

Michael J. McShane
Curriculum Vitae
Current as of January 21, 2018

Professor, Texas A&M University
Department of Biomedical Engineering & Department of Materials Science and Engineering
5065 Emerging Technologies Building / MS 3120
College Station, TX 77843-3120
PH: (979) 845-7941 FAX: (979) 845-4450
mcshane@tamu.edu

EDUCATION

B.S., *Magna Cum Laude*, Bioengineering, December 1994, Texas A&M University.

Ph.D., Biomedical Engineering, August 1999, Texas A&M University.

Design of an optical probe and signal processing for an implantable fluorescence-based glucose sensor

PROFESSIONAL EXPERIENCE

(Texas A&M University, College Station, TX)

09/17-Present *Interim Head*, Department of Biomedical Engineering

09/13-Present *Professor*, Departments of Biomedical Engineering and Materials Science & Engineering

08/15-Present *Director of Graduate Programs*, Department of Biomedical Engineering

11/06-Present *Professor, Materials Science and Engineering Department*:

07/06-08/13 *Associate Professor*: Department of Biomedical Engineering, Materials Science & Engineering Program

(Louisiana Tech University, Ruston, LA)

09/05-07/06 *Interim Director*, Center for Biomedical Engineering and Rehabilitation Science

09/04-07/06 *Associate Professor*, Biomedical Engineering, Institute for Micromanufacturing (IfM)

08/04-07/06 *Program Chair, PhD in Biomedical Engineering*, Biomedical Engineering

09/99-08/04 *Assistant Professor*, Biomedical Engineering, Institute for Micromanufacturing (IfM)

HONORS AND AWARDS

James J. Cain Professor II in Biomedical Engineering, TAMU, 2017-2020.

Fellow, American Institute of Medical and Biological Engineering (since 2014)

Senior Member, IEEE (since 2009)

TEES Faculty Fellow, TAMU, 2014-2015

E.D. Brockett Professorship, TAMU, 2010-2011

George Armistead '23 Faculty Fellow, TAMU, 2008.

George Armistead '23 Faculty Fellow, TAMU, 2007.

W.W. Chew Professor of Engineering, LA Tech, 2004-2006.

COES Nominee for the Virgil Orr Junior Faculty Award, LA Tech, 2004.

Outstanding Young Scientist, Houston Society for Engineering in Medicine and Biology, 2/2004.

Research Excellence Award—"Million Dollar Club," College of Engineering and Science, LA Tech, 9/2002.

Researcher of the Year, Sigma Xi National Society, LA Tech Chapter, 5/2002.

Research Excellence Award—"NSF EPSCoR Grant Team," College of Engineering and Science, LA Tech, 9/2001.

Distinguished Graduate Award, Texas A&M Assoc. of Form. Stud., 4/2000.

1st Prize, Open Finalist, IEEE-EMBS Student Paper Competition, sponsored by the Whitaker Foundation, 21st Annual Conference, Atlanta, GA, 10/1999.

Predoctoral Fellowship, Whitaker Foundation, Rosslyn, Virginia, 09/1996-08/1999.

Regional Finalist, IEEE-EMBS Student Paper Competition, sponsored by the Whitaker Foundation, 20th Annual Conference, Hong Kong, 10/1998.

Graduate Merit Fellowship, Texas A&M Assoc. of Former Students, College Station, TX, 01/1995-12/1995.

Undergraduate Research Fellow, Texas Eng. Experiment Station, College Station, TX, 05/1994-08/1994.

RESEARCH GRANTS

Current (TOTAL: ~\$4.5M; TAMU PORTION: \$1,573,462)

"Redundant Multimode Chemo-optical Transducers," *NSF Nano-Biosensing Program*, PI: McShane. \$328,805, 08/01/2014-07/31/2018. REU Supplements: \$12,000.

"Implantable multi-analyte sensors for the continuous monitoring of body chemistries," *NIH Director's Transformative Research Award*, PI: McShane, Wisniewski; \$4,122,519 (TAMU portion: \$1,244,657), 09/15/12-06/30/17.

Completed (TOTAL: ~\$15M; attributable to McShane: \$5.6M;

TAMU PORTION: ~\$4.7M; attributable to McShane@ TAMU: ~\$2.5M)

"Virtual Labs for Illustration of Biomedical Signal Processing Theory and Application," *Louisiana Tech University Instructional Innovation Summer Grants Program*, \$750, 7/2000-8/2000 (PI).

"Travel to IEEE-EMBS/BMES conference", *LaEPSCOR Travel Grants for Emerging Faculty*, \$500, 10/99 (PI).

"Biomedical Engineering Predoctoral Fellowship," *The Whitaker Foundation*, \$54,000 + tuition & fees, 09/1996-08/1999 (PI).

"Microstructures for Control and Guidance of Smooth Muscle Cell Growth," *Louisiana Board of Regents Research Competitiveness Subprogram*, \$125,000, 7/2001-6/2004 (Co-Inv).

"Dermal implantation procedures and in vivo assessment for nanoengineered glucose sensors," *Louisiana Tech University Summer Grants Program*, \$988, 6/2001-8/2001, (PI).

"Automatic Health Monitoring of Humans in Hot/Humid Environments," *NASA LURA Program*, \$10,000, 9/1/2001-8/31/2002 (PI).

"Nanofabricated Optical Sensors for Biochemical Monitoring in Microgravitated Cell Cultures," *NASA LURA Program*, \$5,000, 9/1/2001-8/31/2002 (PI).

"Fabrication and testing of a Fabry-Perot spectrometer and integrated liquid channel using surface micromachining," *Defense Intelligence Agency MASINT Program Contract* (through Sandia National Labs), \$100,000, 3/2001-12/2001, (Co-Inv).

"Fluorescent nanoparticles for monitoring extracellular and intracellular electrolyte levels," *The Rockefeller Brothers Fund Biomedical Pilot Initiative*, \$24,766, 7/1/01-6/30/2002 (PI).

"Travel to IEEE Sensors conference", *LaEPSCOR Travel Grants for Emerging Faculty*, \$500, 6/2002 (PI).

"Instrumentation for a Fiber Optics Laboratory," *Louisiana Board of Regents Enhancement Program*, \$47,048, 7/1/2002-6/30/2003, (co-PI).

"Blood Pressure Monitoring using Integrated Sensors," *NASA/LaSPACE*, \$10,000, 9/1/2002-8/31/2003 (PI).

"Nanofabricated Biochemical Sensors for Monitoring in Microgravitated Cultures: Stability of Immobilized/Encapsulated Enzymes and Indicators," *NASA/LaSPACE*, \$10,000, 9/1/2002-8/31/2003 (PI).

"Planning for Establishment of a Small Business for Production of Non-Invasive Glucose Sensors," *CEnIT Seed Grants Program*, LA Tech University, \$15,000, 12/1/2002-8/31/2003, (PI).

"Feasibility Study on Microscale Surface Plasmon Resonance Biosensors Using Polymer Waveguides and Nanoparticle Active Layers," *CEnIT Seed Grants Program*, LA Tech University, \$23,000, 12/1/2002-8/31/2003, (PI).

"Prototyping and Proposal Submission for a Microbubble Blood Oxygenator," *CEnIT Seed Grants Program*, LA Tech University, \$9,000, 1/1/2003-3/31/2003, (co-PI).

"Nanoengineered Fluorescent Sensors for Monitoring Neural Biochemical Dynamics," *The Whitaker Foundation Grants for Young Investigators*, \$239,318, 6/2001-5/2004 (PI).

"Optical Nanosensors for Medical and Biological Applications," *Louisiana Board of Regents Research Competitiveness Subprogram*, \$147,744, 7/2001-6/2004 (PI).

"The Louisiana Microsystems Development Initiative: Toward Low-cost (Bio)chemical Production and Environmental Monitoring," *NSF/EPSCoR Research Infrastructure Initiative*, \$3,000,000, 1/2001-12/2004, (Co-Inv).

"BioMEMS and Biomedical Nanotechnology Training Laboratory and Instrumentation," *Louisiana Board of Regents Enhancement Program*, \$118,060, 7/1/2003-6/30/2004, (PI).

"Intracellular Delivery of Nanoscale Oxygen Sensors," *NASA/LaSPACE*, \$10,000, 9/1/2003-8/31/2004 (PI).

"Nanoscale Cellular Response to Microfluidically Delivered Chemical Signals," *NASA/LaSPACE*, \$5,000, 9/1/2004-8/31/2005 (PI).

"Planning for the Biosystems Nanomanufacturing Research and Development Center," *Louisiana Board of Regents / NSF EPSCoR Planning Grants Program*, \$50,000, 3/1/2003-5/31/2005, (PI).

"Nanoengineered Shells for Encapsulation and Controlled Release," *NSF Nanoscale Interdisciplinary Research Team*, \$901,103, 9/1/2002-8/31/2006, (co-PI).

"One-Two-Three-Go-A Strategic Initiative for Rapid Research Competitiveness in Microsystems Development," *Louisiana Board of Regents Departmental Excellence through Faculty Excellence*, \$911,000, 6/2000-present, (Co-Inv).

"Nanoscale Biotechnology: Molecules, Methods, Devices, and Applications" *Louisiana Board of Regents Governor's Biotechnology Initiative*, \$1,950,000, 1/1/2003-12/31/2007, (co-PI).

"Innovative Ventures for Emerging Technologies in Rural North Louisiana," *NSF Partnerships for Innovation*, \$599,937, 11/1/2003-10/31/2006 (co-PI).

"Undergraduate Experiences in Micro and Nano Engineering," *NSF Research Experiences for Undergraduates*, \$365,087, 2/1/03 – 1/30/06 (co-Inv).

"Novel Micro/Nano Approaches to Glucose Measurement with pH-Sensitive Hydrogels," *US Army – Technologies for Metabolic Monitoring (Glucose sensors)*, \$300,000, 6/1/2004-5/31/2006, (PI).

"Graduate Fellows in Biomedical Engineering," *LA BoR Graduate Fellows Program*, \$286,500, 7/1/06-6/30/09 (PI).

"Acquisition of a Field Emission Scanning Electron Microscope for Nanotechnology Research, Training, and Education," *NSF Major Research Instrumentation*, \$524,875, 8/15/05-8/14/08 (co-PI).

- “Hydrogel Scaffolds for Corneal Tissue Engineering,” *NIH IDeA Networks of Biomedical Research Excellence*, \$499,222, 10/1/05-9/30/10 (mentor for Dr. Huiguang Zhu).
- “A Modular Lab-in-a-Sphere: Multifunctional Nanoparticles Incorporated within Hydrogel Microspheres,” *NSF Nanoscale Exploratory Research*, \$100,000, 8/1/05-7/31/07 (PI).
- “Fluorescent Glucose Sensors from Polyion Shells,” *NIH R01 - Sensor Development and Validation*, \$1,328,872, 9/30/2002-8/31/2007, (PI).
- “Engineering Nanocomposite Diffusion-Limiting Membranes for Biosensors” *NSF Bioengineering Research Grants*, \$276,196, 6/1/06-5/31/10 (PI).
- “Advanced BioMaterials as Implantable Chemical Sensors (BioMICS),” DARPA/DoD subcontract from PROFUSA, Inc. (McShane, sub. PI; PI: Wisniewski) \$86,387 subcontract value, 3/15/2011 – 12/1/2011.
- “Nanosphere Encapsulation of Active Enzymes,” PROFUSA, Inc., \$45,000, 7/1/2012-12/31/2012.
- “Effects of Oxygen on Optical Glucose Sensors,” PROFUSA, Inc., \$45,000, 3/1/2012-3/31/2013.
- “Long-Term Fluorescence-Based Glucose Monitoring,” *NIH R43 Artificial Pancreas Grant*, subcontract from PROFUSA, Inc. (PI; Wisniewski; subcontract PI: McShane) \$199,989 subcontract value (\$750,000 total), 9/15/2011 – 8/14/2014. (In final report, Phase II application stage)
- “Energy Transfer Between Nanomaterials: Fundamentals and Sensor Applications,” *NSF Biosensing Program (CBET)*, \$380,000, 8/15/2011 – 07/31/2014.
- “Multiscale Smart Coatings with Sustained Anticorrosive Action,” *NSF / The G8 Research Councils Initiative on Multilateral Research Funding* (international PI: Möhwald; US PI: Lvov; sub PI: McShane) \$150,000 subcontract value (€1,350,000 total), 6/1/2012-5/31/2016.

STUDENTS GRADUATED (TOTAL: 17 MS, 15 PHD, 3 POSTDOCTORAL SCHOLARS)

Name, Degree, Date – Initial or Current Position, if Known

(MS Graduates from Louisiana Tech University)

- Urvi Gururaj Shenoy, MS Biomedical Engineering, May 2002 – Manager of Honeywell’s India MEMS Division
- Swetha Chinnayelka, MS Electrical Engineering, August 2002 – Finished Ph.D. at LA Tech (see below)
- David Chang-Yen, MS Biomedical Engineering, August 2002 – Finished Ph.D. at University of Utah, now with Wasatch Microfluidics Inc., Taylorsville, UT
- Javeed Shaikh Mohammed, MS Electrical Engineering, November 2002 – Finished Ph.D. at LA Tech (see below)
- Ravi Deverkadra, MS Biomedical Engineering, November 2002 – Research Engineer, CardioMEMS, Atlanta, GA
- Kishore Kondabatni, MS Biomedical Engineering, November 2002 – Research Engineer, Icon Interventional Systems, Cleveland, OH
- Michael Barnidge, MS Biomedical Engineering, August 2003 – Completed M.D. at LSUHSC-Shreveport, LA
- John Glawe, MS Biomedical Engineering, November 2003 – Research Technician, Biomedical Research Institute, Shreveport, LA
- Swati Kaul, MS Electrical Engineering, March 2004 – status unknown
- Deepti Terala, MS Biomedical Engineering, March 2004 – St. Jude, Memphis, TN
- Amitava Sen, MS Biomedical Engineering, November 2004 – status unknown
- Ryan Simpson, MS Biomedical Engineering, May 2005 – Research Technician, Biomedical Research Institute, Shreveport, LA
- Kevin Driggers, MS Biomedical Engineering, November 2005 – Biomedical Engineer, HealthCareFirst, Springfield, MO
- Aaron Mack, MS Molecular Science and Nanotechnology, November 2006 – Research Assistant, UT Health Science Center, Houston, TX

(PhD Graduates from Louisiana Tech University)

- Mengyan Li, PhD Engineering, August 2003 – Research Associate Professor, Drexel University, Philadelphia, PA
- Patrick Grant, PhD Biomedical Engineering, May 2004 – Product Manager, Alcon, Dallas, TX
- Rohit Srivastava, PhD Biomedical Engineering, May 2005 – Associate Professor, School of Biosciences and Bioengineering, Indian Institute of Technology - Bombay
- Suman Nayak, PhD Biomedical Engineering, May 2005 – Research Scientist, Human Genome Sciences, Rockville, MD
- Quincy Brown, PhD Biomedical Engineering, August 2005 – Assistant Professor, Tulane University
- Swetha Chinnayelka, PhD Engineering, November 2005 – Technology Development Engineer, Bayer Medical, NJ
- Javeed Shaikh Mohammed, PhD Engineering, May 2006 – Assistant Professor, Biomedical Technology, College of Applied Medical Sciences, King Saud University, Saudi Arabia
- Erich Stein, PhD Biomedical Engineering, November 2006 – Product Design Engineer, Avail Medical, Irving, TX

(Graduates from Texas A&M University)

Saniya Ali, MS Biomedical Engineering, December 2010 – Ph.D. Candidate, Duke University
Saurabh Singh, PhD Biomedical Engineering, May 2010 – Research Associate, Los Alamos National Lab, NM
Ruiqi Long, PhD Biomedical Engineering, May 2012 – Optical Design Engineer, Hysitron, Silicon Valley, CA
Jaebum Park, PhD Materials Science and Engineering, August 2012 – Hyundai, Detroit, MI
Merene Phillip, MS Biomedical Engineering, May 2013 – IT Consultant, Dallas, TX
Bradley Collier, PhD Biomedical Engineering, May 2012 – Postdoctoral Scholar at Northeastern University, Boston, MA
Jason Roberts, PhD Biomedical Engineering August 2014 – Medical device application reviewer, US FDA, Silver Spring, MD
Dustin Ritter, PhD Biomedical Engineering, December 2014 – Postdoctoral Scholar at Dept of Chemistry, Pennsylvania State University, State College, PA
Liam Andrus, MS Biomedical Engineering, August 2015 – Engineer, Medtronic, Dallas, TX
Ashvin Nagaraja, PhD Biomedical Engineering, December 2015 – Engineer, Intel, Portland, OR
Matthew Jones, ME Biomedical Engineering, August 2017
Aniket Biswas, PhD Biomedical Engineering, August 2017
Rachel Unruh, PhD Biomedical Engineering, December 2017

(Postdoctoral Scholars)

Huiguang Zhu, Jitendra Solanki, Sakib Elahi

CURRENT STUDENTS (3 PHD, 2 MS) *indicates student has passed qualifier and been admitted to candidacy

Yil-Hwan You, BS, ME Materials Science and Engineering, Hongik University, Seoul, Korea (PhD MSEN)
Victoria Baldock, BS Biomedical Engineering, University of South Carolina (PhD BMEN)
Karen Dayle Kotturi, BS, MS Civil Engineering, MS Electrical Engineering, San Jose State University (PhD BMEN)
Anurag Pandarpurkar, B.Tech Engineering Physics, IIT-Guwahati, MS Biomedical Engineering, Carnegie Mellon University (PhD BMEN)
Lindsey Bornhoeft, BS Biochemistry, University of Tennessee-Chattanooga (MS BMEN)
Tokunbo Falohun, BS Biomedical Engineering, University of Maryland (MS BMEN)

STUDENT AWARDS

Patrick Grant—*1st Prize, Poster Competition*: Grant, P.S., Nayak, S.R., Duchesne, T., Lvov, Y., McShane, M.J., "Nanoassembled fluorescent sensors for physiological monitoring" Poster at the *19th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2001.
Patrick Grant—*Top Ten Poster*: Grant, P.S., Guice, K.B., Brown, J.Q., Nayak, S.R., McShane, M.J., "Nanoengineering Biocompatible Chemical Sensors for Neuroscience," *15th Annual Retreat of the Neuroscience Center of Excellence*, New Orleans, LA, March 2003.
Quincy Brown—*3rd Prize, Open Finalist, IEEE-EMBS Student Paper Competition*, sponsored by the Whitaker Foundation: Brown, Q., Lvov, Y.M., McShane, M.J., "Nanoengineered Polyelectrolyte Microcapsules as Fluorescent Potassium Ion Sensors," *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.
Catherine Stanecki, Outstanding Undergraduate Student Award: Stanecki, C.E., Hannibal, A.M., Watts, A., Driggers, K.H., M. J. McShane, "A Novel Biosensor for On-line Dialysis Monitoring," *BMES Fall Meeting*, Nashville, TN, October 4, 2003.
Quincy Brown—*1st Prize, IEEE Sensors Conference Student Paper Competition*, Brown, Q., Guice, K.B., McShane, M.J., "Nanoengineered Polyelectrolyte Microcapsules as Fluorescent Potassium Ion Sensors," *2nd IEEE Sensors Conference*, Toronto, Canada, October 2003.
Kyle Guice—*National Science Foundation Graduate Research Fellowship*, 2004-2007; attended the University of Texas, Chemical Engineering.
Quincy Brown—*2nd Prize, Student Paper Competition*, Brown, Q., McShane, M.J., " Nanoengineered Optical Glucose Microsensors," *4th Annual Diabetes Technology Meeting*, Philadelphia, PA, October 2004.
Mary Caldorera—*National Science Foundation Graduate Research Fellowship*, 2005-2008; attending the University of Texas, Biomedical Engineering.
Quincy Brown—*Awarded the Evans Atwell-Welch Postdoctoral fellowship at Rice University*, Houston, TX, October 2005.
Quincy Brown—*Academic Achievement Award (Outstanding Dissertation)*, College of Engineering and Science, Louisiana Tech University 2006.
Quincy Brown—*Awarded a Ruth Kirschstein NIH Postdoctoral fellowship at Duke University*, Raleigh, NC, March 2006.
Erich Stein—*1st Prize, Student Poster Competition, 2nd Annual Biomedical Engineering Day*, Ruston, LA, 2006.
Erich Stein—*Academic Achievement Award (Outstanding Dissertation)*, College of Engineering and Science, Louisiana Tech University 2006.

Ruiqi Long—*Runner Up, Poster Competition*: Long, R., McShane, M.J., "Monte Carlo Simulation of Fluorescence Emitted from Dermal Implanted Microparticle Sensor" Poster at the *25th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2008.
Dustin Ritter, *National Excellence Fellowship*, Texas A&M University College of Engineering, 2007-present
Brad Collier, *Graduate Merit Fellowship*, Texas A&M University, 2008-2009.
Dustin Ritter, *National Science Foundation Graduate Research Fellowship*, 2009-present
Jared Newton, *1st Prize, Poster Competition, USRG Summer 2011*.
Saadiah Ahmed, *2nd place, Oral Presentation Competition (Medicine, Biomedical Engineering, Neuroscience), Student Research Week 2012*.

PATENT APPLICATIONS

Fiber-optic Sensors for Measurement of Gastric pH (National Institutes of Health)
Optical sensors and related methods (Louisiana Tech University)
Nanoscale Films with Specific Cell Interaction Properties and Integrated Optical Sensors (Louisiana Tech University)
Urea Sensor for Online Dialysate Monitoring using Optical Thin Film Indicators (Louisiana Tech University)
Implantable Biosensors (worldwide provisional filed; priority date 12/9/15)
International Patent Application No.: PCT/US16/65981
Title: IMPLANTABLE BIOSENSORS
International Filing Date: December 9, 2016
Inventor: Michael J. McShane et al.
Reference: TAMUS 4288, 4291 & 4345

INVENTION REPORTS (DISCLOSED TO TEXAS A&M UNLESS OTHERWISE INDICATED)

Novel peak-hopping stepwise feature selection method
A Broadband Optical Coupler (Louisiana Tech University)
Cellular Photobiomodulation Control System Utilizing Nano-Shell Sensor Feedback (Louisiana Tech University)
Fabrication Method for Thin Oxygen Sensitive Film (Louisiana Tech University)
Nanoscale Films with Specific Cell Interaction Properties and Integrated Optical Sensors (Louisiana Tech University)
Multicomponent Patterning for Multilayer Nanofilms (Louisiana Tech University)
Urea Sensor for Online Dialysate Monitoring using Optical Thin Film Indicators (Louisiana Tech University)
Nanoengineered Surface Plasmon-based Fiber Optic Biosensors (Louisiana Tech University)
Fluorescent Microcapsule Sensors Employing Apo-Enzyme and Competitive Binding Ligand (Louisiana Tech University)
A Modular Lab-in-a-Sphere: Multifunctional Nanoparticles Incorporated within Hydrogel Microspheres (LA Tech)
Method of Compensation for Local Oxygen Variation for Implanted Enzymatic Biosensors
Luminescent Enzymatic Sensors based on Porous Matrices
Dynamic Windowing Algorithm for the Luminescence Lifetime Determination of One or More Luminophores
A Subcutaneous, Multi-Element ON/OFF Sensor for Analyte Range Determination
Cross-Linked Protein Cores with Floppy Polymeric Shells for Steric Protection
Orthogonal Attachment of a Single-Layered Protein Shell Around a Central Glycoprotein Core
Moldable Ionotropically-Gelated Alginate Hydrogel Containing Diffusion-Controlled Micro- and/or Nano-Cavities
Composite Matrices with Dispersed Embedded Functional Domains for Implantable Devices
Nanofilms with Tunable Small-Molecule Aqueous-Phase Diffusion Properties
Multimode Chemo-Optical Transducers

PROFESSIONAL SOCIETIES

AIMBE, Fellow 2014-present; IEEE *Senior Member*: 2009-present; IEEE: *Member*, 1997-present; IEEE EMBS: *Member*, 1997-present; BMES: *Member*, 1999-present; SPIE: *Member*, 1997-present; Society for Applied Spectroscopy (SAS): *Member*, 1996-2003; AIChE: *Member*, 2002-2003; ACS: *Member*, 2004-present; Society for Biomaterials: *Member*, 2018

LEADERSHIP IN INTERNATIONAL PROFESSIONAL SOCIETIES

IEEE Sensors Council Representative for IEEE-EMBS (Appointed; 2006, 2007, 2008)

Secretary/Treasurer, IEEE Sensors Council (Appointed; 2009, 2010)

Note: Secretarial duties included preparing and presenting the 5-year Council Review Report for IEEE during summer 2009.

IEEE-EMBS North America Representative (Elected; 2010-2012)

Vice President of Finances, IEEE Sensors Council (Elected; 2011-2013)

President, IEEE Sensors Council (Elected; Terms: President-Elect=2014-2015; **President=2016-2017**; Immediate Past-President=2018-2019; Senior Past-President=2020-2021)

IEEE Technical Activities Board Society and Council Review Committee (Appointed; 2018-2020)

OTHER SERVICE ACTIVITIES

*Technical Committee & Session Chair (Significant leadership positions indicated in **BOLD**)*

Photonics West – Optical Diagnostics and Sensing (2000-2018)

Biomedical Engineering Society - Imaging and Biomedical Optics track, Biosensors and Light Delivery Session, Instrumentation and Microsystems (2001-2003)

IEEE-EMB Society – Biomedical Instrumentation Track (2002, 2009, 2011, 2012)

American Institute of Chemical Engineers – BioMEMS Session Vice Chair (2002)

IfM Nanoassembly Seminar – co-chair (2001-2006)

Texas A&M University Student Research Week – Evaluator and Session Chair (2007, 2008)

Society for Biomaterials – Abstract Reviewer (2008)

Houston Society for Engineering in Medicine and Biology, Track Organizer and Session Chair (2004-2009), **Steering Committee (2009)** [Conference deactivated in 2009]

IEEE Special Topics Conference on Microtechnology in Medicine and Biology, Technical Committee (2004-2009) / **Conference Program Chair (2005)**

Southern Biomedical Engineering Conference, Technical Committee, Theme Chair, Session Chair (2011-2012)

IEEE Special Topics Conference on Micro- and Nano-Engineering in Medicine Conference (MNMC), Technical Committee (2011-2012)

Track Chair, Biomedical Engineering Society, Device Technologies and Biomedical Robotics Track, BMES 2014, 2018 Annual Meeting

General Co-Chair, IEEE SENSORS 2021, Sydney, Australia.

Proposal Peer Reviewer

Panel /Study Sections

NSF SBIR/STTR program (1999)

NSF Biomedical Engineering Program and Research to Aid Persons with Disabilities Program (2002-2004)

Juvenile Diabetes Foundation - Glucose Monitors (1999)

NIH SBIR Study Section Panelist (2003-2011, 7 panels total)

NIH Bioengineering, Technology, and Surgical Sciences (10/2005, 2/2006, 5/2006)

NIH Predoctoral/Postdoctoral Fellowships for Technology Development Research (2006, 2007)

NIH Small Grants ((NIAMS R03) 2006, 2010)

NIH Quantum Grants (2007)

NSF Graduate Fellowships (2007, 2009)

National Space Biomedical Research Institute (NSBRI) (2009, 2010); **CHAIR (2011)**

NIH SBIR – Bioanalytical Chemistry (2009)

NIH SBIR – Biomaterials, Nanotechnology, Drug Delivery Systems (2009, 2011)

NIH SBIR – Artificial Pancreas (2009)

NIH Cancer Centers of Nanotechnology Excellence (CCNE) (2010)

NIH Enabling Bioanalytical and Imaging Technologies Study Section (6/2011)

NSF Engineering Research Centers – NanoBio/Healthcare (2011)

NIH ZRG1 SBIB-Q Design and Development of Novel Technologies for Healthy Independent Living (2016)

NIH SBIR/STTR Endocrinology and Reproduction (2016-2017 4X)

NIH NIBIB Trailblazer Award for New and Early Stage Investigators (2017)

Mail Reviews

NSF Postdoctoral Fellowships (2004)
European Science Foundation – EUROCORES (Collab. Research Programme) Self-Organised Nano-structures (2003)
USDA SBIR (2003-2005)
ACS Petroleum Research Fund Mail Review (2004)
NSF International Research Fellowship (2005)
Ireland Health Research Board (2005)
Singapore Agency for Science, Technology and Research (A*STAR) Biomedical Research Council (BMRC) (2005)
Army Research Office SBIR (2006)
Army Research Office Chemical and Biological Defense Basic Research Program (2007)
NSF Inorganic, Bioinorganic, and Organometallic Chemistry Program (2007)
American Diabetes Association (2007)
Canadian National Science and Engineering Research Council (2007-2008)
UK Medical Research Council (2008)
DOE SBIR Program (2008, 2009)
NIH Challenge Grants (2009)
American Institute of Biological Sciences (2011)
Austrian Science Fund (FWF), Erwin Schroedinger Program (2011)
Louisiana Board of Regents Pfund Program (2016)
NASA/NSBRI Life Science Satellite Missions (2016)
NIH DP2 New Innovator Award (2017)

Journal Editor

Associate Editor, Journal of Sensors, 2007-present

Associate Editor, Sensors (MDPI), 2009-present

Associate Editor, IEEE Transactions on Nanobioscience, 2003-present

Guest Associate Editor, IEEE Sensors Journal, Optical Sensors Issue, 2015

Associate Editor, IEEE Transactions on Biomedical Engineering, 2006

Guest Editor, “Special Issue on Glucose Sensors,” Sensors (MDPI), 2011

Guest Editor, “Special Issue on Fluorescent Glucose Sensors,” Diabetes Science and Technology (Liebert), 2012.

Guest Editor, “Special Issue on Tissue Response to Implanted Devices,” Diabetes Science and Technology (Liebert), 2014-2015.

Student Editor, IEEE Eng. In Med. And Biology Society Magazine, 1997-1999.

Manuscript Peer Reviewer:

ACS Nano, ACS Sensors, Acta Biomaterialia, Advanced Healthcare Materials, Advanced Materials, Analyst, Analytica Chimica Acta, Analytical Chemistry, Analytical Methods, Angewandte Chemie, Annals of Biomedical Engineering, Applied Materials and Interfaces, Applied Spectroscopy, Applied Optics, Biochimica et Biophysica Acta – Proteins and Proteomics, Biomacromolecules, Biomaterials, Biosensors and Bioelectronics, Biotechnology and Bioengineering, Chemistry of Materials, Diabetes Science and Technology, Diabetes Technology and Therapeutics, IEEE Engineering in Medicine and Biology Magazine, IEEE Transactions on Biomedical Engineering, IEEE Transactions on Nanobioscience, IEEE Sensors Journal, FASEB Journal, International Journal of Food Science and Technology, Journal of the American Chemical Society, Journal of Biomedical Materials Research: B, Journal of Biomedical Nanotechnology, Journal of Biomedical Optics, Journal of Fluorescence, Journal of Luminescence, Journal of Microencapsulation, Journal of Micromechanics and Microengineering, Journal of Nanoscience and Nanotechnology, Journal of Physical Chemistry, Langmuir, Macromolecules, Macromolecular Bioscience, NanoLetters, Nanomedicine, Nanotechnology Journal (Institute of Physics), Nature Protocols, PLOS One, PNAS – Proceedings of the National Academy of Science, Physiological Measurements, Sensors, Sensors and Actuators B: Chemical, Journal of Sensors, Small, Thin Solid Films, Trends in Biotechnology

COURSES TAUGHT [BOLD indicates my first time teaching the course; *Italics indicates NEW COURSE*]

Louisiana Tech University (NOTE: quarter system; hours noted in parentheses are semester credits)

Academic Year	Fall	Winter	Spring
1999-2000	BIEN 425 – Advanced Bioinstrumentation (3)	BIEN 310 – Clinical Engineering (3)	<i>BIEN 550 – Biomedical Optics (3)</i>
2000-2001	BIEN 425 – Advanced Bioinstrumentation (3)	BIEN 510 – Bioinstrumentation – Graduate Level (4)	BIEN 310 – Clinical Engineering (3)
2001-2002	BIEN 550 – Biomedical Optics (3)	BIEN 510 – Bioinstrumentation – Graduate Level (4)	BIEN 420 – Biomaterials and Biomechanics (3)
2002-2003	BIEN 225 – Biomedical Systems (3)	<i>BIEN 557 – Fiber Optic Sensors (3)</i>	<i>BIEN 230 – Biomaterials (2)</i>
2003-2004	BIEN 225 – Biomedical Systems (3)	BIEN 610 – Graduate Seminar (1)	BIEN 310 – Clinical Engineering (3)
2004-2005	BIEN 225 – Biomedical Systems (3) <i>BIEN 610 – Doctoral Enhancement Seminar (1)</i>	<i>BIEN 557 – BioMEMS Lab (3)</i> <i>BIEN 610 – Doctoral Enhancement Seminar (1)</i>	BIEN 533 – Biomedical Optics (3) <i>BIEN 610 – Doctoral Enhancement Seminar (1)</i>
2005-2006	BIEN 225 – Biomedical Systems (3) BIEN 610 – Doctoral Enhancement Seminar (1)	BIEN 425 – Advanced Bioinstrumentation (3) BIEN 610 – Doctoral Enhancement Seminar (1)	BIEN 310 – Clinical Engineering (3) BIEN 610 – Doctoral Enhancement Seminar (1)

NOTES

Total of 28 classes and 68 hours taught in 7 years (Average: 4 classes, 9.7 hours per year)
 9 different full courses taught in 6 years, not including the seminar course (8 different courses in first 4 years)
 Average overall teaching evaluation: 3.76/4
 BIEN 420 was moved from a senior to sophomore-level course, reduced in hours and focused on biomaterials
 200 and 400-level courses are required for undergraduates (20-30 students per class); BIEN 310 is an elective
 BIEN 610 Graduate seminar – changed to a year-long course with focus on professional development
 BIEN 557 courses were new lab-based courses (2 hours of lecture, 3 hours of lab per week), supported by grants proposed by me and awarded by the LA Board of Regents Enhancement Grant mechanism (~\$100k in equipment each)

Texas A&M University

Academic Year	Fall	Spring	Summer
2006-2007	N/A	<i>BMEN 489/689 – Fluorescence-Based Biosensors (3)</i>	N/A
2007-2008	<i>BMEN 489/689 – Biomedical Nanotechnology (3)</i>	BMEN 489/689 – Optical Biosensors (3) <i>BMEN 306 – Biomeasurements Lab (1)</i>	N/A
2008-2009	BMEN 489/689 – Biomedical Nanotechnology (3)	BMEN 426/626 – Optical Biosensors (3) BMEN 306 – Biomeasurements Lab (1)	N/A
2009-2010	BMEN 486/686 – Biomedical Nanotechnology (3)	BMEN 426/626 – Optical Biosensors (3) BMEN 306 – Biomeasurements Lab (1)	BMEN 453 – Design Projects I (2) BMEN 454 – Design Projects II (2)
2010-2011	BMEN 486/686 – Biomedical Nanotechnology (3) BMEN 453 – Design Projects I (2) BMEN 454 – Design Projects II (2)	BMEN 453 – Design Projects I (2) BMEN 454 – Design Projects II (2)	BMEN 454 – Design Projects II (2)
2011-2012	BMEN 486/686 – Biomedical Nanotechnology (3) BMEN 453 – Design Projects I (2)	BMEN 454 – Design Projects II (2)	
2012-2013	BMEN 453 – Design Projects I (2)	BMEN 454 – Design Projects II (2) BMEN 486/686 – Biomedical Nanotechnology (3)	
2013-2014	BMEN 453 – Design Projects I (2)	<i>BMEN 253 – Design Controls (1)</i> <i>BMEN 353 – Needs Analysis (1)</i> BMEN 454 – Design Projects II (2)	
2014-2015	<i>Sabbatical Year – No teaching assignments</i>		
2015-2016	*BMEN 486 – Biomedical Nanotechnology (3) *BMEN 686 – Biomedical Nanotechnology (3)	BMEN 322 – Biosignal Analysis (3)	
2016-2017		BMEN 674 – Biomedical Engineering Communications (3)	
2017-2018	BMEN 305 – Biomedical Instrumentation Lab (1 x 4)	BMEN 674 – Biomedical Engineering Communications (3)	

NOTES

Total of 21 classes and 48 hours taught in 6 years (Average: 3.5 classes, 8 hours per year)
 9 different courses taught in 11 years
 Average overall teaching evaluation: 4.1
 BMEN 306 required instruction and evaluation on statistics in addition to management of lab modules
 *BMEN 486/686 were unstacked, completely different courses in 2015

Special Guest Lectures: Introduction to MEMS and Microfabrication – "Optical MEMS"; Nanoconstruction by Self-Assembly – "Fluorescent Micro/NanoSensor Fabrication"; Biosensors – "Spectroscopy-based Biosensors, "; Systems Physiology – "Regulation of Osmolarity, Fluid Volumes, and Ion Concentrations"; Biotechnology Principles – "High Throughput Screening for Medical Applications" and "Biosensors"; Microstructure Analysis and Materials Characterization - "Fluorescence, Confocal, and Two-Photon Microscopy" and "Raman Spectroscopy"; BioMEMS – "Surface Modification for BioMEMS" and "Cell Culture for BioMEMS"; Biomaterials – "Dermal Biocompatibility"; Biomedical Engineering Case Studies – "Statistical Analysis of Microscale Optical Biosensor Performance: Control of Response and Effects of Protein Adsorption"

Interdisciplinary University Service

Agricultural and Biological Engineering Faculty Search Team (Nanotechnology), TAMU 2009
Materials Characterization Facility Advisory Board, TAMU 2011-2012
Protein Chemistry Lab Advisory Board, TAMU 2012
Reviewer, Merit & Diversity Fellowships, TAMU 2008, 2010, 2012
Reviewer, Astronaut Scholarship Foundation, TAMU 2012
Graduate Committee, College of Engineering, TAMU 2015-2016
Academic Civil Rights Investigation Committee (ACRIC), TAMU 2017-2019

Departmental Curriculum/Lab Development

Track coordinator for Undergrad Bioinstrumentation and Bioimaging Track – 2007/2008
Track coordinator for Graduate Biomaterials Track - 2008
Equipment acquisition coordinator for undergraduate teaching/shared research labs – 2007-2011
Responsible for collecting faculty requests, prioritizing, and overseeing purchasing for >\$1.5M:

Atomic Force Microscope (AFM), Agilent
Contact Angle Goniometer, KSV
Fiber-optic UV-Vis/Fluorescence Spectrometers, Ocean Optics
Photolithography Suite – Spincoater, Specialty Coating Systems; UV Flood Source/Oven, UVTronics
Laser Engraving System
Scanning Electron Microscope, Nikon/JEOL
Vibrotome, Leica
Plate Reader, Tecan
Ellipsometer, J. Woollam
Nanoparticle Sizer, Nanosight
High resolution slide scanner, Microtechnik
FTIR, Bruker
Ultracentrifuge, Beckman-Coulter
UPLC, Waters
Excimer Laser Machining Tool, Resonetics

Junior Faculty Mentor

Brian Applegate, Javier Jo, Elizabeth Cosgriff-Hernandez, AJ Jain: review proposals and manuscripts; provide advice on research and teaching strategies; regular meetings to review progress, obstacles, challenges. The first three have successfully passed through the tenure and promotion process. AJ is still within one year of joining.

Committee Member

Chair, Biomedical Engineering Graduate Program Committee, 2015-2017
Chair, Biomedical Engineering Design Advisory Committee, 2013-2014
Chair, Biomedical Engineering Safety Committee, 2009-2011
Biomedical Engineering Faculty Search Committee, 2007-2013, TAMU
Biomedical Engineering Tenure and Promotion Committee, 2010-2014
Leader, Biomedical Engineering Shared Facilities Team, 2007-2012
Biomedical Engineering Shared Lab Supervisor Search Team, 2012
Biomedical Engineering Shop Supervisor Search Team, 2012, TAMU
Biomedical Engineering Graduate Program Coordinator Search Team, 2008, TAMU
Biomedical Engineering Graduate Student Recruitment Committee, 2007-2008, TAMU
Biomedical Engineering Program Faculty Search Teams, LA Tech
Biophysics Search Team, LA Tech
Chair, Microfluidics Engineer Search Team, LA Tech
Graduate Course Consolidation Team, LA Tech
KSD 6 Instructional Lab Equipment Team, LA Tech

Chair, Lab and Space Team, Institute for Micromanufacturing, LA Tech
Leadership Team, Institute for Micromanufacturing, LA Tech
Tolbert Pipes Endowed Chair Search Team, Institute for Micromanufacturing, LA Tech
Research and Economic Development Team, COES, LA Tech
Ethics and Professionalism Team, COES, LA Tech

Advisory Roles

Biomedical Engineering Society (faculty advisor), TAMU
Biomedical Engineering Society (faculty advisor), LA Tech
Tau Beta Pi Engineering Honor Society (faculty advisor), LA Tech

PUBLICATIONS (Google Scholar: 5458 Citations, h-index=38; i10-index=87; as of 02/01/2018)

(1) *Refereed Journal Articles (*indicates students)*

- 101) *A Biswas, *LR Bornhoeft, *S Banerjee, *YH You, MJ McShane, "Composite hydrogels containing bioactive microreactors for optical enzymatic lactate sensing," *ACS Sensors*, vol. 2, pp. 1584-1588, 2017
- 100) *A Biswas, *S Banerjee, *E Gart, *AT Nagaraja, MJ McShane, "Gold Nanocluster containing Polymeric Microcapsules for Intracellular Ratiometric Fluorescence Biosensing," *ACS Omega*, vol. 2, pp. 2499-2506 (2017).
- 99) *LR Bornhoeft, *A Biswas, MJ McShane, "Composite Hydrogels with Engineered Microdomains for Optical Glucose Sensing at Low Oxygen Conditions," *Biosensors*, vol. 7, 2017.
- 98) *YH You, *A Nagaraja, *A Biswas, JH Hwang, G Coté, MJ McShane, "SERS-active Smart Hydrogels with Modular Microdomains: from pH to glucose sensing" *IEEE Sensors Journal*, vol. 17, pp. 941-950 (2017). DOI: [10.1109/JSEN.2016.2636020](https://doi.org/10.1109/JSEN.2016.2636020)
- 97) *F Jivan, R Yegappan, H Pearce, JK Carrow, MJ McShane, AK Gaharwar, DL Alge, "Sequential Thiol-ene and Tetrazine Click Reactions for the Polymerization and Functionalization of Hydrogel Microparticles," *Biomacromolecules* Accepted 9/22/16 DOI: 10.1021/acs.biomac.6b00990
- 96) *A Biswas, *AT Nagaraja, *Y-H You, *JR Roberts, MJ McShane, "Cross-linked nanofilms for tunable permeability control in a composite microdomain system," *RSC Advances*, **6**, 71781-71790 (2016). DOI: 10.1039/C6RA13507B
- 95) *DW Ritter, *JM Newton, *JR Roberts, MJ McShane, "Albuminated Glycoenzymes: Enzyme Stabilization through Orthogonal Attachment of a Single-Layered Protein Shell around a Central Glycoenzyme Core," *Bioconjugate Chemistry*, **27** (5), pp 1285-1292 (2016). DOI: 10.1021/acs.bioconjchem.6b00103
- 94) *AT Nagaraja, *YH You, *JW Choi, *JH Hwang, KE Meissner, MJ McShane, "Layer-by-layer modification of high surface curvature nanoparticles with weak polyelectrolytes using a multiphase solvent precipitation process," *Journal of Colloid and Interface Science*, vol. 466, pp. 432-441 (2016). doi:[10.1016/j.jcis.2015.12.040](https://doi.org/10.1016/j.jcis.2015.12.040)
- 93) *LP Andrus, *R Unruh, NA Wisniewski, MJ McShane, "Characterization of Lactate Sensors Based on Lactate Oxidase and Palladium Benzoporphyrin Immobilized in Hydrogels," *Biosensors* vol. 5, pp. 398-416 (2015).
- 92) *RM Unruh, *JR Roberts, SP Nichols, S Gamsey, NA Wisniewski, MJ McShane, "Preclinical Evaluation of Poly(HEMA-co-acrylamide) Hydrogels Encapsulating Glucose Oxidase and Palladium Benzoporphyrin as Fully Implantable Glucose Sensors," *Journal of Diabetes Science and Technology* vol. 9, pp. 985-992, (2015).
- 91) *A Biswas, *AT Nagaraja, MJ McShane. "Fabrication of Nanocapsule Carriers from Multilayer-Coated Vaterite Calcium Carbonate Nanoparticles." *ACS Applied Materials & Interfaces* (2014) **6** (23), pp 21193-21201. DOI: 10.1021/am5061195
- 90) *BB Collier, MJ McShane, "Temperature Compensation of Oxygen Sensing Films Utilizing a Dynamic Dual Lifetime Calculation Technique," *IEEE Sensors Journal*, vol. 14, pp. 2755-2764 (2014). DOI: [10.1109/JSEN.2014.2311327](https://doi.org/10.1109/JSEN.2014.2311327)
- 89) *DW Ritter, *JM Newton, MJ McShane, "Modification of PEGylated enzymes with glutaraldehyde can enhance stability while avoiding intermolecular crosslinking," *RSC Advances*, vol. 4, pp. 28036-28040 (2014). DOI: 10.1039/C4RA03809F.
- 88) *AT Nagaraja, *S. Pradhan, MJ McShane, "Poly(vinylsulfonic acid) assisted synthesis of aqueous solution stable vaterite calcium carbonate nanoparticles," *Journal of Colloid and Interface Science*, vol. 418, pp. 366-372 (2014). <http://dx.doi.org/10.1016/j.jcis.2013.12.008>
- 87) *J. Shaik, *J. Shaikh Mohammed, M.J. McShane, D. K. Mills, "Behavior of Articular Chondrocytes On Nanoengineered Surfaces," *NanoLife* vol. 3 (2013). DOI: 10.1142/S1793984413420014
- 86) *AT Nagaraja, *A Sooresh, KE Meissner, MJ McShane, "Processing and Characterization of Stable, pH-sensitive Layer-by-Layer Modified Colloidal Quantum Dots," *ACS Nano*, 2013.
- 85) *BB Collier, MJ McShane, "Time-Resolved Measurements of Luminescence," *Journal of Luminescence*, 2013.
- 84) *JR Roberts, *D Ritter, MJ McShane, "A Design Full of Holes: Functional Nanofilm-Coated Microdomains in Alginate Hydrogels," *J. Mater. Chem. B*, 2013, **1**, 3195-320. DOI: 10.1039/C3TB20477D
- 83) J. Shaik, J. Shaikh Mohammed, M.J. McShane, D.K. Mills, "Chondrocyte Behavior on Micropatterns Fabricated Using Layer-by-Layer Lift-Off: Morphological Analysis," *Journal of Medical Engineering*, vol. 2013, Article ID 560328 (2013). doi:10.1155/2013/560328.
- 82) *D.W. Ritter, *J.R. Roberts, M.J. McShane, "Glycosylation site-targeted PEGylation of glucose oxidase retains native enzymatic activity," *Enzyme and Microbial Technology*, (2013). Available online 17 January 2013, ISSN 0141-0229, 10.1016/j.enzmtec.2013.01.004.
- 81) *J Shaik, *JS Mohammed, MJ McShane, DK Mills, "In vitro evaluation of chondrosarcoma cells and canine chondrocytes on layer-by-layer (LbL) self-assembled multilayer nanofilms," *Biofabrication* vol. 5, p. 015004 (2012).
- 80) *JR Roberts, *J Park, K Helton, N Wisniewski, MJ McShane, "Biofouling of polymer hydrogel materials and its effect on diffusion and enzyme-based luminescent glucose sensor functional characteristics," *Journal of Diabetes Science and Technology* vol. 6, p. 1267 (2012).

- 79) * Akl, T.J., *T.J. King, *R. Long, M.J. McShane, M.N. Ericson, M.A. Wilson, and G.L. Coté, "Performance assessment of an opto-fluidic phantom mimicking porcine liver parenchyma," *Journal of Biomedical Optics* vol. 17, (2012), DOI:10.1117/1.JBO.17.7.077008.
- 78) *Collier, B. B. and M. J. McShane, "A Dynamic Windowing Algorithm for the Fast and Accurate Determination of Luminescence Lifetimes." *Analytical Chemistry*, vol. 84, pp. 4725-4731 (2012).
- 77) *Long, R. and M. J. McShane, "Design of an Optical System for Interrogation of Implanted Luminescent Sensors and Verification with Silicone Skin Phantoms," *IEEE Transactions on Biomedical Engineering*, vol.59, pp.2459-2465, (2012). doi: 10.1109/TBME.2012.2203306
- 76) Srivastava, R.; *Jayant, R. D.; *Chaudhary, A.; McShane, M. J., "Smart Tattoo" Glucose Biosensors and Effect of Coencapsulated Anti-Inflammatory Agents. *Journal of diabetes science and technology* **2011**, 5 (1), 76.
- 75) Ariga, K.; Ji, Q.; McShane, M. J.; Lvov, Y. M.; Vinu, A.; Hill, J. P., Inorganic Nanoarchitectonics for Biological Applications. *Chemistry of Materials* **2011**.
- 74) *Romoser A, *Ritter D, *Majitha R, Meissner KE, McShane M, Sayes, C.M. (2011) "Mitigation of Quantum Dot Cytotoxicity by Microencapsulation," *PLoS ONE* 6(7): e22079. doi:10.1371/journal.pone.0022079.
- 73) Ariga, K., M. McShane, Y.M Lvov, Q. Ji, J.P. Hill, "Layer-by-layer assembly for drug delivery and related applications," *Expert Opinion on Drug Delivery*, 2011, vol. 8, pp. 633-644. doi:10.1517/17425247.2011.566268
- 72) *Akl T.J. R. *Long, M.J. McShane, M.N. Ericson, M.A. Wilson, G.L. Coté, "Optimizing probe design for an implantable perfusion and oxygenation sensor," *Biomed. Opt. Express* 2, 2096-2109 (2011) ; <http://dx.doi.org/10.1364/BOE.2.002096>
- 71) *Long, R., T. *King, T. *Akl, M.N. Ericson, M. Wilson, G.L. Coté, M.J. McShane, "Optofluidic phantom mimicking optical properties of porcine livers," *Biomed. Opt. Express* 2, 1877-1892 (2011) <http://dx.doi.org/10.1364/BOE.2.001877>
- 70) *Collier, B., *Singh, S., McShane, M., "Microparticle ratiometric oxygen sensors utilizing near-infrared emitting quantum dots," *Analyst*, 2011, Accepted: 11/ 22/10, Published online 12/2011, DOI: 10.1039/C0AN00661K.
- 69) *Jayant, R., *Joshi, A., McShane, M.J., Srivastava, R., "In vitro & in vivo evaluation of anti inflammatory agents using nanoengineered alginate carriers: Towards localized implant inflammation suppression," *International Journal of Pharmaceutics*, vol. 403, pp. 268-275, 2011. doi:10.1016/j.ijpharm.2010.10.035..
- 68) *Shaik, J., *Shaikh Mohammed, J., McShane, M.J., Mills, D.K., "Growth and Behavior of Bovine Articular Chondrocytes on Nanoengineered Surfaces – Part I," *International Journal of Nanotechnology*, vol. 8, 2011, pp. 679 - 699, DOI: 10.1504/IJNT.2011.041438
- 67) *Singh, S., McShane, M.J., "Role of porosity in tuning the response range of microsphere-based glucose sensors," *Biosensors and Bioelectronics*, vol. 26, pp. 2478-2483, 2011. doi:10.1016/j.bios.2010.10.036
- 66) *Chaudhary, A., McShane, M.J., Srivastava, R., "Glucose response of dissolved-core alginate microspheres: towards a continuous glucose biosensor," *Analyst*, vol. 135, pp. 2620-2628, 2010. DOI: 10.1039/C0AN00109K
- 65) McShane, M.J., *Ritter, D.W., "Microcapsules as optical biosensors," *Journal of Materials Chemistry*, 2010, DOI: 10.1039/C0JM01251C
- 64) *Park, J., McShane, M.J., "Dual-Function Nanofilm Coatings with Diffusion Control and Protein Resistance," *ACS Applied Materials & Interfaces*, vol. 2, pp. 991-997, 2010. DOI: 10.1021/am900673r
- 63) *Long, R. McShane, M.J., "Three-dimensional, multiwavelength Monte Carlo simulations of dermally implantable luminescent sensors," *Journal of Biomedical Optics*, vol. 15, 027011, 2010. DOI:10.1117/1.3374180.
- 62) *Singh, S., McShane, M.J., "Enhancing the longevity of microsphere-based glucose sensors towards one month continuous operation," *Biosensors and Bioelectronics*, vol. 25, pp. 1075-1081, 2010. DOI:10.1016/j.bios.2009.09.026.
- 61) Chaudhury, A., Raina, M., Harma, H., Hanninen, P., McShane, M.J., Srivastava, R., "Evaluation of Glucose Sensitive Affinity Binding Assay Entrapped in Fluorescent Dissolved Core Alginate Microspheres," *Biotechnology and Bioengineering*, vol. 104, pp. 1075-1085, 2010. DOI: 10.1002/bit.22500
- 60) Nassar, R., Palmer, J., Wu, Y., Dai, W., Wang, P. and McShane, M. J., "Modeling mass transfer of FITC-Labeled dextran from polyelectrolyte microcapsules," *Chemical Engineering Communications*, vol. 196, pp. 812-823, 2009. DOI: 10.1080/00986440802592291
- 59) Jayant, R.D, McShane, M.J., Srivastava, R., "Polyelectrolyte-coated alginate microspheres as drug delivery carriers for dexamethasone release," *Drug Delivery*, vol. 16, pp. 331-340, 2009. DOI: 10.1080/10717540903031126
- 58) *Shaikh-Mohammed, J., McShane, M.J., "Supported Nanocomposite Membranes: Bridging Microtechnology with Nanotechnology," *Journal of Nanoscience and Nanotechnology*, vol. 9, pp. 2965-9, 2009. DOI: 10.1166/jnn.2009.dk25
- 57) *Shaikh-Mohammed, J., McShane, M.J., "Polymer/Colloid Surface Micromachining: Micropatterning of Hybrid Multilayers," *Langmuir*, vol. 24, pp. 13796-13803, 2008. DOI: 10.1021/la802637u
- 56) De Geest, B.G., McShane, M.J., Demeester, J. De Smedt, S.C., Hennink, W.E., "Microcapsules Ejecting Nanosized Species into the Environment," *Journal of the American Chemical Society*, vol. 130, pp. 14480-14482, 2008. DOI: 10.1021/ja806574h.

- 55) *Chinnayelka, S., Zhu, H., McShane, M., “Near-Infrared Resonance Energy Transfer Glucose Biosensors in Hybrid Microcapsule Carriers,” *Journal of Sensors*, vol. 2008, Article ID 346016, 2008. DOI:10.1155/2008/346016
- 54) *Stein, E.W., Singh, S., McShane, M.J., “Microscale Enzymatic Optical Biosensors Using Mass Transport Limiting Nanofilms. 2. Response Modulation by Varying Analyte Transport Properties ,” *Analytical Chemistry*, vol. 80, pp. 1408-1417, 2008. DOI: 10.1021/ac701738e
- 53) *Stein, E.W., Grant, P.S., Zhu, H., McShane, M.J., “Microscale Enzymatic Optical Biosensors Using Mass Transport Limiting Nanofilms. 1. Fabrication and Characterization Using Glucose as a Model Analyte,” *Analytical Chemistry*, vol. 29, pp. 1339-1348, 2007. DOI: 10.1021/ac061414z
- 52) *Nayak, S., McShane, M.J., “Attraction and Encapsulation of Peroxidase by Polymerizing Acrylic Acid Monomers in Polyelectrolyte Microcapsules,” *Journal of Biomedical Nanotechnology*, vol. 3, pp. 170-177, 2007. DOI: 10.1166/jbn.2007.014
- 51) *Nayak, S., McShane, M.J., “Fluorescence glucose monitoring based on transduction of enzymatically-driven pH changes within microcapsules,” *Sensor Letters*, vol. 4, pp. 433-439, 2006. DOI: 10.1166/sl.2006.062
- 50) Mao, J., McShane, M.J., “Transduction of volume change in pH-sensitive hydrogels with resonance energy transfer,” *Advanced Materials*, vol. 18, pp. 2289-2293, 2006. DOI: 10.1002/adma.200600040
- 49) *Stein, E.W., Volodkin, D., McShane, M.J., Sukhorukov, G., “Real Time Assessment of Spatial and Temporal Coupled Catalysis within Polyelectrolyte Microcapsules Containing Co-immobilized Glucose Oxidase and Peroxidase,” *Biomacromolecules*, vol. 7, pp. 710-719, 2006. DOI: 10.1021/bm050304j
- 48) *Shaikh-Mohammed, J., DeCoster, M.A., McShane, M.J., “Fabrication of 3D Interdigitated Nanocomposite Cell Scaffold Micropatterns Using the Lithography-Layer-by-Layer (L-LbL) Technique,” *Langmuir*, vol. 22, pp. 2738-2746, 2006. DOI: 10.1021/la0525473
- 47) Zhu, H., McShane, M.J., “Synthesis and functionalization of monodisperse poly(ethylene glycol) hydrogel microspheres within polyelectrolyte multilayer microcapsules”, *Chemical Communications*, vol. 14, pp. 153-155, 2006. DOI: 10.1039/B513292D
- 46) Mao, J., *Kondu, S., Ji, H.-F., McShane, M.J., “A study of the near-neutral pH-sensitivity of chitosan/gelatin hydrogels by turbidimetry and microcantilever deflection,” *Biotechnology and Bioengineering*, vol. 95, p. 333-341, 2006. DOI: 10.1002/bit.20755
- 45) *Chinnayelka, C., McShane, M.J., “Glucose Sensors Based on Microcapsules Containing an Orange/Red Competitive Binding RET Assay,” *Diabetes Technology and Therapeutics*, vol. 8, pp. 269-278, 2006. DOI: 10.1089/dia.2006.8.269
- 44) *Brown, J.Q., *Srivastava, R., Zhu, H., McShane, M.J., “Enzymatic Fluorescent Microsphere Glucose Sensors: Evaluation of Response Under Dynamic Conditions,” *Diabetes Technology and Therapeutics*, vol. 8, pp. 288-295, 2006. DOI: 10.1089/dia.2006.8.288
- 43) Zhu, H., *Srivastava, R., McShane, M.J., “Combined Physical and Chemical Immobilization of Glucose Oxidase in Alginate Microspheres Improves Stability of Encapsulation and Activity,” *Bioconjugate Chemistry*, vol. 16, pp. 1451-1458, 2005. DOI: 10.1021/bc050171z
- 42) *Yan, X., Ji, H.-F., McShane, M.J., “Experimental and Theoretical Aspects of Glucose Measurement Using a Microcantilever Modified by Enzyme-Containing Polyacrylamide,” *Diabetes Technology and Therapeutics*, vol. 7, pp. 986-995, 2005. DOI:10.1089/dia.2005.7.986
- 41) Zhu, H., McShane, M.J., “Loading of Hydrophobic Materials into Polymer Particles: Implications for Fluorescent Nanosensors and Drug Delivery”, *Journal of the American Chemical Society*, vol. 17, pp. 13448-13449, 2005. DOI: 10.1021/ja052188y.
- 40) *Li, M., Mills, D. K., Lvov, Y. M., Cui, T., McShane, M. J., “Comparison of Selective Attachment and Growth of Smooth Muscle Cells on Gelatin- and Fibronectin-coated Micropatterns,” *Journal of Nanoscience and Nanotechnology*, vol. 5, pp. 1809-1815, 2005. DOI: 10.1166/jnn.2005.436
- 39) *Chinnayelka, C., McShane, M.J., “Microcapsule Biosensors using Competitive Binding RET Assays based on Apo-Enzymes,” *Analytical Chemistry*, vol. 77, pp. 5501-11, 2005. DOI: 10.1021/ac050755u
- 38) *Brown, J.Q., McShane, M.J., “Modeling of Spherical Fluorescent Glucose Microsensor Systems: Design of Enzymatic Smart Tattoos.” *Biosensors and Bioelectronics*, vol. 21, pp. 1760-1769, 2005. DOI:10.1016/j.bios.2005.08.013
- 37) *Srivastava, R., Zhu, H., *Brown, J.Q., McShane, M.J., “Stable Encapsulation of Active Enzyme by Application of Multilayer Nanofilm Coatings to Alginate Microspheres,” *Macromolecular Bioscience*, vol. 5, pp. 717-727, 2005. DOI: 10.1002/mabi.200500061
- 36) Zhu, H., *Srivastava, R., McShane, M.J., “Spontaneous Loading of Positively-Charged Macromolecules into Alginate-Templated Polyelectrolyte Multilayer Capsules”, *Biomacromolecules*, vol. 6, pp. 2221-2228, 2005. DOI: 10.1021/bm0501656
- 35) Zhu, H., *Stein, E., *Lu, Z., Lvov, Y., McShane, M.J., “Synthesis of Size-Controlled Monodisperse Manganese Carbonate Microparticles”, *Chemistry of Materials*, vol. 17, pp. 2323-2328, 2005. DOI: 10.1021/cm048229r
- 34) **Guice, K.B., **Caldorera, M.E., McShane, M.J., “Fluorescent Oxygen Nanosensors for Intracellular Monitoring using Polyelectrolyte Ultrathin Films on Nanoscale Carriers,” *Journal of Biomedical Optics*, vol. 10, pp. 1064031, 2005. DOI: 10.1117/1.2147419

- 33) *Glawe, J.D., *Hill, J., Mills, D.K., McShane, M.J., "Influence of Channel Width on Alignment of Smooth Muscle Cells by High-Aspect-Ratio Microfabricated Elastomeric Cell Culture Scaffolds," *Journal of Biomedical Materials Research*, vol. 75, pp. 106-114, 2005. DOI: [10.1002/jbm.a.30403](https://doi.org/10.1002/jbm.a.30403)
- 32) *Brown, J.Q., *Srivastava, R., McShane, M.J., "Encapsulation of Glucose Oxidase and an Oxygen-Quenched Fluorophore in Polyelectrolyte-Coated Calcium Alginate Microspheres: Potential for Implantable Optical Glucose Sensor Systems," *Biosensors and Bioelectronics*, vol. 22, pp.212-216, 2005. DOI: [10.1016/j.bios.2004.08.020](https://doi.org/10.1016/j.bios.2004.08.020)
- 31) *Srivastava, R., *Brown, J.Q., Zhu, H., M.J. McShane, "Stabilization of Glucose Oxidase in Alginate Microspheres with Photoreactive Diazo-resin Nanofilm Coatings," *Biotechnology and Bioengineering*, vol. 51, pp. 124-131, 2005. DOI: [10.1002/bit.20469](https://doi.org/10.1002/bit.20469)
- 30) *Srivastava, R.S., McShane, M.J., "Application of Self-Assembled Ultrathin Film Coatings to Stabilize Macromolecule Encapsulation in Alginate Microspheres," *Journal of Microencapsulation*, vol. 22, pp. 397-411, 2005. DOI: [10.1080/02652040500099612](https://doi.org/10.1080/02652040500099612)
- 29) *Li, M., Mills, D. K., Lvov, Y. M., Cui, T., McShane, M. J. "Cellular Response to Gelatin- and Fibronectin-Coated Multilayer Polyelectrolyte Nanofilms," *IEEE Transactions on Nanobioscience*, vol. 4, pp. 170-179, 2005. DOI: [10.1109/TNB.2005.850477](https://doi.org/10.1109/TNB.2005.850477)
- 28) *Brown, J.Q., McShane, M.J., "Core-referenced Ratiometric Potassium Ion Sensors made with Layer-by-Layer Self Assembly on Europium Nanoparticles," *IEEE Sensors Journal*, vol. 5, pp. 1197-1205, 2005. DOI: [10.1109/JSEN.2005.853252](https://doi.org/10.1109/JSEN.2005.853252)
- 27) *Yadavalli, V.K., Russell, R.J., Pishko, M.V., McShane, M.J., Coté, G.L. "A Monte Carlo Simulation of Photon Propagation in Fluorescent Poly(ethylene glycol) Hydrogel Microsensors," *Sensors and Actuators B: Chemical*, 105, pp. 365-377, 2005. DOI: [10.1016/j.snb.2004.06.025](https://doi.org/10.1016/j.snb.2004.06.025)
- 26) Zhu, H., McShane, M.J., "Macromolecule Encapsulation in Diazo-resin-Based Hollow Polyelectrolyte Microcapsules," *Langmuir*, vol. 21, pp.424-430, 2005. DOI: [10.1021/la048093b](https://doi.org/10.1021/la048093b)
- 25) *Chinnayelka, S., McShane, M.J., "RET Nanobiosensors based on Affinity Binding between Apo-Enzyme and its Substrate," *Biomacromolecules*, vol. 5, pp.1657-1661, 2004. DOI: [10.1021/bm0496662](https://doi.org/10.1021/bm0496662)
- 24) *Gupta, N., *Patel, A.A., Nassar, R., Lvov, Y.M., McShane, M.J., Palmer, J.D., "Study of transport phenomena of FITC labeled dextran through nano-self assembled microshells," *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, vol. 245, pp. 137-142, 2004. DOI: [10.1016/j.colsurfa.2004.07.010](https://doi.org/10.1016/j.colsurfa.2004.07.010)
- 23) *Shaikh-Mohammed, J., DeCoster, M.A., McShane, M.J., "Micropatterning of Nano Engineered Surfaces to Study Neuronal Cell Attachment In Vitro," *Biomacromolecules*, vol. 5, pp. 1745-1755, 2004. DOI: [10.1021/bm0498631](https://doi.org/10.1021/bm0498631)
- 22) *Chinnayelka, S., McShane, M.J., "Glucose-Sensitive Nanoassemblies Comprising Affinity-Binding Complexes Trapped in Fuzzy Microshells," *Journal of Fluorescence*, vol. 14, pp. 583-593, 2004. DOI: [10.1023/B:JOFL.0000039345.57924.f3](https://doi.org/10.1023/B:JOFL.0000039345.57924.f3)
- 21) *Srivastava, R.S., *Shenoy, G., *Forrest, S., *Chinnayelka, S., *Shaikh-Mohammed, J., Besser, R.S., McShane, M.J., "Bulk Micromachining of MEMS Tunable Fabry-Perot Interferometer: Effect of Residual Silicon on Device Performance," *Journal of Microlithography, Microfabrication, and Microsystems*, vol. 3, pp. 579-588, 2004. DOI: [10.1117/1.1794707](https://doi.org/10.1117/1.1794707)
- 20) *Li, M., *Kondablatni, K.K., Cui, T., McShane, M.J., "Fabrication of 3-D gelatin-patterned glass substrates with layer-by-layer and lift-off (LbL-LO) technology," *IEEE Nanotechnology Journal*, vol. 3, pp. 115-123, 2004. DOI: [10.1109/TNANO.2003.820818](https://doi.org/10.1109/TNANO.2003.820818)
- 19) *Brown, J.Q., McShane, M.J., "Nanoengineered Polyelectrolyte Micro- and Nano-Capsules as Fluorescent Potassium Ion Sensors," *IEEE-EMBS Magazine* vol. 22, pp. 118-123, 2003. DOI: [10.1109/EMEMB.2003.1256281](https://doi.org/10.1109/EMEMB.2003.1256281)
- 18) *Stein, E.W., McShane, M.J., "Multilayer Lactate Oxidase Shells on Colloidal Carriers as Engines for Nanosensors," *IEEE Transactions on Nanobioscience*, vol. 3, pp. 133-137, 2003. DOI: [10.1109/TNB.2003.816229](https://doi.org/10.1109/TNB.2003.816229)
- 17) *Grant, P.S., McShane, M.J., "Development of Multilayer Fluorescent Thin Film Chemical Sensors Using Electrostatic Self Assembly," *IEEE Sensors Journal*, vol. 3, pp. 139-146, 2003. DOI: [10.1109/JSEN.2002.817484](https://doi.org/10.1109/JSEN.2002.817484)
- 16) *Fang, M., *Grant, P.S., McShane, M.J., Sukhorukov, G.S., Golub, V., Lvov, Y.M., "Magnetic Bio/Nanoreactor with Multilayer Shells of Glucose Oxidase and Inorganic Nanoparticles," *Langmuir*, vol. 18, pp. 6338-6344, 2002. DOI: [10.1021/la025731m](https://doi.org/10.1021/la025731m)
- 15) *Chang-Yen, D.A., Lvov, Y.M., McShane, M.J., Gale, B.K., "Electrostatic Self-Assembly of a Ruthenium-Based Oxygen-Sensitive Dye using Polyion-Dye Interpolyelectrolyte Formation," *Sensors and Actuators B: Chemical*, vol. 87, pp. 336-345, 2002. DOI: [10.1016/S0925-4005\(02\)00267-8](https://doi.org/10.1016/S0925-4005(02)00267-8)
- 14) McShane, M.J., "Potential for Glucose Monitoring with Nanoengineered Fluorescent Biosensors," *Diabetes Technology and Therapeutics*, vol. 4, pp. 533-538, 2002. DOI: [10.1089/152091502760306625](https://doi.org/10.1089/152091502760306625)
- 13) **Duchesne, T.A., *Brown, J.Q., **Guice, K.B., Lvov, Y.M., McShane, M.J., "Encapsulation and Stability Properties of Nanoengineered Polyelectrolyte Capsules for use as Fluorescent Sensors," *Sensors and Materials*, vol. 14, 293-308, 2002.
- 12) McShane, M.J., *Brown, J.Q., **Guice, K.B., Lvov, Y.M., "Polyelectrolyte Microshells as Carriers for Fluorescent Sensors: Loading and Sensing Properties of a Ruthenium-Based Oxygen Indicator," *Journal of Nanoscience and Nanotechnology*, vol. 2, pp. 411-416, 2002. DOI: [10.1166/jnn.2002.118](https://doi.org/10.1166/jnn.2002.118)

- 11) McShane, M.J., Russell, R.J., Pishko, M.V., and Coté, G.L., " Glucose Monitoring Using Implanted Fluorescent Microspheres," *IEEE-EMBS Magazine*, 19, pp. 36-45, 2000. DOI: [10.1109/51.887244](https://doi.org/10.1109/51.887244)
- 10) McShane, M.J., Rastegar, S., Pishko, M.V., and Coté, G.L., "Monte Carlo modeling for implantable fluorescent analyte sensors," *IEEE Transactions on Biomedical Engineering*, 47, pp. 624-632, 2000. DOI: [10.1109/10.841334](https://doi.org/10.1109/10.841334)
- 9) Spiegelman, C.H., Bennett, J.F., Vannucci, M., McShane, M.J., Coté, G.L., "A transparent tool for seemingly difficult calibrations: the parallel calibration method," *Analytical Chemistry*, 72, pp. 135-140, 2000. DOI: [10.1021/ac990584r](https://doi.org/10.1021/ac990584r)
- 8) Russell, R.J., Gefrides, C.C., McShane, M.J., Coté, G.L. and Pishko, M.V., "A fluorescence-based glucose biosensor using concanavalin A and dextran encapsulated in a poly(ethylene glycol) hydrogel," *Analytical Chemistry*, 71, pp. 3126-3132, 1999. DOI: [10.1021/ac990060r](https://doi.org/10.1021/ac990060r)
- 7) McShane, M.J., Cameron, B.D., Coté, G.L., and Spiegelman, C.H., "Improving complex near-IR calibrations using a new wavelength selection algorithm," *Applied Spectroscopy*, 53, pp. 1575-1581, 1999. DOI: [10.1366/0003702991946037](https://doi.org/10.1366/0003702991946037)
- 6) McShane, M.J., Cameron, B.D., Coté, G.L., Motamedi, M. and Spiegelman, C.H., "A novel peak-hopping stepwise feature selection method with application to Raman spectroscopy," *Analytical Chimica Acta*, 388, pp. 251-264, 1999. DOI: [10.1016/S0003-2670\(99\)00080-X](https://doi.org/10.1016/S0003-2670(99)00080-X)
- 5) McShane, M.J. and Coté, G.L., "Near-infrared spectroscopy for determination of glucose, lactate, and ammonia in cell culture media," *Applied Spectroscopy*, 52, pp. 1073-1078, 1998. DOI: [10.1366/0003702981944968](https://doi.org/10.1366/0003702981944968)
- 4) McShane, M.J., Coté, G.L. and Spiegelman, C.H., "Assessment of partial least-squares calibration and wavelength selection for complex near-infrared spectra," *Applied Spectroscopy*, 52, pp. 878-884, pp. 1998. DOI: [10.1366/0003702981944427](https://doi.org/10.1366/0003702981944427)
- 3) Spiegelman, C.H., McShane, M.J., Goetz, M.J., Motamedi, M., Yue, Q.L. and Coté, G.L., "Theoretical justification of wavelength selection in PLS calibration: development of a new algorithm," *Analytical Chemistry*, 70, pp. 35-44, 1998. DOI: [10.1021/ac9705733](https://doi.org/10.1021/ac9705733)
- 2) McShane, M.J., Coté, G.L. and Spiegelman, C., "Variable selection in multivariate calibration of a spectroscopic glucose sensor," *Applied Spectroscopy*, 51, pp. 1559-1564, 1997. DOI: [10.1366/0003702971939118](https://doi.org/10.1366/0003702971939118)
- 1) Netto, E.J., Peterson, J.I., McShane, M.J., Hampshire, V., "A fiberoptic broad-range pH sensor system for gastric measurements," *Sensors and Actuators B-Chemical*, 29, pp. 157-163, 1995. DOI: [10.1016/0925-4005\(95\)01677-5](https://doi.org/10.1016/0925-4005(95)01677-5)

(2) *Book Chapters*

- 7) McShane, M.J., "Photoluminescent Nanosensors" in *Optochemical Nanosensors*, Taylor and Francis, F. Arregui, Ed., 2012.
- 6) McShane, M.J., "Enzyme immobilization in polyelectrolyte microcapsules," in *Enzyme Stabilization and Immobilization: Methods and Protocols, Methods in Molecular Biology Series*, Springer, S. Minter, Ed., vol. 679, pp. 147-154, 2011. DOI: [10.1007/978-1-60761-895-9_12](https://doi.org/10.1007/978-1-60761-895-9_12)
- 5) McShane, M.J., "Encapsulated Probes" for *Sensors based on Nanostructured Materials*, Springer, F. Arregui, Ed., pp. 253-274, 2009. DOI: [10.1007/978-0-387-77753-5](https://doi.org/10.1007/978-0-387-77753-5).
- 4) Stein, E.W. and McShane, M.J., "Fluorescence-based glucose sensors" for *In Vivo Glucose Sensing*, John Wiley & Sons, Inc., J. Stenken and D. Cunningham, Eds., pp. 269-316, 2009. DOI: [10.1002/9780470567319.ch10](https://doi.org/10.1002/9780470567319.ch10)
- 3) Coté, G.L., McShane, M.J., and Pishko, M.V., "Fluorescence-based glucose biosensors" Chapter 11 of *Handbook of Optical Sensing of Glucose in Biological Fluids and Tissues*, Taylor and Francis, V. Tuchin, Ed., 2008.
- 2) McShane, M.J., "Microcapsules as "Smart Tattoo" Glucose Sensors: Engineering Systems with Enzymes and Glucose-Binding Sensing Elements" Chapter 6 of *Topics in Fluorescence Vol. 11—Glucose Sensing*, Plenum Press, Geddes and Lakowicz, Eds., pp. 131-165, 2006. [Books.google.com](https://books.google.com)
- 1) McShane, M.J. and Lvov, Y.M., "Layer-by-Layer Electrostatic Self-Assembly and Biomaterial Applications," in *Encyclopedia of Nanoscience and Nanotechnology.*, Marcel Dekker, published online 12/24/2004. DOI: [10.1081/E-ENN-120013616](https://doi.org/10.1081/E-ENN-120013616)

(3) *Published Conference Papers and Proceedings*

**does not include submitted or accepted (currently unpublished) abstracts*

- *YH You, M Schechinger, A Locke, G Coté, M McShane, "Nanoengineered capsules for selective SERS analysis of biological samples," Proc. SPIE 10501-2 (PW18B-BO504-86) (2018).
- R Unruh, M McShane, "Hybrid Inorganic-Organic Interpenetrating Network Hydrogels as Optical Biosensors," *2016 32nd Southern Biomedical Engineering Conference (SBEC)*, p 66.
- YH You, A Nagaraja, A Biswas, H Marks, GL Coté, MJ McShane, "SERS-based hydrogel sensors for pH and enzymatic substrates," *IEEE SENSORS 2015*.
- RM Unruh, JL Weaver, MJ McShane, "Hydrogel matrix effects on oxygen diffusion: Controlling properties for biosensor applications," *IEEE SENSORS 2015*.

- BB Collier, MJ McShane, "Enzymatic glucose sensor compensation for variations in ambient oxygen concentration," *Proc SPIE* 859104-859104-8 (2013)
- R Long, M McShane, "[High-throughput spectral system for interrogation of dermally-implanted luminescent sensors.](#)" Engineering in Medicine and Biology Society (EMBC), 2012 Annual Conference. pp. 2351-2354.
- Akl, T. J., T. J. King, et al. (2012). "In vitro performance of a perfusion and oxygenation optical sensor using a unique liver phantom." *Proceedings of SPIE* **8229**: 822904, 2012.
- Collier, B., McShane, M.J., "Simultaneous, Accurate Lifetime Determination of Two Luminophores Using Time-Domain Techniques," *IEEE Sensors 2011*, pp. 943-946.
- Roberts, J., Collier, B., McShane, M.J., "Incorporation of Optical Enzymatic Sensing Chemistry into Biocompatible Hydrogels," *IEEE Sensors 2011*, pp. 1245-1248.
- Collier, B., Park, J., McShane, M.J., "Tuning of luminescent sensor response and degradation through manipulation of nanofilm coating properties," *IEEE Sensors 2010*, pp. 1587 – 1591, DOI: [10.1109/ICSENS.2010.5690290](#)
- T. J. Akl, T. J. King, R. Long, J. S. Baba, M. J. McShane, M. N. Ericson, M. A. Wilson and G. L. Coté, "Optimizing source detector separation for an implantable perfusion and oxygenation sensor", *Proc. SPIE* 7906, 790605 (2011); doi:10.1117/12.875731
- Long, R. McShane, M., "High-efficiency optical systems for interrogation of dermally-implanted sensors," *IEEE-EMBS Annual Meeting*, Buenos Aires, Argentina, September 2010.
- Long, R., Collier, B., Roberts, J., McShane, M., "Dynamic testing and in vivo evaluation of dermally implantable luminescent microparticle glucose sensors," *Proc. SPIE*, vol. 7572, 2010. DOI: 10.1117/12.842880
- Park, J., McShane, M., "Nanofilms as universal coatings for biosensors," *IEEE Sensors 2009*, pp. 1208 – 1211, DOI: [10.1109/ICSENS.2009.5398364](#)
- Collier, B., Long, R., McShane, M., "Dual-probe luminescence lifetime measurements for the oxygen compensation in enzymatic biosensors," *IEEE Sensors 2009*, pp. 703 – 706, 2009. DOI: [10.1109/ICSENS.2009.5398556](#).
- Long, R., McShane, M.J., "Experimental validation of an optical system for interrogation of dermally-implanted microparticle sensors," *31st International IEEE EMBS Conference*, pp. 122 – 125, 2009. DOI: 10.1109/IEMBS.2009.5334722
- Chaudhary, A., Raina, M., McShane, M.J., Srivastava, R., "Dissolved core alginate microspheres as "smart-tattoo" glucose sensors," *31st International IEEE EMBS Conference*, pp. 4098 – 4101, 2009. DOI: [10.1109/IEMBS.2009.5334597](#)
- Park, J., McShane, M., "Nanofilm coatings for transport control and biocompatibility," *IEEE Sensors 2008*, pp. 562 – 565, 2008. DOI: 10.1109/ICSENS.2008.4716501
- Long, R., McShane, M.J., "Optical instrument design for interrogation of dermally-implanted luminescent microparticle sensors," *30th International IEEE EMBS Conference*, pp. 5656 – 5659, 2008. DOI: 10.1109/IEMBS.2008.4650497
- Long, R., Singh, S., McShane, M.J., "Stability of response and in vivo potential of microparticle glucose sensors," *Proc. SPIE*, vol. 6863, 2008. DOI:10.1117/12.773315
- Peri, K., McShane, M., Wilson, C.G., "Brilliant Dust: Nanoparticle Doped On-Chip Microplasmas for Fluorescent Detection of Biomolecules," *IEEE MEMS 2006*, pp. 354 – 357, 2006. DOI: [10.1109/MEMSYS.2006.1627809](#)
- Stein, E.W., Grant, P.S., H. Zhu, M.J. McShane, "Tailoring the sensitivity of enzymatic smart tattoos with nanoengineered coatings and porphyrin oxygen indicators," *8th World Congress on Biosensors*, Toronto, Canada, May 2006.
- Brown, J.Q., E.W. Stein, H. Zhu, M.J. McShane, "Design and Evaluation of Long-Term Response for Fluorescent Enzymatic Glucose Sensors," *4th Annual Diabetes Technology Meeting*, San Francisco, CA, November 2005.
- Chinnayelka, S., McShane, M.J., Response Properties of Competitive Binding RET Assays Encapsulated in Nanoengineered Microshells," *4th Annual Diabetes Technology Meeting*, San Francisco, CA, November 2005.
- Mack, A.C., J. Mao, M.J. McShane, "Transduction of pH- and Glucose-Sensitive Hydrogel Swelling Through Fluorescence Resonance Energy Transfer," *IEEE Sensors Conference*, Orange County, CA, October 2005.
- Chinnayelka, S., M.J. McShane, "Competitive Binding Assays in Microcapsules as "Smart Tattoo" Biosensors," *IEEE Sensors Conference*, Orange County, CA, October 2005.
- Brown, J.Q., McShane, M.J., "Potentially-Implantable Nanoengineered Optical Glucose Microsensors," *3rd Annual Diabetes Technology Meeting*, Philadelphia, PA, October 28-29, 2004.
- Kuila, D., Tien, M., Lvov, Y., McShane, M., Aithal, R., Singh, S., Potluri, A., Boden, N., Kaul, S., "Nanoassembly of Immobilized Lignolytic I for Biocatalysis, Bioremediation, and Biosensing," *SPIE Optics East*, Philadelphia, PA, October 27, 2004.
- Brown, J.Q., McShane, M.J., "Optimal Design of Nanoengineered Implantable Optical Sensors Using a Genetic Algorithm," *26th International IEEE EMBS Conference*, San Francisco, CA, September 1-4, 2004.
- Chinnayelka, S., McShane, M.J., "RET Nanobiosensors using Affinity of an Apo-Enzyme Toward its Substrate," *26th International IEEE EMBS Conference*, San Francisco, CA, September 1-4, 2004.
- Shaikh-Mohammed, J., DeCoster, M.A., McShane, M.J., "Cell Adhesion Testing using Novel Testbeds Containing Micropatterns of Complex Nanoengineered Multilayer Films," *26th International IEEE EMBS Conference*, San Francisco, CA, September 1-4, 2004.

- Zhang, G., McShane, M.J., Robinson, C.J., "Using Electrostatic Self-Assembled Gradient Nanosensor Phantoms for Calibration of an Optical Intrinsic Signal Imaging System," *26th International IEEE EMBS Conference*, San Francisco, CA, September 1-4, 2004.
- Kaul, S., Chinnayelka, S., McShane, M.J., "Self-Assembly of Polymer/Nanoparticle Films for Fabrication of Fiber-Optic Sensors Based On SPR," *Proc SPIE*, v. 5317, pp. 224-233, 2004.
- Brown, J.Q., Chopra, S., Grant, P.S. McShane, M.J., "Glucose Micro- and Nano-Sensors Based on Nanoassembled Enzyme/Polymer/Dye Composites," *Proc SPIE*, v. 5325, pp. 21-30, 2004.
- Brown, J.Q., Guice, K.B., Simpson, R.T, McShane, M.J., "Electrostatic self-assembly of nanocomposite hybrid fluorescent sensors," *Proc SPIE*, v. 5331, pp. 52-59, 2004.
- Shaikh-Mohammed, J., Li, M., Terala, D., McShane, M.J., "Integrated Micro/Nanofabrication of Cell Culture Scaffolds with Selective Cell Adhesion and Fluorescent Indicators," *Proc SPIE International Micromachining and Microfabrication Conf.*, v. 5345, pp. 43-50, 2004.
- Grant, P.S., Barnidge, M.A., McShane, M.J., "Spectroscopic Fiber Probes for Chemical Sensing Based on Layer-by-Layer Self Assembled Ultrathin Films," *IEEE Sensors Conference*, Toronto, Canada, October 21-24, 2003.
- Brown, J.Q., Guice, K.B., McShane, M.J., "Internally-Referenced Chemical Transducers Using Molecular Probes Assembled on Fluorescent Nanoparticles," *IEEE Sensors Conference*, Toronto, Canada, October 21-24, 2003.
- McShane, M.J., "Multilayer Nanoengineering Techniques for Fabrication of Opto-Chemical Probes," *IEEE Sensors Conference*, Toronto, Canada, October 21-24, 2003.
- Grant, P.S., Kaul, S., Chinnayelka, S., M. J. McShane, "Fiber Optic Biosensors Comprising Nanocomposite Multilayered Polymer and Nanoparticle Ultrathin Films," *25th International IEEE EMBS Conference*, Cancun, Mexico, September 17-21, 2003.
- Brown, J.Q., Guice, K.B., Caldorera, M.E., M. J. McShane, "Fabrication and Deployment of Nanoscale Fluorescent Intracellular Probes," *25th International IEEE EMBS Conference*, Cancun, Mexico, September 17-21, 2003.
- Stanecki, C.E., Hannibal, A.M., Watts, A., Driggers, K.H., M. J. McShane, "A Novel Biosensor for On-line Dialysis Monitoring," *25th International IEEE EMBS Conference*, Cancun, Mexico, September 17-21, 2003.
- Li, M., Ai, H., Mills, D. K., Lvov, Y.M., McShane, M. J., Gale, B. K. "Using Microfabrication and Electrostatic Layer-by-layer (LBL) Self-assembly Technologies to Improve the Growth and Alignment of Smooth Muscle Cells," *Proc 2nd Annual International IEEE-EMBS Special Topic Conference on Microtechnologies in Medicine and Biology*, Madison, WI, 2002.
- Duchesne, T.A., Brown, J.Q., Guice, K., Lvov, Y.M., McShane, M.J. "Nanoassembled Fluorescent Microshells as Biochemical Sensors," *SPIE International Biomedical Optics Conf.*, San Jose, CA, v. 4624, pp. 66-75, 2002.
- Grant, P.S., Lvov, Y.M., McShane, M.J., "Nanostructured Fluorescent Particles for Glucose Sensing," *SPIE International Biomedical Optics Conf.*, San Jose, CA, v. 4624, pp. 47-54, 2002.
- Shenoy, U.G., Srivastava, R., Forrest, S., Besser, R.S., McShane, M.J. "Microfabricated Interferometer and Integrated Fluidic Channel for Infrared Spectroscopy of Aqueous Samples," *SPIE International Biomedical Optics Conf.*, San Jose, CA, v. 4626, pp. 411-420, 2002.
- O'Neal, D. P., McShane, M.J., Pishko, M.V., Coté, G.L., "Implantable Biosensors: Analysis of fluorescent light propagation through skin," *SPIE International Biomedical Optics Conf.*, San Jose, CA, v. 4263, pp. 20-24, 2001.
- Robinson, C.J., Napper, S.A., Gale, B.K., McShane, M.J., "Rehabilitative Microsystems," *Proc 1st Annual International IEEE-EMBS Special Topic Conference on Microtechnologies in Medicine and Biology*, Lyon, France, 2000.
- Li, M., Glawe, J.D., Green, H., Mills, D.K., McShane, M.J., Gale, B.K., "Effect of high aspect-ratio microstructures on cell growth and attachment," *Proc 1st Annual International IEEE-EMBS Special Topic Conference on Microtechnologies in Medicine and Biology*, Lyon, France, pp. 531-536, 2000.
- McShane, M.J., Russell, R.J., Pishko, M.V., and Coté, G.L., "Progress Toward Implantable Fluorescence-Based Sensors for Monitoring Glucose Levels in Interstitial Fluid," *SPIE International Biomedical Optics Conf.*, San Jose, CA, v. 3923, pp. 78-87, 2000.
- McShane, M.J., Russell, R.J., Pishko, M.V., and Coté, G.L., "Optical System for Implantable Analyte Sensors," *21st International IEEE EMBS Conference*, Atlanta, GA, v. 2, pp. 804-807, 1999.
- McShane, M.J., Rastegar, S., and Coté, G.L., "Probe design for implantable fluorescence-based sensors," *SPIE International Biomedical Optics Conf.*, San Jose, CA, v. 3599, pp. 93-100, 1999.
- McShane, M.J., Cameron, B.D., Coté, G.L., and Spiegelman, C.H., "Peak-hopping stepwise wavelength selection algorithm for spectroscopic applications," *SPIE International Biomedical Optics Conference*, San Jose, CA, v. 3599, pp. 101-109, 1999.
- McShane, M.J., Rastegar, S. and Coté, G.L., "Fluorescence-based implantable biosensors: Monte Carlo modeling for optical probe design," *20th International IEEE EMBS Conference*, Hong Kong, SAR, v.4, pp. 1799-1802, 1998.
- Cooney, K.M., Coté, G.L., Gossage, K., McShane, M.J., van der Breggen, E., Motamedi, M., and Coté, G.L., "Development of an optical system for the detection of oral cancer using near-infrared spectroscopy", *20th International IEEE EMBS Conference*, Hong Kong, SAR, 1998.

- Cooney, K.M., Coté, G.L., Gossage, K.W., McShane, M.J., Motamedi, M. and van der Breggen, E., "Detection of spectral differences between normal and cancerous oral tissue using near-infrared spectroscopy," *OSA Spring Topical Meetings*, Orlando, FL, 1998.
- Jung, B.J., McShane, M.J., Coté, G.L. and Rastegar, S., "Effects of temperature on near-infrared spectroscopic measurement of glucose," *SPIE International Biomedical Optics Conf.*, San Jose, CA, v. 3253, pp. 41-46, 1998.
- McShane, M.J. and Coté, G.L., "Determination of cell culture medium components with overlapping near-IR absorbance peaks," *SPIE International Biomedical Optics Conference*, San Jose, CA, 1998.
- McShane, M.J., Coté, G.L. and Spiegelman, C.H., "Variable selection for quantitative determination of glucose concentration with near-infrared spectroscopy," *SPIE International Biomedical Optics Conference*, San Jose, CA, 1997.

(4) *Invited Lectures*

- McShane, M.J., "Biomaterials as Implantable Chemo-Optical Transducers – Prospects for Continuous Multianalyte Monitoring," *Invited Talk* at Medtronic, Inc. Northridge, CA, Dec 8, 2017.
- McShane, M.J., "Nano-enabled Implantable Biochemical Monitoring," *Keynote Talk* for *International Conference on Functional Nanomaterials and Nanotechnology (ICFNN-2017)*, Kathmandu, Nepal, Oct 10-13, 2017.
- McShane, M.J., "Nanocomposite hydrogel-based chemo-optical transducers and amplifiers: Towards neurochemical sensing," *Invited Talk* for *IEEE Brain-Machine Interface Workshop 2016 – Special Session on Sensors*, Budapest, Hungary, Oct 12, 2016.
- McShane, M.J., "Implantable Materials Enabling Noninvasive Metabolic Monitoring," *Invited Talk* for *SciX 2016*, Minneapolis, MN, Sept 21, 2016.
- McShane, M.J., "From Wearables to Implantables: Enabling Next-Generation Monitoring," *Invited Lecture* for *University of Glasgow*, Glasgow, OK, Sept 12, 2016.
- McShane, M.J., "From Wearables to Implantables: Enabling Next-Generation Monitoring," *Opening Plenary Talk* for *EuroSensors 2016*, Budapest, Hungary, Sept 5, 2016.
- McShane, M.J., "Implantable Optical Biosensors – Materials and Instrumentation for Next-Generation Monitoring," *Invited Presentation* for *University of Houston*, Houston, TX, March 2016.
- McShane, M.J., "Implantable Optical Biosensors – Materials and Instrumentation for Next-Generation Monitoring," *Invited Presentation* for *F21 Bioprocessing and Biosensing Center*, Columbia, MO, September 2015.
- McShane, M.J. and Nichols, S. "Implantable Optical Biosensors – Materials and Instrumentation for Next-Generation Monitoring," *Invited Presentation* for *Whitaker Foundation Lecture Department of Biomedical Engineering*, Texas A&M University, August 2015.
- McShane, M.J., "Texas A&M University-Industry Collaboration in Medical Device Research and Development," *Keynote Speech* for *Presidents' Forum of Southeast Asia and Taiwan Universities (SATU)*, Tainan, Taiwan, July 2015.
- McShane, M.J., "Implantable Optical Biosensors – Materials and Instrumentation for Next-Generation Monitoring," *Invited Presentation* for *World Premier Institute of Materials Nanoarchitectonics (MANA) of the National Institute of Materials Science*, Tsukuba, Japan, July 2015.
- McShane, M.J., "Implantable Optical Biosensors – Materials and Instrumentation for Next-Generation Monitoring," *Invited Presentation* for *Innovation Center of NanoMedicine (iCONM)*, Tokyo, Japan, June 2015.
- McShane, M.J., "Implantable Luminescent Biosensors," *Invited Presentation* for *Florida International University Biomedical Engineering Seminar*, February 2015.
- McShane, M.J., "Implantable Luminescent Biosensors," *Invited Presentation* for *Texas A&M Biological, Agricultural, and Civil Engineering Multidisciplinary Seminar*, December 2014.
- McShane, M.J., "Personal Monitoring: From Wearables to Implantables," *Invited Presentation* for *Texas A&M Health Science Center Ground Rounds*, September 2014.
- Helton, K.L., et al., "Tissue-Integrating Sensors," *Invited Presentation* for *symposium at the Diabetes Technology Society's Tissue Response to Implanted Devices Meeting*, May 2014.
- McShane, M.J., "Implantable Luminescent Biosensors," *Invited Talk* for *Physics of Quantum Electronics Meeting*, Snowbird, UT, January 2014.
- McShane, M.J., Wisniewski, N.A., "Toward Multianalyte Monitoring with Tissue-Integrating Sensors," *Invited Presentation* for *NIH High-Risk, High-Reward grantee meeting*, November 2013.
- McShane, M.J., "Optical Sensors with Micro to Nanoscale Organization," *Invited Lecture*, *Institute for Micromanufacturing Seminar Series*, Louisiana Tech University, Ruston, LA, January 2013.
- McShane, M.J., "Nanocomposite Materials for Optical Sensing," *Invited Lecture*, *EMBS Micro and Nanotechnology in Medicine*, Maui, HI, December 2012.
- McShane, M.J., "Next-Generation Implantable Sensors," *Invited Lecture*, *Tulane University Biomedical Engineering Department*, New Orleans, LA, October 2012.
- McShane, M.J., "Luminescent Optical Biosensors – Materials and Instrumentation for Next-Generation Monitoring," *Seminar*, *IEEE-EMBS Dallas*, Dallas, TX, May 2012.

- McShane, M.J., "Inline and implantable optical sensors for biochemical monitoring," *Invited Lecture, American Society for Artificial Internal Organs*, San Francisco, CA, June 2012.
- McShane, M.J., "Next-Generation Implantable Sensors," *Invited Lecture, Dallas IEEE-EMBS*, Dallas, TX, May 2012.
- McShane, M.J., "Encapsulation of Luminescent Sensing Chemistry with Engineered Nanofilms," *Invited Lecture, PITTCON*, Orlando, FL, March 2012.
- McShane, M.J., "Nanocomposite Multilayers for Optical Biosensors," *Invited Lecture, Harrington Symposium*, University of Texas – Austin, November 10, 2011.
- McShane, M.J., "Nanomaterials for Biosensors," *Invited Workshop Lecture, IEEE-EMBS Annual Meeting*, Boston, MA, August 2011.
- McShane, M.J., "Fun with Nanofilms: From Neural Networks to Sensors to Backpacks for Cells, there's something for everyone," *Invited Master Series Lecture, Texas A&M Toxicology Program, College Station, TX*, July 2009.
- McShane, M.J., "Nanoscale Biosensors: Opportunities and Challenges," *Invited Keynote Lecture, International Workshop on Nanotech and Healthcare 2007, Thanjavur, India*, October 2007.
- McShane, M.J., "Assembly and testing of microparticle and microcapsule 'smart tattoo' materials," *Invited Lecture, SPIE Photonics West*, January 2007.
- McShane, M.J., "Micro/Nanoscale Particles and Capsules: Emerging Technology for Biochemical Monitoring," *Invited Seminar, University of Wisconsin, College of Pharmacy Seminar*, December 15, 2006.
- McShane, M.J., "Smart Tattoos: Implantable Sensors for Metabolic Monitoring," *Invited Seminar, University of Washington, Center for Nanotechnology Seminar*, May 8, 2006.
- McShane, M.J., "Microcapsule Biochemical Sensors: Assembling Molecules into Useful Micro/Nanosystems," *Invited Seminar, Louisiana State University, Biomedical Engineering Seminar*, December 5, 2005.
- McShane, M.J., "Microcapsule Biochemical Sensors: Assembling Molecules into Useful Micro/Nanosystems," *Invited Seminar, Pennsylvania State University, Biomedical Engineering Seminar*, November 18, 2005.
- McShane, M.J., "Microcapsule Biochemical Sensors: Assembling Molecules into Useful Micro/Nanosystems," *Invited Seminar, Texas A&M University, Biomedical Engineering Seminar*, November 1, 2005.
- McShane, M.J., "Nanotechnology Applied to Engineering Glucose-Sensing, 'Smart Tattoos'," *Invited Presentation for Nanotechnology* symposium at the Diabetes Technology Meeting, November 2005.
- McShane, M.J., "Biosensor applications of polyelectrolyte nanofilms and microcapsules," *Invited Presentation for the Polymer Materials Science and Engineering Symposium "Smart Nano-Assemblies" at the 228th National Meeting of the American Chemical Society*, Washington, DC, August 28, 2005.
- McShane, M.J., "Biosensor applications of polyelectrolyte nanofilms and microcapsules," *Invited Presentation for the Polymer Materials Science and Engineering Symposium "Smart Nano-Assemblies" at the 228th National Meeting of the American Chemical Society*, Washington, DC, August 28, 2005.
- McShane, M.J., "Micro/Nanostructures to Define and Monitor the Cellular Environment," *Invited Lecture, Louisiana State University, Center for Advanced Microdevices/Center for Biomodular Microsystems Summer School*, July 27, 2005.
- McShane, M.J., "Smart Tattoos: Implantable Sensors for Metabolic Monitoring," *Invited Seminar, Purdue University, Biomedical Engineering Seminar*, August 30, 2004.
- Chinnayelka, S., McShane, M.J., "Self-Assembly of a Biosensor for Monitoring Glucose based on Resonance Energy Transfer," *Invited Presentation for the Optical Sensors Symposium at the BMES Fall Meeting*, Nashville, TN, October 4, 2003.
- Connolly, B., Daniel, B., McShane, M.J., Bazan, N.G., DeCoster, M.A., "Nanofilms as Substrates for Defining Critical Signaling for Neuronal Survival," *NSF/EPSCoR National Meeting*, Las Vegas, NV, September 12, 2003.
- McShane, M.J., Lvov, Y.M., "Nanoassembled Fluorescent Micro/Nanoshells as Biochemical Sensors," *Invited Presentation for the Polymer Materials Science and Engineering Symposium "Smart Nano-Assemblies" at the 226th National Meeting of the American Chemical Society*, New York, NY, September 8, 2003.
- Lvov, Y.M., Hua, F., Cui, T., McShane, M.J., "'Marriage' of LbL-Nanoassembly and Traditional Lithography for Micropatterns and Microchannel Devices," *Invited Presentation for the Polymer Materials Science and Engineering Symposium "Smart Nano-Assemblies" at the 226th National Meeting of the American Chemical Society*, New York, NY, September 9, 2003.
- McShane, M.J., "Layer-by-layer Self-Assembly: Micropatterning and Micro/Nanoscale Biosensors," *Invited Presentation, Neuroscience Seminar Series*, New Orleans, LA, January 17, 2003.
- McShane, M.J., "Layer-by-layer Self-Assembly: Micropatterning and Micro/Nanoscale Biosensors," *Invited Presentation, Neuroscience Seminar Series*, New Orleans, LA, January 17, 2003.
- McShane, M.J., "Nanoengineering Devices for Biomedical Research and Clinical Applications," *Invited Presentation, Physiology Seminar Series*, Shreveport, LA, January 27, 2003.
- McShane, M.J., "Nanoengineering of Optical Devices for Chemical Analysis," *Invited Presentation, Neurobiotechnology*, Shreveport, LA, December 4, 2002.

- Lvov, Y.M., McShane, M.J., Jones, S.A., de Villiers, M., "Nanocapsule Technology Based on Layer-by-Layer Self Assembly," **Invited Presentation**, *Louisiana Conference on Commercial Applications of Microsystems, Materials, and Nanotechnologies*, Ruston, LA, October 21-22, 2002.
- McShane, M.J., "Nanoengineering of Fluorescence-Based Chemical Sensors Using Electrostatic Self-Assembly: Thin Films and Micro/Nanoshells," **Invited Presentation**, *IEEE Sensors 2002*, Orlando, FL, June 13, 2002.
- Guice, K.B., Nayak, S., Lvov, Y.M., McShane, M.J., "Micro-scale Hollow Core Fluorescent Sensors for the Measurement of Oxygen and Glucose," **Invited Presentation**, *2nd Undergraduate/Graduate Research Symposium*, Louisiana Tech University, Ruston, LA, April 12, 2002.
- Srivastava, R., Shenoy, G., Chinnayelka, S., Forrest, S.R., Besser, R.S., McShane, M.J., "Microspectrometer for Infrared Analysis of Gases and Biological Fluids," **Invited Poster**, *Focus on Bio- & Information Technologies*, LA EPSCoR, Baton Rouge, LA, April 10-11, 2002.
- Brown, J.Q., Duchesne, T.A., Lvov, Y.M., McShane, M.J., "Nanoengineered Polyelectrolyte Microshells as Carriers for Fluorescent Sensors," **Invited Poster**, *Focus on Bio- & Information Technologies*, LA EPSCoR, Baton Rouge, LA, April 10-11, 2002.
- Grant, P.S., Lvov, Y.M., McShane, M.J., "Nanostructured Fluorescent Biosensor," **Invited Poster**, *Focus on Bio- & Information Technologies*, LA EPSCoR, Baton Rouge, LA, April 10-11, 2002.
- Nayak, S.R., Guice, K.B., Lvov, Y.M., McShane, M.J., "Nanoengineered Fluorescent Sensors Containing Enzyme Assays," **Invited Poster**, *Focus on Bio- & Information Technologies*, LA EPSCoR, Baton Rouge, LA, April 10-11, 2002.
- Kim, S.S., Shaikh Mohammed, J., Deverkadra, R., Kondabatni, K.K., McShane, M.J., "Micro Total Analysis System," **Invited Poster**, *Focus on Bio- & Information Technologies*, LA EPSCoR, Baton Rouge, LA, April 10-11, 2002.
- McShane, M.J., "Nanoengineered Thin Films and ShELLS: Novel Applications to Fluorescence Biomedical Sensor Development," **Invited Seminar**, Texas A&M University, *Biomedical Engineering Seminar*, October 29, 2001.
- McShane, M.J., Lvov, Y.M., "Nanocomposite Thin Films for Optical Sensors and Nanobioreactors," **Invited Presentation**, *BioMEMS and Biomedical Nanotechnology 2001*, Columbus, OH, September 22-25, 2001.
- McShane, M.J., "Nanoengineered Thin Films and ShELLS: Novel Applications to Fluorescence Biomedical Sensor Development," **Invited Seminar** at the University of Toledo, *Biomedical Engineering Seminar Series*, September 7, 2001.
- McShane, M.J., "Nanoconstruction of Fluorescent Sensors: Thin Films and Microshells," **Invited Presentation**, *Bio-Micro-Sensors for Biology and Medicine Workshop*, Louisiana Tech University, Ruston, LA, May 9, 2001.
- Duchesne, T., Lvov, Y.M., McShane, M.J., "Nanoassembled Fluorescent Sensors for Physiological Monitoring," **Invited Presentation**, *1st Undergraduate/Graduate Research Symposium*, Louisiana Tech University, Ruston, LA, April 12, 2001.
- McShane, M.J., "Nanoassembled Fluorescent Sensors for Physiological Monitoring," **Invited Seminar** at the University of Louisville, *Chemical Engineering Seminar Series*, March 30, 2001.
- McShane, M.J., "Optics and Micro-Optics in Medicine, Biology, and Biotechnology," **Invited Short Course** presented at the University of Taipei, Taiwan, March 6-8, 2001.
- McShane, M.J., Grant, P.S., Nayak, S.R., Duchesne, T., Lvov, Y.P., "Development of Fluorescent Sensors Using Nanofabrication," **Invited Presentation** at the *19th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2001.
- Robinson, C.J., Napper, S.A., Gale, B.K., McShane, M.J., "Rehabilitative Microsystems," **Invited Presentation** at the *1st Annual International IEEE-EMBS Special Topic Conference on Microtechnologies in Medicine and Biology*, Lyon, France, 2000.
- Spiegelman, C.H., Rock, J.C., Rumgyart, F., Bennett, J., Lee, S.-J., Vannucci, M., McShane, M., and Coté, G.L., "Issues in Spectrographic Calibration," **Invited Paper** presented at the *National Consortium for Plutonium*, Amarillo, TX, 1999.
- Spiegelman, C.H., Rock, J.C., Rumgyart, F., Bennett, J., Lee, S.-J., Vannucci, M., McShane, M., and Coté, G.L., "Issues in Spectrographic Calibration," **Invited Paper** presented to Los Alamos Nat. Labs, Div. TA1, Los Alamos, NM, 1999.
- Spiegelman, C.H., Bennett, J.F., Vannucci, M., McShane, M.J., and Coté, G.L., "The Parallel Calibration Method," **Special Invited Paper** presented at the *International Envirometrics Meeting*, Athens, Greece, 1999.
- Spiegelman, C.H., McShane, M.J., Cameron, B.D., and Coté, G.L., "Preprocessing Calibration Data: Mean Centering, Scaling, Background Correcting, and Variable Selection in Spectroscopic Calibrations," **Invited Paper** presented at the *Federation of Analytical Chemistry and Spectroscopy Societies Conference*, Austin, TX, 1998.
- McShane, M.J., Coté, G.L. and Spiegelman, C.H., "Variable selection with PLS calibration: Comparison of techniques," **Invited Paper** presented at the *International Diffuse Reflectance Conference*, Chambersburg, PA, 1998.
- Spiegelman, C.H., McShane, M.J. and Coté, G.L., "Variable selection with PLS calibration: Comparison of techniques," **Invited Paper** presented at the *American Statistical Society Conference*, Dallas, TX, 1998.
- McShane, M.J. and Coté, G.L., "Near-infrared chemical sensing in cell culture media," **Invited Paper** presented at the *Federation of Analytical Chemistry and Spectroscopy Societies Conference*, Providence, RI, 1997.

(5) *Non-refereed Conference Papers and Abstracts*

- A Biswas, A Nagaraja, Y You, LR Bornhoeft, M McShane, "Tunable Diffusion Control in Microcapsule-Based Nanocomposite Devices," (PMSE 689) *American Chemical Society 2016 Fall Meeting*, Philadelphia, PA, August 2016.
- Y You, A Biswas, M McShane, "Hydrogel Sensors with Dual-Mode Optical Readout," (PMSE 682) *American Chemical Society 2016 Fall Meeting*, Philadelphia, PA, August 2016.
- RM Unruh, JR Roberts, S Nichols, MK Balaconis, NA Wisniewski, MJ McShane, "Evaluation of Luminescent Copolymer Hydrogels as Fully-Implantable Sensors," *Diabetes Technology Meeting*, Bethesda, MD, November 2014.
- M Schechinger, R Unruh, A Nagaraja, J Weaver, MJ McShane, "Reference Sensors using Poly-acrylonitrile (PAN) Nanobeads for Improved Accuracy in Implantable Optical Sensing Devices," *Biomedical Engineering Society*, San Antonio, TX, 2014.
- A Biswas, A Nagaraja, MJ McShane, "Ratiometric Nanocapsule Sensors Fabricated From Sacrificial CaCO₃ Nanoparticles," *Biomedical Engineering Society*, San Antonio, TX, 2014.
- Y You, A Liu, JR Roberts, MJ McShane, "A SERS Sensing System based on Encapsulation of Gold Nanoparticles in Microporous Alginate Hydrogels," *Biomedical Engineering Society*, San Antonio, TX, 2014.
- RM Unruh, S Nichols, NA Wisniewski, MJ McShane, "*In Vitro* and *In Vivo* Evaluation of Copolymer Hydrogels as Enzyme-based Luminescence Glucose Sensors," *Biomedical Engineering Society*, San Antonio, TX, 2014.
- D.W. Ritter, J.M. Newton, J.R. Roberts, B.B. Collier, and M.J. McShane, "Enzyme Stabilization Strategies to Prolong Bioanalytical Sensor Function" *Gordon Research Conference on Bioanalytical Sensors*, Newport, RI, 2014.
- RM Unruh, S Nichols, NA Wisniewski, MJ McShane, "Poly (2-hydroxyethyl methacrylate-co-acrylamide) Copolymer Hydrogels as Fully-Implantable Biosensors," *Society for Biomaterials – Regional Biomaterials Day*, College Station, TX, June 2014.
- AT Nagaraja, Y You, KE Meissner, MJ McShane. "Investigating pH-Dependent Layer-by-Layer Assembly on Nanoparticles: A Universal Tool for Engineering Surface Properties for Enhanced Stability," poster and oral presentation *ACS 2014, 247th National Meeting and Exposition*. March 17, 2014; Dallas, TX.
- JR Roberts, MJ McShane "Controlling gelation kinetics of injectable microporous alginate nano/micro composites," *ACS 2014, 247th National Meeting and Exposition*. March 17, 2014; Dallas, TX.
- RM Unruh, JR Roberts, MJ McShane, "Fabrication and Characterization of Optically-Responsive Glucose Sensing Nanoreactors," *ACS 2014, 247th National Meeting and Exposition*. March 17, 2014; Dallas, TX.
- RM Unruh, MJ McShane, "Effect of Encapsulated Species on the Transport of Small Molecules through Hydrogels," *Society of Women Engineers Annual Conference*, Baltimore, MD, October 2013.
- D.W. Ritter, J.R. Roberts, J.M. Newton, B.B. Collier, and M.J. McShane, "Albuminated Glycoenzymes: A New Class of "All-Natural" Single Enzyme Nanoparticles" *Biomedical Engineering Society*, Seattle, WA, 2013.
- AT Nagaraja, A Soorash, KE Meissner, MJ McShane. "Layer-by-Layer Surface Modification of Colloidal Quantum Dots for Biosensor Applications," *Biomedical Engineering Society*, Seattle, WA, 2013.
- JR Roberts and M.J. McShane, "Injectable/moldable optical biosensors: Microporous alginate hydrogels as a platform for glucose sensing," *Biomedical Engineering Society*, Seattle, WA, 2013.
- JR Roberts, D.W. Ritter and M.J. McShane. "Multiscale composite alginate hydrogels: a platform technology for multifunctional injectable biomaterials," *Biomedical Engineering Society*, Seattle, WA, 2013.
- RM Unruh, MJ McShane, "Effect of Encapsulated Species on the Transport of Small Molecules through Hydrogels," *Biomedical Engineering Society*, Seattle, WA, 2013.
- J.R. Roberts, D.W. Ritter, and M.J. McShane, "Multiscale Composite Alginate Hydrogels: A Platform Technology for Multifunctional Injectable Biomaterials," *Biomedical Engineering Society*, Seattle, WA, 2013.
- J.M. Newton, D.W. Ritter, and M.J. McShane, "Cross-linking of PEGylated Enzymes: Effects on Aggregation Potential and Enzymatic Longevity". *Biomedical Engineering Society*, Seattle, WA, 2013.
- Collier, B., McShane, M.J., "A Dynamic Windowing Algorithm for the Fast and Accurate Determination of Luminescence Lifetimes," Southern Biomedical Engineering Conference, Houston, TX, May 2012.
- Roberts, J. Park, J., McShane, M.J., "Incorporation of Optical Enzymatic Glucose Sensing Chemistry in Hydrogels: Evaluation of Diffusion and Sensor Functional Characteristics," Southern Biomedical Engineering Conference, Houston, TX, May 2012.
- Ritter, D., A. Romoser, R. Majithia, C. Sayes, K. Meissner, M. McShane, "Micro-Encapsulation as a Means to Modulate Nanomaterial-Cell Interactions," *BMES Fall Meeting*, Austin, TX October 2010.
- King, T., T.J. Akl, R. Long, M.J. McShane, M.N. Ericson, M. Wilson, and G.L. Coté, "A phantom that mimics optical and flow properties of liver for developing a perfusion sensor," *BMES Fall Meeting*, Austin, TX October 2010.
- Park, J., and M. McShane, "Nanoscale Diffusion-Limiting Biopolyelectrolyte Multilayers," *BMES Fall Meeting*, Austin, TX October 2010.
- Collier, B., McShane, M.J., "Response and Stability Optimization of Microsphere Glucose Sensors Utilizing Catalase and Nanofilms," *BMES Fall Meeting*, Austin, TX October 2010.

- Romoser, A., D. Ritter, R. Majithia, C. Sayes, K. Meissner, M. McShane, "Micro-Encapsulation as a Means to Modulate Nanomaterial-Cell Interactions," *BMES Fall Meeting*, Austin, TX October 2010.
- Romoser AA, Majithia R, Ritter D, McShane M, Meissner K, Criscitiello MF, and Sayes CM. "Understanding the Effects of Microencapsulation and Temporal Intracellular Response". *Society of Toxicology*, March 2010.
- Romoser A, Ritter D, Majithia R, McShane M, Meissner K, and Sayes CM. "Understanding the effects of microencapsulation and temporal intracellular response". *Gulf Coast Society of Toxicology*, November 2009.
- Ritter, D.W., M.J. McShane, "Development of a novel competitive-binding assay incorporating an inorganic energy transfer pair," *26th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, March 2009.
- Singh, S., M.J. McShane, "Investigation of the effect of protein adhesion on microparticle-based glucose sensors with different capping layers," *26th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, March 2009.
- Long, R., M.J. McShane, "Design and Testing of an Optical System for Interrogation of Dermal-Implanted Fluorescent Microparticle Sensors," *26th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, March 2009.
- Park, J.B., M.J. McShane, "Polyelectrolyte multilayers for diffusion-control and protein-resistance," *26th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, March 2009.
- Singh, S., M.J. McShane, "Use of Catalase and Nanofilm Coatings to Enhance the Longevity of Microparticle-Based Glucose Sensors," *AICChE Fall Meeting*, Pittsburgh, PA, November 2008.
- Ritter, D.W., Singh, S., Chinnayelka, S., M.J. McShane, "Microcapsule Sensors Comprising a Near-Infrared Competitive Binding Assay," *BMES Fall Meeting*, St. Louis, MO, September 2008.
- Park, J.B., M.J. McShane, "Dual-function Nanofilm Coatings: Transport Control and Protein Resistance for Biosensors," *BMES Fall Meeting*, St. Louis, MO, September 2008.
- Long, R., M.J. McShane, "Optical System Design for Interrogation of Dermal-Implanted Fluorescence Microparticle Sensors," *BMES Fall Meeting*, St. Louis, MO, September 2008.
- Singh, S., M.J. McShane, "Use of Catalase and Nanofilm Coatings to Enhance the Longevity of Microparticle-Based Glucose Sensors," *BMES Fall Meeting*, St. Louis, MO, September 2008.
- Park, J.B., M.J. McShane, "Dual-function Nanofilm: Diffusion-limiting and Biocompatible Nanoscale Multilayer Films for Biosensors," *25nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, February 2008.
- Long, R., M.J. McShane, "Monte Carlo Simulation of Fluorescence Emitted from Dermal-Implanted Microparticle Sensor," *25nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, February 2008.
- Singh, S., M.J. McShane, "Enhancing the Longevity of Microparticle-Based Glucose Sensors with Near-IR Emission," *25nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, February 2008.
- Park, J.B., M.J. McShane, "Controlling diffusion for biosensors using nanoscale multilayer films," *BMES Fall Meeting*, Los Angeles, CA, October 2007.
- Singh, S., Stein, E.W., M.J. McShane, "Enhancing the longevity of microparticle sensors by co-immobilization of enzymes," *BMES Fall Meeting*, Los Angeles, CA, October 2007.
- Huckaby, K.N., McShane, M.J., "Full-spectrum Fluorescence Monte Carlo Simulations of Smart Tattoos," *BMES Fall Meeting*, Chicago, IL, October 2006.
- Zhu, H. and M. J. McShane "Photo-Polymerizable Poly (Allylamine Hydrochloride) (PAH) Hydrogel As A Tissue Engineering Scaffold," *BMES Fall Meeting*, Chicago, IL, October 2006.
- Stein, E.W., Brown, J.Q., M.J. McShane, "Glucose biosensors based on metalloporphyrin indicators in hybrid polymer-silica microparticle carriers," *BMES Fall Meeting*, Chicago, IL, October 2006.
- Shaik, J., Shaikh Mohammed, J.S., McShane, M.J., Mills, D., "Growth and behavior of chondrocytes on nanocomposite ultrathin films." *FASEB Journal* **20**(4): A25-A25, 2006.
- Brown, J.Q., R. Srivastava, H. Zhu, M.J. McShane, "Nanoengineered Implantable Fluorescent Glucose Microsensors for Diabetic Monitoring," *BMES Fall Meeting*, Baltimore, MD, October 2005.
- Shaik, J., J. Shaikh Mohammed, M.J. McShane, D.K. Mills, "Growth and Behavior of Chondrocytes on Nanoengineered Surfaces," *BMES Fall Meeting*, Baltimore, MD, October 2005.
- Shaikh Mohammed, J., M.A. DeCoster, M.J. McShane, "Nanoengineering of Micropatterns to Study Neuronal Cell Attachment in vitro," *BMES Fall Meeting*, Baltimore, MD, October 2005.
- Stein, E.W., and M.J. McShane, "Real-time temporal and spatial consumption of glucose within polyelectrolyte microspheres containing co-immobilized glucose oxidase and peroxidase," Abstracts of Papers of the American Chemical Society **230**: 2005.
- Zhu, H. and M. J. McShane "Loading of hydrophobic materials into polymer particles: Implications for fluorescent nanosensors and drug delivery." Abstracts of Papers of the American Chemical Society **230**: 2005.
- Shaikh Mohammed, J. and M. J. McShane "Fabrication of nanocomposite micropatterns of polymers and colloids using L-LbL (lithography-layer-by-layer) technique." Abstracts of Papers of the American Chemical Society **230**: 2005.
- Mao, J., Kondu, S., Ji, H.-F., McShane, M.J., "Response of chitosan/gelatin-coated microcantilever to small pH change." Abstracts of Papers of the American Chemical Society **230**: 2005.

- Chinnayelka, S., McShane, M.J., "Microcapsule Based Glucose Biosensors using RET and Affinity of an Apo-Enzyme Toward its Substrate," *22nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2005.
- Mack, A.C., Grant, P.S., McShane, M.J., "Nanoengineered Fluorescent Neural Probes for Monitoring Biochemical Dynamics," *22nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2005.
- Simpson, R.T., McShane, M.J., "Construction of a Microcapsule-based Fluorescent Lactate Sensor," *22nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2005.
- Caldorera, M.E., Deorosan, B.A., Haley, V.P., Hiers, E.A., Moore, A.L., McShane, M.J., "Self-contained System for Observation of Chemically Stimulated Cell Cultures," *22nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2005.
- Brown, J.Q., McShane, M.J., "Design, Modeling, and Validation of Nanoengineered Optical Glucose Microsensors," *22nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2005.
- Zhu, H., Srivastava, R., Brown, J.Q., McShane, M.J., "Comparison of Different Techniques for Loading Glucose Oxidase into Nanoengineered Microcapsules as Glucose Biosensor," *22nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2005.
- Nayak, S.R., McShane, M.J., "Microencapsulation Techniques for Biosensors: A Study of Factors Affecting Enzyme Encapsulation and Stability," *22nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2005.
- Srivastava, R., Brown, J.Q., Zhu, H., McShane, M.J., "Application of Self-assembled Ultrathin Film Coatings to Stabilize Enzyme Encapsulation and Activity in Alginate Microspheres," *22nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2005.
- Shaikh Mohammed, J., DeCoster, M.A., McShane, M.J., "Fabrication of Nanocomposite Multicomponent Micropatterns Using L-LbL (Lithography-Layer-by-Layer) Method: Platforms for Neuronal Networks and Co-culture," *22nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2005.
- Yan, X., Ji, H.-F., McShane, M.J., Lvov, Y., "Thermodynamic and Kinetic Study of Enzyme -Based Microcantilevers for Glucose Measurement," *22nd Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2005.
- Brown, J.Q., Zhu, H., McShane, M.J., "Optical Glucose Sensors Based On Hydrogel Microspheres With Novel Nanoengineered Multilayer Coatings," *BMES Fall Meeting*, Philadelphia, PA, October 2004.
- Akangire, G.G., Sharma, M.K., Brown, J.Q., McShane, M.J., Mills, D.K., "Fibrotic Response To Implanted Glucose Biosensor Components In Rat Dermis," *BMES Fall Meeting*, Philadelphia, PA, October 2004.
- Sharma, M.K., Akangire, G.G., Brown, J.Q., McShane, M.J., Mills, D.K., "Towards Realizing A Biocompatible, Nano-Scale, Implantable Glucose Sensor," *BMES Fall Meeting*, Philadelphia, PA, October 2004.
- Zhu, H., Srivastava, R., Nayak, S.R., Atherton, J., McShane, M.J., "Efficient Methods for Loading Enzymes into Nanoengineered Capsules for Biosensors and Bioprocessing," *BMES Fall Meeting*, Philadelphia, PA, October 2004.
- Grant, P.S., Chopra, S., McShane, M.J., "Nanoscale Enzyme-Based Optical Sensors for Neurochemicals," *BMES Fall Meeting*, Philadelphia, PA, October 2004.
- Ying, W., Mills, D.K., Besio, W., McShane, M.J., "The Effects Of Light-Emitting Diode Photon Irradiation On Proliferation Of Human Dermal Fibroblasts," *BMES Fall Meeting*, Philadelphia, PA, October 2004.
- Roldan, J.E., Ai, H., McShane, M.J., Lvov, Y., D.K. Mills, "Nanosignals: Controlled Delivery Of Clinical Therapeutics," *BMES Fall Meeting*, Philadelphia, PA, October 2004.
- Chinnayelka, S., McShane, M.J., "Nanobiosensors for Glucose monitoring based on Affinity of a Lectin/Apo-Enzyme Toward a Polysaccharide" *American Chemical Society SW Regional Meeting*, Fort Worth, TX, October 2004.
- Wuyyuru, V., Collinworth, A., Brown, J.Q., McShane, M.J., Mills, D.K., "In-vitro Cytotoxicity Analyses of Polyelectrolyte Materials used in Glucose Sensors," *Experimental Biology 2004*, Washington, D.C., April 2004.
- Akangire, G., Sharma, M., Brown, J.Q., Collinworth, A., McShane, M., Mills, D., "In-Vivo Biocompatibility Studies of Polyelectrolyte Microcapsules," *Experimental Biology 2004*, Washington, D.C., April 2004.
- Daniel, B., Shaikh Mohammed, J., McShane, M.J., DeCoster, M.A., "Combining Nanotechnology and Neuroscience: Neuronal patterning at the cell level," *16th Annual Retreat of the Neuroscience Center of Excellence*, New Orleans, LA, April 2004.
- McShane, M. J., "Particle-Based Fluorescent Chemical Sensors Employing Nanoengineered Ultra-thin Films," *21st Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2004.
- Caldorera, M.E., Guice, K.B., Brown, J.Q., McShane, M.J., "Intracellular Delivery of Nanosensors: Influence of Coatings on Uptake Efficiency and Distribution," *21st Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2004.
- Mohammed, J.S., Glawe, J., Li, M., McShane, M.J., "Controlling Cell-material Interactions Using Micropatterned Nanocomposite Ultrathin Films," *21st Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2004.

- Wuyyuru, V., Collinsworth, A., Brown, J.Q., McShane, M.J., Mills, D.K., "In-vitro Cytotoxicity Studies of Implantable Glucose Sensors," *21st Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2004.
- Akangire, G., Sharma, M., Brown, J.Q., Collinsworth, A., McShane, M.J., Mills, D.K., "In-Vivo Biocompatibility of Polyelectrolyte Microcapsules," *21st Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2004.
- Wuyyuru, V., Collinsworth, A., Brown, J.Q., McShane, M.J., Mills, D.K., "In-vitro Cytotoxicity Analysis of Polyelectrolyte Microcapsules for Biosensors," *Institute of Biological Engineering*, Fayetteville, AR, 2004.
- Akangire, G., Sharma, M.K., Brown, J.Q., Collinsworth, A., McShane, M.J., Mills, D.K., "Biocompatibility of Polyelectrolyte Microcapsules: An In-Vivo Study," *Institute of Biological Engineering*, Fayetteville, AR, 2004.
- Chinnayelka, S., McShane, M.J., "Self-Assembly of a Biosensor for Monitoring Glucose based on Resonance Energy Transfer," *BMES Fall Meeting*, Nashville, TN, October 4, 2003.
- Terala, D., McShane, M.J., "Micro- and Nano-Fabrication of High Aspect Ratio Cell Culture Scaffolds with Integrated Fluorescent Sensors," *BMES Fall Meeting*, Nashville, TN, October 4, 2003.
- Grant, P.S., McShane, M.J., "Nanostructured Fluorescent Biosensors for Monitoring Neural Chemistry," *BMES Fall Meeting*, Nashville, TN, October 4, 2003.
- Brown, J.Q., Mills, D.K., Gupta, S., McShane, M.J., "A Pilot Study to Determine Intradermal Biocompatibility of Polyelectrolyte-Coated Microspheres," *BMES Fall Meeting*, Nashville, TN, October 4, 2003.
- Nayak, S.R., Stein, E.W., McShane, M.J., "Encapsulation of Enzymes in Polyelectrolyte Microcapsules for Biosensing Applications," *BMES Fall Meeting*, Nashville, TN, October 4, 2003.
- Li, M., Mills, D.K., Lvov, Y.M., Cui, T., McShane, M.J., "Control of Attachment and Growth of Smooth Muscle Cells (SMCs) on Multilayer Polyelectrolyte Ultra Thin Film-Patterned Substrates," *BMES Fall Meeting*, Nashville, TN, October 4, 2003.
- Srivastava, R., McShane, M.J., "Self-Assembled Ultrathin Film Coatings to Stabilize Enzyme Encapsulation in Alginate Microspheres," *BMES Fall Meeting*, Nashville, TN, October 4, 2003.
- Stanecki, C.E., Hannibal, A.M., Watts, A., Driggers, K.H., M. J. McShane, "A Novel Biosensor for On-line Dialysis Monitoring," *BMES Fall Meeting*, Nashville, TN, October 4, 2003.
- Stein, E.W., Simpson, R.T., McShane, M.J., "Nanoassembled Lactate Oxidase Nanoreactors and Fluorescent Lactate Sensors," *226th National Meeting of the American Chemical Society*, New York, NY, September 8, 2003.
- Guice, K.B., McShane, M.J., "Oxygen Measurements Based on Ru(dpp) Absorbed into Polyelectrolyte Films on Fluorescent Nanoparticle Templates," *226th National Meeting of the American Chemical Society*, New York, NY, September 8, 2003.
- Nayak, S.R., Stein, E.W., Gupta, N., Palmer, J., McShane, M.J., "Transport of Macromolecules Through Polyelectrolyte Microcapsules—Effect of Molecular Size and Shell Materials," *226th National Meeting of the American Chemical Society*, New York, NY, September 8, 2003.
- Glawe, J.D., Kondabatni, K.K., Li, M., Mills, D.K., Lvov, Y.M., Cui, T., McShane, M.J., "Alignment of Smooth Muscle Cells Cultured on Micropatterned and Microchannel Substrates," *Experimental Biology 2003*, San Diego, CA, April 2003.
- Nayak, S.R., Guice, K.B., McShane, M.J., "Encapsulation of Glucose Oxidase in Polyelectrolyte Microcapsules for Sensor Applications," *20th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2003.
- Li, M., Glawe, J.D., Mills, D.K., Cui, T., Lvov, Y.M., McShane, M.J., "Microfabricated Polymeric Channels with Nanoengineered Polyelectrolyte Films to Control Cell Attachment, Growth, and Alignment," *20th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2003.
- Grant, P.S., Guice, K.B., Brown, J.Q., Nayak, S.R., McShane, M.J., "Nanoengineering Biocompatible Chemical Sensors for Neuroscience," *15th Annual Retreat of the Neuroscience Center of Excellence*, New Orleans, LA, March 2003.
- Li, M., Kondabatni, K.K., Mills, D.K., Lvov, Y.M., Cui, T., McShane, M.J., "Properties of Microstructured Self-Assembled Polymer/Biological Nanocomposite Materials for Tissue Engineering," *NJ Biomaterials Conference*, Somerset, NJ, October 2002.
- Brown, Q., Lvov, Y.M., McShane, M.J., "Nanoengineered Polyelectrolyte Microcapsules as Fluorescent Potassium Ion Sensors," *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.
- Chinnayelka, S., Besser, R.S., McShane, M.J. "Modeling and Fabrication of Mirrors used in Micro-Spectrometers for Infrared Analysis of Biofluids," *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.
- Li, M., Ai, H., Mills, D.K., Lvov, Y.M., Gale, B.K., McShane, M.J., "Culturing Smooth Muscle Cells On Modified PDMS Substrates," *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.
- Deverkadra, R., McShane, M.J., "Fabrication of a Waveguide-Based Biosensor for Sensing in Microchannels," *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.
- Kondabatni, K.K., Hua, F., Cui, T., Lvov, Y.M., McShane, M.J., "Micro-Patterning of Nanosensor Elements Using Layer-By-Layer Self-Assembly, Avidin-Biotin Chemistry, and Photolithography," *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.
- Guice, K.B., Lvov, Y.M., McShane, M.J., "Nanoengineered Microcapsules for Fluorescent Sensing of Oxygen," *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.

- Grant, P.S., Lvov, Y.M., McShane, M.J., "Nanostructured Fluorescent Biosensor for Glucose Detection," *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.
- Shenoy, G., Srivastava, R., Forrest, S., Besser, R.S., McShane, M.J., "Microcuvette for Integration with Infrared Spectrometer for Biofluid Analysis," *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.
- Srivastava, R., Shenoy, G., Forrest, S., Besser, R.S., McShane, M.J., "Micro-Spectrometer for Infrared Analysis of Gases and Biological Fluids", *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.
- Nayak, S.R., Guice, K.B., Lvov, Y.M., McShane, M.J., "Nanoengineered Fluorescent Sensors Containing Enzyme Assays," *2nd Joint IEEE EMBS/BMES Conference*, Houston, TX, October 2002.
- Grant, P.S., Nayak, S.R., Brown, J.Q., Mills, D.K., Robinson, C.J., Briski, K.P., Lvov, Y.M., McShane, M.J., "Fluorescent Micro/Nanosensors Based on Polyelectrolyte Thin Films and Capsules," *Louisiana Conference on Commercial Applications of Microsystems, Materials, and Nanotechnologies*, Ruston, LA, October 21-22, 2002.
- Shaikh Mohammed, J., Barnidge, M., Kim, S.S., McShane, M.J., "Modeling and Fabrication of a Broadband Capacitive Micromachined Ultrasound Transducer Array for Photoacoustic Spectroscopy," *Louisiana Conference on Commercial Applications of Microsystems, Materials, and Nanotechnologies*, Ruston, LA, October 21-22, 2002.
- Deverkadra, R.R., McShane, M.J., "Fabrication and Testing of Waveguides for Chemical and Biological Sensing Applications," *Louisiana Conference on Commercial Applications of Microsystems, Materials, and Nanotechnologies*, Ruston, LA, October 21-22, 2002.
- Srivastava, R., Shenoy, G., Terala, D., Kaul, S., Forrest, S., Besser, R., McShane, M.J. "Components for an Infrared Micro-Spectrometer 'on a Chip'," *Louisiana Conference on Commercial Applications of Microsystems, Materials, and Nanotechnologies*, Ruston, LA, October 21-22, 2002.
- Cobb, R., Ciccirella, C., McShane, M., Cheng, C, Roemer, L., "Pulse Monitor for High Humidity and Temperature Environment", *Annual Meeting of Louisiana Association of Exercise Physiologists*, Lafayette, LA, Sep. 13, 2002.
- Hill, J., Ciccirella, C., McShane, M., Cheng, C, Roemer, L., "Body Temperature Monitor for High Humidity and Temperature Environment", *Annual Meeting of Louisiana Association of Exercise Physiologists*, Lafayette, LA, Sep. 13, 2002.
- Deverkadra, R., McShane, M.J., "Fabrication and Testing of Embedded Waveguides for Sensing in Microchannels," *TexMEMS IV*, Texas Tech University, July 11, 2002.
- Srivastava, R., Shenoy, G., Forrest, S., Besser, R.S., McShane, M.J., "Micromachined Fabry-Perot Interferometer with Integrated Sample Chamber for Infrared Analysis of Biological Fluids and Gases," *TexMEMS IV*, Texas Tech University, July 11, 2002.
- Kondabatni, K.K., Hua, F., Cui, T., Lvov, Y.M., McShane, M.J., "Micro-Patterning Of Nano Sensors Elements For Tissue Scaffolds And Cell-Based Sensors," *TexMEMS IV*, Texas Tech University, July 11, 2002.
- Chinnayelka, S., Besser, R.S., McShane, M.J., "Design, Fabrication, and Testing of Si-Al Broadband Reflectors for an Infrared Microspectrometer," *TexMEMS IV*, Texas Tech University, July 11, 2002.
- McShane, et al., "Fluorescent Micro/Nanosensors Based on Polyelectrolyte Thin Films and Capsules," *Poster Presentation, NIH BECON 2002: Biosensors in Biological Research and Medicine*, Bethesda, MD, June 24-25, 2002.
- Duchesne, T., Lvov, Y.M., McShane, M.J., "Fluorescent Biosensors Based on Nanofabricated Microshells," *BMES Annual Conference*, Duke University, October 7, 2001.
- Grant, P.S., Lvov, Y.M., McShane, M.J., "Nanofabricated Fluorescent Biosensors Based on Enzyme Films," *BMES Annual Conference*, Duke University, October 7, 2001.
- Shenoy, U.G., Srivastava, R., Forrest, S., Besser, R., McShane, M.J., "An Infrared Microspectrometer for Biochemical Spectroscopy," *BMES Annual Conference*, Duke University, October 7, 2001.
- Nayak, S.R., Grant, P.S., Lvov, Y.M., McShane, M.J., "Self-Assembled Fluorescent Thin Film Sensors for Biomedical Applications," *BMES Annual Conference*, Duke University, October 7, 2001.
- McShane, M.J., "Nanocomposite Thin Film Methods for Optical Sensor Development," *2nd Annual Louisiana Microsystems and Microfabrication Conference*, Baton Rouge, LA, August 20-22, 2001.
- Shenoy, U.G., Srivastava, R., Forrest, S., Besser, R., McShane, M.J., "Micromachined Fabry-Perot Interferometer for Infrared Spectroscopy," Poster at *TexMEMS III*, University of Texas-Dallas, June 7, 2001.
- K. Varahramyan, A. Tayebi, R. Besser, M. Boman, P. Coane, T. Cui, J. Fang, B. Gale, R. Gunasekaran, P. Liu, Y. Lvov, M. McShane, M. Tao, M. Vasile, Z. Zhong, "Micro/Nano Systems Education at Louisiana Tech University" *Tex MEMS III*, Dallas TX, June 7, 2001,
- Duchesne, T., Lvov, Y.M., McShane, M.J., "Fluorescent Biosensors Based on Nanofabricated Microshells," Poster at the *Bio-Micro-Sensors for Biology and Medicine Workshop*, Louisiana Tech University, Ruston, LA, May 9, 2001.
- Grant, P.S., Nayak, S.R., Lvov, Y., McShane, M.J., "Nanocomposite Fluorescent Thin-Film Sensors," Poster at the *Bio-Micro-Sensors for Biology and Medicine Workshop*, Louisiana Tech University, Ruston, LA, May 9, 2001.
- Grant, P.S., Nayak, S.R., Duchesne, T., Lvov, Y., McShane, M.J., "Nanoassembled fluorescent sensors for physiological monitoring" Poster at the *19th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2001.
- Li, M., Glawe, J.D., Green, H., Mills, D.K., McShane, M.J., Gale, B.K., "Microfabricated substrates for tissue engineering," Presentation at the *19th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2001.

- Meledeo, A, O'Neal, D.P., McShane, M.J., Pishko, M.V., Coté, G.L., "Development of a Fluorescence-Based Polymer Sensing System for Glucose Monitoring," Presentation at the *19th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 2001.
- Russell RJ, Pishko MY, McShane MJ, Cote G, Rastegar S. Monte Carlo simulations of photon propagation in poly(ethylene glycol) hydrogel-based fluorescent biosensors. *Abstracts of Papers of the American Chemical Society*. **2000**;219:U106-U106.
- Jung, B.J., McShane, M.J., Rastegar, S. and Coté, G.L., "Temperature effect on PLS calibration models for NIR spectroscopic glucose measurement," Presentation at the *16th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 1998.
- McShane, M.J. and Coté, G.L., "Noninvasive measurement of cell culture medium components," Presentation at the *15th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 1997.
- Robinson, S.H., Coté, G.L., McShane, M.J. and Spiegelman, C.H., "Wavelength selection for optimal determination of glucose concentration in biological media," Presentation at the *15th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, 1997.

(6) *Editorial Columns*

- Sampath, S. and McShane, M., "The graduate school application process", *IEEE Engineering in Medicine and Biology Magazine*, 18, pp. 12-13, 1999.
- Sampath, S. and McShane, M., "Time management in graduate school", *IEEE Engineering in Medicine and Biology Magazine*, 18, p. 25, 1999.
- Sampath, S. and McShane, M., "Tips for writing a scientific paper", *IEEE Engineering in Medicine and Biology Magazine*, 18, pp. 40+, 1999.
- Sampath, S. and McShane, M., "Scholarly exchange ... ", *IEEE Engineering in Medicine and Biology Magazine*, 17, p. 14, 1998.
- Sampath, S. and McShane, M., "Keeping up with the field", *IEEE Engineering in Medicine and Biology Magazine*, 17, p. 16, 1998.
- Sampath, S. and McShane, M., "Optics in Biomedical Engineering", *IEEE Engineering in Medicine and Biology Magazine*, 17, pp. 31+, 1998.
- Sampath, S. and McShane, M., "Changing of the guard", *IEEE Engineering in Medicine and Biology Magazine*, 16, p. 18, 1997