure of both natural and synthetic polymers and their effect on living tissues.

About Biomaterials Day

Biomaterials Day, funded by the Society for Biomaterials (SFB), is a one day symposium at six different locations throughout the United States.

Biomaterials Day at Rice University will enhance networking between academic, industrial and government sectors and will increase student exposure to exciting biomaterials research.

SFB members and non-members as well as students throughout the area interested in the biomaterials field attend the event.

The Rice symposium will include keynote and invited lectures by leading engineers, physicians, and scientists in the field. Oral presentations from both academic and industrial researchers will showcase ongoing research in the region and promote collaboration and knowledge exchange between institutions and industry. Finally, abstracts will be solicited for a poster session that will provide a venue for student research presentations and networking. Awards will be given for best poster.

SFB officially initiated the Biomaterials Day program in 2008 to highlight cutting-edge research and increase student interest in biomaterials careers.
57. Long-Term Safety and Stability of Carbon Nanotube Fiber as Active Interfaces with Excitable Tissues
Jiaxi Stephen Yan1,2, Flavia Vitale2, and Matteo Pasquali2,3
1Department of Bioengineering, Rice University; 2Department of Chemical and Biomolecular Engineering, Rice University; 3Department of Material Science & NanoEngineering, The Smalley Institute for Nanoscale Science & Technology, Rice University, Houston, TX

58. Antifouling Silicones Prepared with PEO-Silane Amphiphiles
Melissa L. Hawkins1, Samantha M. Schott1, Bagrat Grigoryan1, Marc A. Rufin1, Elizabeth S. Raymond2, Jeffery E. Raymond2, Melissa A. Grunlan1,4
Texas A&M University, 1Department of Biomedical Engineering, 2Department of Neuroscience and Experimental Therapeutics, 3Department of Chemistry, Laboratory for Synthetic-Biologic Interactions, 4Department of Materials Science and Engineering, College Station, TX

59. Peptide Stereochemistry as an Emerging Design Tool for Self-Assembling Biomaterials
Alexey Y. Koyfman1, Rajagopal Appavu1, Samantha M. Sheller2, Joshua D. Snook3, Mark A. White4, and Jai S. Rudra4
1Department of Pharmacology and Toxicology, 2Department of Biochemistry and Molecular Biology, University of Texas Medical Branch, Galveston, TX

60. Engineered RNA Nanoring for Efficient Delivery of siRNA
Alexey Koyfman1, Kirill Afonin2, Angelica Martins3, Eric Freed2, Wah Chiu3, Jai Rudra1, and Bruce Shapiro3
1Department of Pharmacology and Toxicology, University of Texas Medical Branch, Galveston TX; 2National Cancer Institute, Frederick, MD; 3Department of Biochemistry and Molecular Biology, Baylor College of Medicine, Houston, TX

61. Mimicking the Human Trabecular Bone Niche for Bone Augmentation and Spinal Fusion
Silvia Minardi1,2, Bruna Corradetti1, Francesca Taraballi1, Fernando J. Cabrera1, Jeffrey Van Eps1, Anna Tampieri2, Bradley K. Weiner1, Ennio Tasciotti1
1Center for Regenerative Medicine, Houston Methodist Research Institute, Houston, TX; 2Department of Life and Environmental Sciences, Universita' Politecnica delle Marche, Ancona, Italy

62. Solvent-free Fabrication of Polyhipe Microspheres for Controlled Release of Growth Factors
Michael Whitely; Robert Moglia; Megan Brooks; Jennifer Robinson; Michael Pishko and Elizabeth Cosgriff-Hernandez
1Texas A&M University, College Station, TX

63. Degradation of Thermoset Shape Memory Polyurethanes and Foams
Andrew C Weems, Duncan J Maitland
Dept. Biomedical Engineering, Texas A&M University, College Station, USA

Kristi S. Anseth, Ph.D.

Distinguished Professor, Tisone Professor, Associate Professor of Surgery, HHMI Investigator
University of Colorado, Boulder

Kristi Anseth earned her B.S. degree from Purdue University in 1992 and her Ph.D. degree from the University of Colorado in 1994. She then conducted post-doctoral research at MIT as an NIH fellow and subsequently joined the Department of Chemical and Biological Engineering at the University of Colorado at Boulder as an assistant professor in 1996.

Anseth is presently a Howard Hughes Medical Institute Investigator and distinguished professor of chemical and biological engineering. Her research interests lie at the interface between biology and engineering where she designs new biomaterials for applications in drug delivery and regenerative medicine.

Anseth’s research group has published more than 200 publications in peer-reviewed journals and presented over 180 invited lectures in the fields of biomaterials and tissue engineering. She was the first engineer to be named a Howard Hughes Medical Institute investigator and received the Alan T. Waterman Award, the highest award of the National Science Foundation for demonstrated exceptional individual achievement in scientific or engineering research.

In 2009, she was elected a member of the National Academy of Engineering and the Institute of Medicine. Anseth is also a dedicated teacher, who has received four university awards related to her teaching, as well as the American Society for Engineering Education’s Curtis W. McGraw Award.

Anseth is a fellow of the American Association for the Advancement of Science and the American Institute for Medical and Biological Engineering. She serves on the editorial boards or as associate editor of Biomacromolecules; Journal of Biomedical Materials Research, Part A; Acta Biomaterialia; Progress in Materials Science; and Biotechnology & Bioengineering.
Invited Speakers

**Gang Bao**, Ph.D. is the Foyt Family Professor of Bioengineering at Rice University. The nanoscale structures and devices engineered in his lab have applications in basic biological research toward the understanding of underlying causes of disease, as well as in the translation of nano-scale tools for disease diagnostics and treatment, such as targeted drug/gene and cell-based therapies. He has a B.S. in mechanical engineering from Shandong University and a Ph.D. applied mathematics from Lehigh University.

**Tania Betancourt**, Ph.D. is an assistant professor of chemistry and biochemistry at Texas State University. She has a B.S. in chemical engineering from Texas A&M University, and an M.S. and Ph.D. in biomedical engineering from the University of Texas, Austin. Her research focuses on the development of functional polymeric nanostructures that can act as contrast agents for bioimaging, targeted and intracellular drug delivery systems, and externally controlled therapeutics.

**Stefanie Biechler**, Ph.D., is a senior applications engineer in the ElectroForce Systems Group at Bose Corporation. She works in the design of bioreactors for regenerative medicine applications as well as in improving methods for the characterization of tissues and biomaterials. She has a B.S. in chemical engineering and a Ph.D. in biomedical engineering from the University of South Carolina.

**William E. Cohn**, M.D., FACS, FACC, FAHA, is a cardiovascular surgeon and director of Minimally Invasive Surgical Technology at the Texas Heart Institute at St. Luke’s Episcopal Hospital. He is co-director of the Cullen Cardiovascular Research Laboratory, associate professor of surgery at Baylor College of Medicine and adjunct professor of bioengineering at the University of Houston. Dr. Cohn is one of the leaders of the team of experts developing a total artificial heart that will deliver blood by means of continuous flow rather than pulsation. He has a B.S. from Oberlin College and an M.D. from Baylor.

Graduate Abstracts

50. **Design and development of pH-responsive hydrogel systems for the oral delivery of therapeutic proteins**
Stephanie Steichen, Colleen O’Connor, and Nicholas A. Peppas
1Department of Biomedical Engineering, 2McKetta Department of Chemical Engineering and 3College of Pharmacy, The University of TX at Austin, Austin, TX

51. **Elastomer/Gelatin Composite Membranes for Treatment of Cutaneous Mold Infection**
1Department of Bioengineering, Rice University, Houston, TX
2Department of Infectious Diseases, the University of TX MD Anderson Cancer Center, Houston, TX

52. **Synthesis and Characterization of Biodegradable Polyurethane-ureas as Biomaterials for Soft Tissue Applications**
Tyler Tuchet, Alysha Kishan, Renee Calderon, and Elizabeth Cosgriff-Hernandez, PhD
Department of Biomedical Engineering, TX A&M University, College Station, TX

53. **Reprogramming and Cardiac Differentiation of Amniotic Fluid Derived Stem Cells for the Repair of Congenital Heart Defects**
Christopher J.M. Tsao, Aaron J. Velasquez-Mao, Jeffrey G. Jacot, and Antonios G. Mikos
1Department of Bioengineering, Rice University, 2Congential Heart Surgery Service, TX Children’s Hospital

54. **In Vitro and In Vivo Mineralization and Osteogenesis of Injectable Stem Cell Laden Hydrogels**
1Department of Bioengineering, Rice University, Houston, TX

55. **Intravascular Canine Patent Ductus Arteriosus Closure Device**
M.A. Wierzbicki, J. Bryant, M.W. Miller, and D.J. Maitland
1Dept. Biomedical Engineering, TX A&M University
2Texas Institute for Preclinical Studies, TX A&M University, College Station, TX

56. **Nanoparticle Delivery via Angioplasty Balloons for Treatment of Atherosclerosis**
1University of TX at Arlington, Arlington TX; 2VA North TX Health Care System at Dallas, Dallas TX; 3University of TX Southwestern Medical Center at Dallas, Dallas TX; 4Pennsylvania State University, State College PA
Graduate Abstracts

43. Effect of Flow Conditions in a 3D Tumor Model Generated Using a Flow Perfusion Bioreactor
Marco Santoro\textsuperscript{1,2}, Salah-Eddine Lamhamedi-Cherradi\textsuperscript{2}, Brian A. Menegaz\textsuperscript{3}, Joseph A. Ludwig\textsuperscript{4} and Antonios G. Mikos\textsuperscript{5,3}
\textsuperscript{1}Department of Chemical and Biomolecular Engineering, Rice University, Houston, TX; \textsuperscript{2}Department of Sarcoma Medical Oncology, The University of TX MD Anderson Cancer Center, Houston, TX; \textsuperscript{3}Department of Bioengineering, Rice University, Houston, TX

44. Solid Freeform Fabrication of High Porosity Foams
Nick Sears, M.S., Dhruv Seshadri, Michael Whitley, and Elizabeth Cosgriff-Hernandez, Ph.D.
Department of Biomedical Engineering, TX A&M University, College Station, TX

45. Cure-On-Dispense Printing of High Porosity Foams using Redox Initiation
Dhruv Seshadri, Nick Sears, and Elizabeth Cosgriff-Hernandez
Department of Biomedical Engineering, Rice University, College Station, TX

46. Clindamycin-releasing Porous Poly(methylmethacrylate) space maintainers for Prevention of Mandibular Infection
Shah SR\textsuperscript{1}, Tatara AM\textsuperscript{1}, Lam J\textsuperscript{1}, S. Lu\textsuperscript{1}, G. N. Bennett\textsuperscript{1}, van den Beucken JJJP\textsuperscript{2}, Jansen JA\textsuperscript{2}, Wong ME\textsuperscript{3}, Mikos AG\textsuperscript{1}
\textsuperscript{1}Department of Bioengineering, Rice University, Houston, TX; \textsuperscript{2}Department of Biomatirals, Radboud University Medical Center, Nijmegen, The Netherlands; \textsuperscript{3}Department of Oral and Maxillofacial Surgery, University of TX Health Science Center at Houston, Houston, TX,

47. Encapsulation of Polyanhydride Nanoadjuvants in Biodegradable Microgels for Oral Delivery
Lindsey Sharpe\textsuperscript{1}, Olivia Mutaz-Haddadin\textsuperscript{2}, Jeyvikram Thirumavalavan\textsuperscript{1}, Yasmine Khairandish\textsuperscript{1} and Nicholas A. Peppas\textsuperscript{1,2,3}
\textsuperscript{1}Department of Biomedical Engineering, \textsuperscript{2}Department of Chemical Engineering, and; \textsuperscript{3}Division of Pharmaceutics, University of TX at Austin, Austin, TX-78712-1062

48. Synthesis and Characterization of Cationic Nanogels for Enhanced Cancer Therapy
David S. Spencer\textsuperscript{1}, Bryan C. Luu\textsuperscript{1}, Nicholas A. Peppas\textsuperscript{1-4}
\textsuperscript{1}McKetta Department of Chemical Engineering, The University of TX at Austin; \textsuperscript{2}Department of Biomedical Engineering, The University of TX at Austin; \textsuperscript{3}Institute for Biomaterials, Drug Delivery and Regenerative Medicine, The University of TX at Austin; \textsuperscript{4}College of Pharmacy, The University of TX at Austin, Austin, TX

49. Interpenetrating Collagen-Fibrin Hydrogels for Skeletal Muscle Regeneration
Sarah J. Stagg\textsuperscript{1}; Beth E. Pollot\textsuperscript{1,2}; Christopher R Rathbone\textsuperscript{2}; Anson Ong\textsuperscript{1}; Teja Guda\textsuperscript{1,2}
\textsuperscript{1}The University of TX at San Antonio, San Antonio, TX, \textsuperscript{2}US Army Institute of Surgical Research, Ft. Sam Houston, TX

Invited Speakers

Kytai T. Nguyen, Ph.D., is an associate professor of bioengineering and graduate advisor of bioengineering at the University of Texas at Arlington. She has a B.S. in chemical engineering from the University of Minnesota and a Ph.D. degree in chemical engineering from Rice University. Her research interests include biomaterials, drug delivery systems, cellular and tissue engineering.

Matteo Pasquali, Ph.D., is professor of chemical and biomolecular engineering, professor of chemistry, and chair of the Department of Chemistry at Rice. He has an M.Sc. in chemical engineering from the University of Bologna, Italy, and a Ph.D. in chemical engineering from the University of Minnesota. His research revolves around understanding the interaction of flow and liquid micro/nano-structure in complex fluids, with application to the processing of multifunctional materials, particularly those based on single-walled carbon nanotubes.

Sergey Shevkoplyas, Ph.D., is associate professor of biomedical engineering at the University of Houston. He has a B.S. and M.S. in applied mathematics and physics from the Moscow Institute of Physics & Technology, Russia, and a Ph.D. in biomedical engineering from Boston University. He develops high-throughput microfluidic devices and single-cell analysis tools for blood storage and transfusion of medicine. He is developing novel technologies for improved safety and efficacy of blood transfusions, particularly for resource-limited settings.

Ennio Tasciotti, Ph.D., is co-chair of the Department of Nano-medicine; scientist, Tissue Engineering & Regenerative Medicine Program; and director, Surgical Advanced Technology Laboratory at Houston Methodist Hospital Research Institute. He has an M.Sc. in biological sciences and an M.S. in molecular biology from the Scuola Normale Superiore Pisa, Italy, and a Ph.D. in molecular medicine from the Scuola Normale Superiore Pisa and the International Center for Biotechnology and Genetic Engineering in New Delhi, India.

Chong Xie, Ph.D., is an assistant professor of bioengineering at the University of Texas, Austin. He has a B.S. in applied physics from the University of Science and Technology of China, and a Ph.D. in materials science and engineering from Stanford University. His Ph.D. research with Professor Yi Cui and Professor Bianxiao Cui focused on nanostructured cellular probes. He did his postdoctoral work at Harvard University, with Professor Charles Lieber on nanoelectronic devices and brain probes.
Undergraduate Abstracts

1. Architectural Gradient Scaffolds for Subchondral Restoration
Diana Castillo, Sergio Montelongo, Teja Guda, Joo Ong
The University of TX at San Antonio, Department of Biomedical Engineering

2. Select Choroidal Endothelial Cell Functions under Elevated Pressure and High Glucose Concentrations
K. A. Hamalainen, M. E. Wechsler, R. Bizios and M. A. Reilly
Department of Biomedical Engineering, The University of TX at San Antonio, San Antonio, TX

3. Liquid Crystal Elastomers as Active Substrates for Dynamic Cell Culture
Aditya Agrawal, Oluwatomiyin Adetiba, Hojin Kim, Huiying Chen, Jeffrey G. Jacot, and Rafael Verduzco
1Department of Chemical and Biomolecular Engineering, Rice University, Houston, TX; 2Department of Bioengineering, Rice University, Houston, TX; 3Division of Congenital Heart Surgery, TX Children’s Hospital, Congenital Heart Surgery Services, Houston, TX

4. Characteristics and Properties of Silk Scaffolds
Joseph J. Pearson, Solaleh Mir, Teja Guda, PhD, and Joo L. Ong, PhD
1Department of Biomedical Engineering, The University of TX at San Antonio, San Antonio, TX

5. Achieving Tunable Degradation of PolyHIPE Bone Grafts
Hannah Pearce, Jenny Robinson, Tyler Touchet, Madison McEnery, and E. Cosgriff-Hernandez
1Biomedical Engineering, TX A&M University, College Station, TX

6. Electrochemically-Pre-adsorbed Collagen Promotes Adult Human Mesenchymal Stem Cell Adhesion on Optically Transparent Nanostructured Carbon Substrates
M. E. Wechsler, T. E. Benavidez, M. M. F. Farrer, R. Bizios, and C. D. Garcia
1Department of Biomedical Engineering and 2Chemistry, The University of TX at San Antonio, San Antonio, TX

7. Sequential Click Reactions for the Polymerization and Functionalization of Poly(ethylene glycol) Based Hydrogel Microparticles
Ramanath Yegappan, Faraz Jivan, Akhilesh K. Gaharwar, Daniel L. Alge
1Department of Biomedical Engineering, TX A&M University, College Station, TX; 2Department of Materials Science and Engineering, TX A&M University, College Station, TX

8. Promoting Vascularized Bone Tissue Regeneration on Composite Scaffolds Using Spatial and Temporal Control
Rebekah Rodriguez, Laura Gaviria, Joo Ong, PhD, and Teja Guda, PhD
1Department of Biomedical Engineering, University of Texas at San Antonio

Graduate Abstracts

Elizabeth Hernandez, Jer-Tsong Hsieh, Liping Tang, Jiang Yang, Kytai T. Nguyen
1Department of Bioengineering, University of TX at Arlington, Arlington, TX 76019; 2Department of Biomedical Engineering, 3Department of Urology, The University of TX Southwestern Medical Center, Dallas, TX, 75390; 4Bioengineering Department, The Pennsylvania State University, University Park, PA 16802

37. Microfiber Fabrication from Nanoparticle Polymeric Solutions for Cellular Encapsulation
C.W. Peak, J. Carrow, A. Thakur, A.K. Gaharwar
1Texas A&M University, College Station, TX;

38. Torsional Evaluation of Collagen Coated Hydroxyapatite with Varying rhBMP-2 Dosages in an In Vivo Critical Sized Rabbit Radius Model
Joseph J. Pearson, Suyash Karajgar, Stephanie Shiels, Joseph Wenke, Teja Guda, PhD, and Joo L. Ong, PhD
1The University of TX at San Antonio, San Antonio, TX 76019; 2US Army Institute of Surgical Research, Ft. Sam Houston, TX.

39. Surface Hydrolysis Mediated PEGylation of PNIPAAm Nanogels
Jonathan T. Peters, Nicholas A. Peppas
1Department of Chemical Engineering, 2Department of Biomedical Engineering, 3College of Pharmacy, 4Institute of Biomaterials, Drug Delivery, and Regenerative Medicine, The University of TX at Austin, Austin, TX

40. Development of Suturable and Bioactive Hydrogels to Promote Endothelialization of Vascular Grafts
Biomedical Engineering, TX A&M University, College Station, TX
Institute for Biotechnology, Houston, TX

41. Hyaluronan Hydrogels as Biomimetic Spongiosa Layer for Tissue Engineered Heart Valves
Dan Pupeni, Zoe Punksie, Ronan O’Connell, Yan Wu, Jennifer West, Jane Grande-Allen
1Rice University, Department of Bioengineering, Houston, TX; 2Glasgow University, Department of Biomedical Engineering, Glasgow, UK; 3Duke University, Department of Biomedical Engineering, Durham, NC

42. PEO-silane amphiphiles to prevent protein adsorption on silicone: Dependence on PEO-segment length and concentration
Marc A. Rufin, Mikayla E. Barry, Paige A. Adair, Melissa L. Hawkins, Jeffery E. Raymond, and Melissa A. Grunlana
1Department of Biomedical Engineering, 2Department of Chemistry, 3Department of Materials Science and Engineering, TX A&M University, College Station, TX
29. Osteochondral tissue repair using a bilayered hydrogel composite delivering spatially-guided dual growth factors
Lu S1, Lam J1, Mikos AG1,
1Department of Bioengineering, Rice University, Houston,
2Institute of Cellular & Molecular Biology, College of Pharmacy, The University of TX at Austin
3Department of Biomedical Engineering, Stanford University
4College of Pharmacy, The University of TX at Austin

30. Self-cleaning, Mechanically Robust Membranes for Implanted Glucose Biosensors
Means, A. K.1; Fei, R.2; Abraham, A. A.2; Coté, G. L.2; and Grunlan, M. A.1,2
Department of Materials Science & Engineering1, Department of Biomedical Engineering2, TX A&M University, College Station, TX

31. Hydroxyapatite-Carbon nanotube (HA-CNT) composite scaffolds for bone tissue engineering
Sergio Montelongo1, Alice Hsieh1, and T. Guda1, Anson Ong1
1Department of Biomedical Engineering, The University of TX at San Antonio

32. Self-Fitting Shape Memory Polymer Scaffolds for Bone Defect Repair
Lindsay N. Nail1, Dawei Zhang2, Keri M. Peterson1, Olivia J. George1, Jessica L. Reinhard1, Hanna R. Gildewell1, Melissa A. Grunlan1,2
Dept. of Biomedical Engineering1, Dept. of Materials Science and Engineering2, TX A&M University, College Station, TX

33. Synthesis and Applications of Antioxidant Carbon Nanomaterials
Lizanne G. Nilewski, William K. A. Sikkema, Dr. James M. Tour1
Department of Chemistry, Rice University

34. Nanoparticles for gene therapy: an alternative treatment for hindlimb ischemia
Linda Noukeu1,2, Subhash Banerjee2,3, Liping Tang1,2, Kyta T. Nguyen1,2
1Department of Bioengineering, University of TX at Arlington, Arlington, TX;
2Department of Biomedical Engineering, The University of TX Southwestern Medical Center, Dallas, TX;
3Division of Cardiology, VA North TX Health Care System at Dallas, Dallas, TX

35. Polymeric Nanoparticle-Based Enzymatically Activatable Near-Infrared Nanoprobes for Optical Detection of Cancer
Tugba Ozel1,2, Sean White2, Elaine Nguyen2, Austin Moy2, Nicholas Brenes3, Bernard Choi4, and Tania Betancourt1,2,4
1Materials Science, Engineering and Commercialization Program, TX State University; 2Beckman Laser Institute and Department of Biomedical Engineering, University of California-Irvine, CA; 3InnoSense LLC, Torrance, CA; 4Department of Chemistry and Biochemistry, TX State University

36. Thermo-responsive, multimodal imaging enabled nanoparticles towards cancer therapy
Nikhil Pandey1,2, Aniket S. Wadajkar1,2, Jyothish U. Menon1,2, Varsha Sundaresan1,2,
15. Development of Chronic Wound Dressing Based on Collagen-Mimetic Proteins
Stacy Cereceres1, Tyler Touchet1, Mary Beth Browning2, Clayton Smith1, Jose Rivera2, Magnus Höök2, Canaan Whitfield-Cargile3, Brooke Russell2, and Elizabeth Cosgriff-Hernandez1
1Department of Biomedical Engineering, TX A&M University, College Station, TX
2Institute of Science and Technology, TX A&M Health Science Center, Houston, TX
3Department of Large Animal Clinical Sciences, TX A&M University, College Station, TX

16. Synthesis and Characterization of Smart Molecularly Imprinted Polymers, Using Structural Analogue Templates, for the Capture and Detection of Biomolecules
John R. Clegg1,4, Heidi R. Culver1,4, Justin Zhong2, Afshan S. Irani1 and Nicholas A. Peppas1,2,3,4
1Department of Chemical Engineering, 2Department of Biomedical Engineering, 3College of Pharmacy 4Institute for Biomaterials, Drug Delivery, and Regenerative Medicine. University of TX at Austin, Austin TX

17. Understanding the importance of backbone hydrogen bonding in small peptide selfassembly and the RGD-integrin interaction: consequences for engineering degradable cell-adhesive biomaterials
Kevin M. Eckes, Kiheon Baek, Laura J. Suggs
Department of Biomedical Engineering, The University of TX at Austin, Austin, TX

18. Gap Junction Liposomes for Direct Therapeutic Delivery to the Cytoplasm
Avinash Gadok, Jeanne Stachowiak
Department of Biomedical Engineering, The University of TX at Austin, Austin, TX

19. Human pediatric cardiac cells exhibited high viability in 3D culture and limited expression of SSEA-4 and Isl1
Yang Gao1, Jeffrey G. Jacot1,2
1Department of Bioengineering, Rice University, Houston, TX, 2Division of Congenital Heart Surgery, TX Children’s Hospital, Houston, TX

20. Single growth factor release from PLA-based microparticles for recruitment and differentiation of osteoprogenitor cells
Laura Gavria; Teja Guda, PhD; Joo L. Ong, PhD
The University of TX at San Antonio

21. Healing osteochondral defects of the knee: regenerative osteochondral plugs
Glidewell, H; Gacasan, E; Sehnert, R; Grunlan MA
Texas A&M University, Department of Biomedical Engineering, College Station, TX