

Steve Majerus, MS, PhD

Cleveland VA Medical Center, 10701 East Blvd, 151 W/APT, Cleveland, OH 44106 | 330-592-6009 | steve.majerus@case.edu

POSITIONS

| | |
|---|-----------------------|
| Research Scientist APT Rehabilitation R&D Center, Louis Stokes Cleveland VA Medical Center, Cleveland, OH | 2014 – Present |
| Research Fellow Nephrology Service, Louis Stokes Cleveland VA Medical Center, Cleveland, OH | 2019 – Present |
| Visiting Research Contractor Dept of Biomedical Engineering, Lerner Research Institute, Cleveland Clinic, Cleveland, OH | 2017 – Present |
| Biomedical Engineer APT Rehabilitation R&D Center, Louis Stokes Cleveland VA Medical Center, Cleveland, OH | 2007 – 2014 |
| Sr. Research Associate (Post-Doc) Dept of Electrical Engineering and Computer Science, Case Western Reserve University | 2014 – 2016 |
| Integrated Circuit Designer BluBerry, LLC, Columbia Station, OH | 2012 – 2015 |
| Integrated Circuit Designer Scientific Monitoring, Inc., Scottsdale, AZ | 2009 – 2012 |

RESEARCH INTERESTS

Non-invasive detection of peripheral vascular stenosis using skin-coupled microphones and temporal-spectral analysis; implantable polymeric strain sensors for detecting patency of bypass grafts and endovascular repairs; image-guided ultrasonic peripheral nerve stimulation; closed-loop bladder neuromodulation algorithms; wireless bladder pressure monitoring for conditional neuromodulation

AWARDED GRANTS

| | |
|---|---|
| VA APT IIP-05 Principal Investigator | <i>Conformal, Low-Intensity Ultrasound Arrays ... Image-Guided Tibial Neuromodulation</i> <u>\$50,000</u> 2019 |
| LSCVAMC Principal Investigator | <i>Smart Artificial Urinary Sphincter</i> <u>\$26,000</u> 2019 |
| LSCVAMC Principal Investigator | <i>Access AutoCheck – Point-of-Care Screening of ... Vascular Access Risk</i> <u>\$9,850</u> 2019 |
| Medtronic Principal Investigator | <i>Minimally Invasive Bladder Pressure Sensor</i> <u>\$38,000</u> 2018 |
| VA VISN RIP Principal Investigator | <i>Wireless Graft ... Monitoring Using PDMS-Based Flexible Pulsation Sensors</i> <u>\$19,451</u> 2017 |
| VA RR&D CDA-1 Principal Investigator | <i>Real-Time Monitoring Device for Vascular Signals</i> <u>\$192,000</u> 2016 |
| VA APT IIP-02 Principal Investigator | <i>Wireless Graft ... Monitoring Using PDMS-Based Flexible Pulsation Sensors</i> <u>\$30,000</u> 2015 |
| Craig H Neilsen Foundation Co-Investigator | <i>Closed-loop Bladder Neuromodulation to Restore Continence After Spinal Cord Injury</i> <u>Pending</u> 2019 |
| DoD CDMRP SCIRP-TRA Co-Investigator | <i>Ambulatory Bladder Monitoring After Spinal Cord Injury</i> <u>Pending</u> 2019 |
| VA VISN SPARK Co-Investigator | <i>Smart Foot Position and Pressure Sensor for Power Wheelchairs</i> <u>\$25,000</u> 2018 |
| DARPA SBIR PI Consultant | <i>Flexible Conformal Ultrasound Arrays for Imaging & Modulation</i> <u>\$67,500</u> 2018 |

| | | |
|---------------------|---|------|
| NIH NHLBI SBIR PI | <i>High Resolution Ultrasonic Micro Transducer for In Utero Procedures</i> | |
| Co-Investigator | <u>\$224,912</u> | 2018 |
| Boston Ped Dev Cons | <i>Smart Artificial Urinary Sphincter for Pediatric Patients</i> | |
| Co-Investigator | <u>\$50,000</u> | 2018 |
| VA VISN | <i>Smart Artificial Urinary Sphincter</i> | |
| Co-Investigator | <u>\$50,000</u> | 2018 |
| NIH NCAI | <i>High Resolution IVUS</i> | |
| Co-Investigator | <u>\$137,535</u> | 2017 |
| NIH SPARC OT2 | <i>Conscious Ambulatory Bladder ... Neural Control of Lower Urinary Tract</i> | |
| Co-Investigator | <u>\$1,013,747</u> | 2017 |
| VA VISN 10 SEED | <i>Intervention to Prevent Power Wheelchair User Foot and Leg Injuries</i> | |
| Co-Investigator | <u>\$50,000</u> | 2017 |
| Ohio TVSF-1 | <i>The Urocapsule ... monitoring and improved diagnosis of incontinence</i> | |
| Co-Investigator | <u>\$125,000</u> | 2015 |

EDUCATION

Case Western Reserve University, Cleveland, OH

| | |
|---|------|
| Ph.D. in Electrical Engineering (adviser: Steven L. Garverick) | 2014 |
| M.S. in Electrical Engineering (adviser: Steven L. Garverick) | 2008 |
| B.S. in Electrical Engineering | 2008 |

TEACHING EXPERIENCE

Case Western Reserve University, Cleveland, OH

| | |
|--|-----------|
| Guest Lecturer – Advanced Integrated Circuit Design | 2015-2018 |
| Substitute Lecturer – Special Topics in CMOS Integrated Circuits | 2015-2017 |
| Substitute Lecturer – Electronic Analysis & Design | 2015-2017 |
| Teaching Assistant – Analysis of Signals & Systems | 2010-2013 |
| Teaching Assistant – Digital Logic | 2007-2009 |
| Course Tutor – Analysis of Signals & Systems | 2008-2010 |
| Teaching Assistant – Introduction to Circuits | 2006-2007 |

STUDENT RESEARCH SUPERVISION

Hao Chong (PhD track EE, 2018-), David Ariando (PhD track EE, 2018-19), Junjun Huan (PhD track EE, 2019), Binit Panda (MS BME, 2017-19), Ian McAdams (MS EE, 2017-19), Rohan Sinha (BS EE, 2019-), Stephanie Chin (BS BME, 2018-19), Connor Swingle (BS BME, 2017), Daniel Barbaro (BS CS, 2017), Hannah Kenyon (BS BME, 2018-2019)

ACADEMIC COMMITTEE MEMBER

| | | |
|-------------|----------------------------------|------|
| Binit Panda | Biomedical Engineering, MS, CWRU | 2019 |
| Ian McAdams | Electrical Engineering, MS, CWRU | 2018 |

HONORS AND AWARDS

| | |
|--|------|
| Louis Stokes Research Fellowship | 2018 |
| Invited Paper, <i>2017 IEEE Midwest Circuits and Systems Conference</i> | 2017 |
| Best Paper Award, <i>2016 IEEE Intl Biomedical Circuits & Systems Conference</i> | 2016 |
| Senior Member, <i>Institute of Electrical and Electronics Engineers (IEEE)</i> | 2016 |
| Invited Paper, <i>2016 IEEE Intl Sensors Conference</i> | 2016 |
| National Science Foundation I-Corps Trainee | 2016 |
| Poster Award, <i>Innovating for Continence 2015</i> , Chicago, IL | 2015 |
| Best Poster Silver Medal, Research Showcase, Case Western Reserve University | 2009 |
| Research Excellence Award, Case Western Reserve University | 2008 |
| <i>Magna cum laude</i> , Case Western Reserve University, B.S.E. | 2007 |

PATENTS

Bladder Event Detection for Diagnosis of Urinary Incontinence or Treatment of Lower Urinary Tract Dysfunction. U.S. Patent No. US 10,478,113 B2, issued June 2019. licensed Jan 2020.

Implantable Pressure Sensor. U.S. Patent No. US 10,143,391 B2, issued Dec 4, 2018.

Flexible, Skin-Coupled Microphone Array for Point-of-Care Vascular Access Monitoring. US Provisional Patent Application, filed Nov. 2018.

Systems and Methods for Estimating a Volume of a Hollow Organ. US Patent Application No. 62/289,622, filed Jan 2017.

Abdominal Pressure from Bladder Contraction Detection System. US Patent Application No. 62/154,350, filed October 2018. licensed Jan 2020.

Flexible Pulsation Sensor. US Patent Application No. 62/572,279 filed April 2019.

Smart Foot Position Sensor for Power Wheelchair Users. US Provisional Patent Application No. 62/480,804, filed Apr 2017.

PUBLICATIONS AND PAPERS

Journal Publications

* *corresponding author*

B Panda, S Mandal, **SJA Majerus**, "Flexible, Skin-Coupled Microphone Array for Point of Care Vascular Access Monitoring." *IEEE Transactions on Biomedical Circuits and Systems*, vol. 13, no. 6, pp. 1494-1505, Dec. 2019.

H Chong, J Lou, KM Bogie, CA Zorman, **SJA Majerus**, "Vascular Pressure-Flow Measurement using CB-PDMS Strain Sensor." *IEEE Transactions on Biomedical Circuits and Systems*, vol. 13, no. 6, pp. 1451-1461, Dec. 2019.

V Pashaei, P Dehghanzadeh, G Enwia, M Bayat, **SJA Majerus**, S Mandal, "Flexible Body-Conformal Ultrasound Patches for Image-Guided Neuromodulation," *IEEE Transactions on Biomedical Circuits and Systems*, 2019. **[IN PRESS]**

B Abelson, **SJA Majerus**, D Sun, BC Gill, E Versi, MS Damaser, "Ambulatory Urodynamic Monitoring: State of the Art and Future Directions." *Nature Reviews Urology*, vol. 16, pp 291–301, 2019.

A Basu, **SJA Majerus***, L Ferry, I Makovey, H Zhu, MS Damaser, "Is submucosal bladder pressure monitoring feasible?" *Journal of Engineering in Medicine*, 2018, <https://doi.org/10.1177/0954411918754925>

R Karam, **SJA Majerus**, D Bourbeau, MS Damaser, S Bhunia, "Tunable and Lightweight On-chip Event Detection for Implantable Bladder Pressure Monitoring Devices." *IEEE Trans Biomed Circuits and Systems* vol. 11, no. 6, 2017

SJA Majerus and MS Damaser, "Quantitative Analysis of Technological Innovation in Urology: Invited Editorial Comment." *Urology*, vol. 111, pp. 236, 2017

SJA Majerus, PC Fletter, EK Ferry, H Zhu, KJ Gustafson, MS Damaser (2016) "Suburothelial Bladder Contraction Detection with Implanted Pressure Sensor." *PLoS One*, vol. 12, no. 1, e0168375, 2017

R Karam, D Bourbeau, **SJA Majerus**, I Makovey, HB Goldman, MS Damaser, S Bhunia, "Real-Time Classification of Bladder Events for Effective Diagnosis and Treatment of Urinary Incontinence," *IEEE Transactions on Biomedical Engineering*, vol. 63, no. 4, pp. 721-729, 2016

I Makovey, **SJA Majerus**, R Karam, B Hanzlicek, M Streicher, H Zhu, MS Damaser, "Wireless implantable rechargeable bladder pressure sensor: cystoscopic implantation and ambulatory data collection." *The Journal of Urology*, vol. 193, no. 4, e489, 2015

SJA Majerus, SL Garverick, MA Suster, PC Fletter, MS Damaser, "Wireless, ultra-low-power implantable sensor for chronic bladder pressure monitoring." *ACM Journal of Emerging Technology*, vol. 8, no. 2, pp. 11.1-11.13, 2012

P Fletter, **SJA Majerus**, H Zhu, A Boger, S Garverick, K Gustafson, M Damaser, "Feasibility of submucosal bladder pressure sensing." *Journal of Urology*, vol. 185, no. 4, pp. e317–e318, 2011

SJA Majerus, PC Fletter, MS Damaser, SL Garverick, "Low-power wireless micromanometer system for acute and chronic bladder-pressure monitoring." *IEEE Trans on Biomedical Engineering*, vol. 58, no. 3, pp. 763-768, 2011

Edited Books and Book Chapters

B Panda, S Chin, S Mandal, **SJA Majerus**, "Noninvasive Vascular Blood Sound Monitoring Through Flexible PVDF Microphone," in *Emerging Trends in Signal Processing in Medicine and Biology*, I Obeid, J Picone, I Selesnick, Springer Nature, 2019. **[IN PRESS]**

S Bhunia, **SJA Majerus**, M Sawan, *Implantable Biomedical Microsystems*. Oxford, UK: Elsevier Science & Technology, 2015

SJA Majerus, S Bhunia, M Sawan, "Introduction." in *Implantable Biomedical Microsystems*, Oxford, UK: Elsevier Science & Technology, 2015, pp. 3-12

SJA Majerus, PC Fletter, H Zhu, MS Damaser, "Implantable Bladder Pressure Sensor for Chronic Application: A Case Study," in *Implantable Biomedical Microsystems*, S. Bhunia, **S. Majerus**, M. Sawan, Oxford, UK: Els. Science & Tech., 2015, pp. 231-250

Conference Full Papers (4-page, peer-reviewed)

B Panda, S Mandal and **SJA Majerus**, "Vascular stenosis detection using temporal-spectral differences in correlated acoustic measurements," *2019 IEEE Signal Processing in Medicine and Biology Conf*, Philadelphia, USA, Dec 7 2019.

B Panda, S Chin, S Mandal and **SJA Majerus**, "Skin-Coupled PVDF Microphones for Noninvasive Vascular Blood Sound Monitoring," *2018 IEEE Signal Processing in Medicine and Biology Conf*, Philadelphia, USA, Dec 1 2018.

S Chin, B Panda, MS Damaser and **SJA Majerus**, "Stenosis Characterization and Identification for Dialysis Vascular Access," *2018 IEEE Signal Processing in Medicine and Biology Conf*, Philadelphia, USA, Dec 1 2018.

S Mahmud, **SJA Majerus**, MS Damaser and R Karam, "Design Tradeoffs in Bioimplantable Devices: A Case Study with Bladder Pressure Monitoring," *IEEE On-Line Testing Robust Sys Design*, Platja D'Aro, Spain, 2018, pp. 69-72.

I McAdams, H Kenyon, D Bourbeau, MS Damaser, C Zorman, **SJA Majerus**, "Low-Cost, Implantable Wireless Sensor Platform for Neuromodulation Research." *2018 IEEE Bio Circ and Sys Conf*, Cleveland, USA, Oct 18 2018

SJA Majerus, H Chong, D Ariando, C Swingle, J Potkay, KM Bogie, CA Zorman, "Vascular Graft Pressure-Flow Monitoring Using 3D Printed MWCNT-PDMS Strain Sensors." *2018 IEEE Eng in Medicine and Biology Conf*, Honolulu, USA, July 17–21, 2018.

SJA Majerus, T Knauss, S Mandal, G Vince, MS Damaser, "Bruit-enhancing phonoangiogram filter using sub-band autoregressive linear predictive coding." *IEEE Eng in Medicine and Biology Conf*, Honolulu, USA, July 17–21, 2018

SJA Majerus, J Lerchbacker, D Barbaro, SJ Mitchell, KM Bogie, MK Henzel, "Power Wheelchair Footplate Pressure and Positioning Sensor." *IEEE Eng in Medicine and Biology Conf*, Honolulu, USA, July 17–21, 2018

A Smiley, **SJA Majerus**, I McAdams, B Hanzlicek, D Bourbeau, M.S. Damaser, "Sensors Selection for Continuous Monitoring of Bowel State and Activity." *IEEE Eng in Medicine and Biology Conf*, Honolulu, USA, July 17–21, 2018

I McAdams, **SJA Majerus**, B Hanzlicek, C Zorman, D Bourbeau, MS Damaser, "A Conductance-Based Sensor to Estimate Bladder Volume in Felines." *IEEE Eng in Medicine and Biology Conf*, Honolulu, USA, July 17–21, 2018

SJA Majerus, S Mandal, A Fleischman, "Catheter-mounted CMOS Front-Ends for Broadband Intravascular Ultrasonic Imaging." *2017 Midwest Symposium on Circuits and Systems*, Boston, USA, Aug. 6–10, 2017 **[INVITED]**

SJA Majerus, X Tang, J Liang, and S Mandal, "Embedded Silicon Odometers for Monitoring the Aging of High-Temperature Integrated Circuits." *IEEE Aerospace Electronics Conf (NAECON)*, Dayton, OH, June 2017 **[INVITED]**

SJA Majerus, A Basu, I Makovey, P Wang, H Zhu, C Zorman, W Ko, MS Damaser, "Wireless bladder pressure monitor for closed-loop bladder neuromodulation." *IEEE Sensors Conf*, Oct. 30–Nov. 2, 2016 **[INVITED]**

SJA Majerus, J Dunning, J Potkay, KM Bogie, "Flexible, structured MWCNT/PDMS sensor for chronic vascular access monitoring" *2016 Intl IEEE Sensors Conference*, Orlando, Florida, Oct. 30–Nov. 2, 2016

R Karam, **SJA Majerus**, D Bourbeau, M Damaser, S Bhunia, "Ultralow-Power Data Compression for Implantable Bladder Pressure Monitor: Algorithm and Hardware Implementation." *IEEE Bio Circ Systems Conf (BIOCAS)*, Shanghai, China, Oct. 17-19, 2016 **[BEST PAPER AWARD]**

R Karam, S Bhunia, **SJA Majerus**, SW Brose, MS Damaser, D Bourbeau, "Real-time, Autonomous Bladder Event Classification and Closed-Loop Control from Single-Channel Pressure Data." *Intl Engineering in Medicine and Biology Conference (EMBC) 2016*, Orlando, Florida, Aug. 17-20, 2016

SJA Majerus, I Makovey, H Zhu, WH Ko, MS Damaser, "Wireless implantable pressure monitor for conditional bladder neuromodulation." *2015 Intl. Biomedical Circuits and Systems Conference*, Atlanta, Georgia, Oct. 22, 2015

- SJA Majerus**, MS Damaser, "Automatic drift cancellation of implanted bladder pressure sensor." *2015 Intl. Biomedical Circuits and Systems Conference*, Atlanta, Georgia, Oct. 22, 2015
- P Wang, **SJA Majerus**, R Karam, S Bhunia, B Hanzlicek, DL Lin, H Zhu, JM Anderson, MS Damaser, CA Zorman, WH Ko, "Long-Term Evaluation of Non-hermetic Micropackage Technology for Pressure Sensor in Medical Microsystem," *IEEE Solid-State Sensors, Actuators, and Microsystems*, Anchorage, AK, June 21-25, 2015
- SJA Majerus**, SL Garverick, MS Damaser, "Wireless battery charge management for implantable pressure sensor." *IEEE Dallas Circuits and Systems Conf (DCAS)*, Dallas, TX, USA, Oct. 11-13, 2014
- SJA Majerus**, D Goff, W Merrill, SL Garverick, "A 200 °C custom CMOS chipset for distributed control applications." *12th Intl. Energy Conversion Engineering Conf.*, Cleveland, OH, USA, July 28-30, 2014
- SJA Majerus**, D Goff, W Merrill, SL Garverick, "A 200 °C Motor Control ASIC." *2014 International Conference on High Temperature Electronics (HiTEC 2014)*, Albuquerque, NM, USA, May 13–15, 2014, pp. 159-164
- D Goff, **SJA Majerus**, W Merrill, SL Garverick, "A 200 °C Quad-Output Switched Mode Power Supply IC." *2014 Intl. Conf. on High Temperature Electronics (HiTEC 2014)*, Albuquerque, NM, USA, May 13–15, 2014, pp. 22-27
- SJA Majerus**, SL Garverick, "Power Management Circuits for a 15- μ A, Implantable Pressure Sensor." *IEEE Custom Integrated Circuits Conference*, San Jose, CA, September 15–17, 2013
- SJA Majerus**, W Merrill, SL Garverick, "Design and long-term operation of high-temperature, bulk-CMOS integrated circuits for instrumentation and control." *IEEE EnergyTech 2013*, Cleveland, OH, USA, May 21 – 23, 2013
- SJA Majerus**, D Howe, SL Garverick, W. Merrill, K. Semega, "High-temperature, distributed control using custom CMOS ASICs." *Proc. of the 2012 SAE Power Systems Conference*, Phoenix, AZ, USA, Oct. 30 – Nov. 1, 2012
- D Howe, **SJA Majerus**, SL Garverick, W. Merrill, K. Semega, "High-temperature, bulk-CMOS integrated circuits for a distributed control system – performance results." *Proc. of the 2012 IMAPS Intl. Conf. on High Temperature Electronics (HiTEC 2010)*, Albuquerque, NM, USA, May 8-10, 2012, pp. 2-9
- W Merrill, JH Kim, S Lall, **SJA Majerus**, D Howe, A Behbahani, "Distributed engine control design considerations." *Proc. of the 46th AIAA/ASME/SAE/ASEE Joint Propulsion Conf. and Ex.* July 25-28, 2010
- SJA Majerus**, D Howe, SL Garverick, D Hiscock, W. Merrill, "High-temperature, bulk-CMOS integrated circuits for a distributed FADEC system." *IMAPS Intl. Conf. and Exhibition on High Temperature Electronics (HiTEC 2010)*, Albuquerque, NM, USA, May 11-13, 2010, pp. 47-53
- PC Fletter, **SJA Majerus**, P Cong, MS Damaser, WH Ko, DJ Young, SL Garverick. "Wireless micromanometer system for chronic bladder pressure monitoring." *IEEE Conf on Networked Sensing Systems (INSS)*, Pittsburgh, PA, June 17-19, 2009, pp. 1-4
- SJA Majerus** and SL Garverick, "Telemetry platform for deeply implanted biomedical sensors." *Proc. of the Fifth Intl. Conference on Networked Sensing Systems (INSS 2008)*, Kanazawa, Japan, June 17-19, 2008, pp. 87-92

Conference Abstracts

- M Damaser **SJA Majerus**, J Mrowca, B Hanzlicek, A Smiley, I McAdams, D Bourbeau, "Wireless Monitors for Recording Bladder and Bowel Function in Conscious Ambulatory Animals," *International Urogenital Society Meeting*, Tlaxcala, Mexico, 2019.
- SJA Majerus**, N Desai, "Algorithmic Estimation of Vascular Access Dysfunction from Serial Bruit Recordings," *American Society of Nephrology Kidney Week*, Washington, DC, 2019.
- B Abelson, I McAdams, S Butler, **SJA Majerus**, M Damaser, "Urine Conductivity for Use in Ambulatory Urodynamics," *2019 SUFU Winter Meeting*, Miami, FL, USA, Feb 26 2019.
- DJ Bourbeau, **SJA Majerus**, CT Nguyen, GA Nemunaitis, MS Damaser, "Automated closed-loop stimulation to inhibit neurogenic bladder overactivity," *2019 SUFU Winter Meeting*, Miami, FL, USA, Feb 26 2019.
- DJ Bourbeau, **SJA Majerus**, CT Nguyen, GA Nemunaitis, MS Damaser, "Automated closed-loop stimulation to inhibit neurogenic bladder overactivity," *Soc for Pelvic Research Ann Mtg*, New Orleans, LA, USA, Dec 1 2018.
- A Smiley, **SJA Majerus**, IS McAdams, A Rietsch, MS Damaser, DJ Bourbeau "Wireless Real-Time Sensor Platform for Monitoring Bowel State and Function," *Soc for Pelvic Research Ann Mtg*, New Orleans, LA, USA, Dec 1 2018.
- S Majerus**, I McAdams, A Smiley, D Bourbeau, M Damaser, "Wireless real-time sensor platforms for bladder and bowel preclinical research models." *International Continence Society Annual Meeting*, Philadelphia, USA, Aug 2018

- B Abelson, **SJA Majerus**, P Babbar, B Gill, D Greene, H Zhu, M Damaser, "Uromonitor: Insertion, retention and extraction of ambulatory urodynamic monitoring prototype in humans and large animals." *33rd Engineering and Urology Society Annual Meeting (AUA EUS 2018)*, San Francisco, CA, May 2018
- B Abelson, **SJA Majerus**, S Butler, H Goldman, MS Damaser, "Urine conductivity for use in ambulatory urodynamic monitoring." *33rd Engineering and Urology Society Annual Meeting (AUA EUS 2018)*, San Francisco, CA, May 2018
- A Basu, **SJA Majerus**, I Makovey, H Zhu, M Damaser, "Is sub-mucosal wireless pressure sensing feasible: observations from initial implantation studies." *Innovating for Continence: The Eng. Challenge*, Chicago, IL, 2017
- C Lee, **SJA Majerus**, A Basu, M Damaser, "Design of a sensor to measure bladder volume using electrical conductance." *Innovating for Continence: The Engineering Challenge*, Chicago, IL, April 2017
- R Karam, **SJA Majerus**, S Bhunia, SW Brose, MS Damaser, D. Bourbeau, "Autonomous closed-loop genital nerve stimulation identifies and inhibits hyper-reflexic bladder contractions." *31st Engineering and Urology Society Annual Meeting (AUA EUS 2016)*, San Diego, CA, May 7, 2016
- X Yuan, BW Hanzlicek, DL Lin, **SJA Majerus**, MS Damaser, "The application of an innovative surface electrode system in external urethral sphincter electromyography testing in rats." *31st Engineering and Urology Society Annual Meeting (AUA EUS 2016)*, San Diego, CA, May 7, 2016
- SJA Majerus**, P Wang, WH Ko, C Zorman, MS Damaser, "Chronic biocompatibility evaluation of multi-layer, non-hermetic packaging approach for implantable medical microsystems." *American Vacuum Society Ohio Chapter Annual Meeting*, Cleveland, OH, Oct. 10 2015
- I Makovey, R Karam, **SJA Majerus**, D Bourbeau, H Zhu, S Bhunia, MS Damaser, "Event detection algorithm in single channel bladder pressure recording." *30th Eng. Urology Soc. Mtg. (AUA EUS 2015)*, New Orleans, LA, May 16, 2015
- I Makovey, **SJA Majerus**, E Ferry, H Zhu, MS Damaser, "Cystoscopic implantation of a wireless implantable rechargeable bladder pressure sensor." *Innovating for Continence: The Engineering Challenge*, Chicago, IL, April 2015 [POSTER AWARD]
- R Karam, D Bourbeau, **SJA Majerus**, I Makovey, H Goldman, MS Damaser, S Bhunia, "Real-time contraction event detection from bladder pressure recordings for effective diagnosis and treatment of urinary incontinence." *Innovating for Continence: The Engineering Challenge*, Chicago, IL, April 2015
- SJA Majerus**, I Makovey, E Ferry, P Wang, B Hanzlicek, M Streicher, WH Ko, H Zhu, MS Damaser, "Demonstration of wireless, catheter-free bladder pressure sensor for ambulatory monitoring and closed-loop bladder control." *Innovating for Continence: The Engineering Challenge*, Chicago, IL, April 2015
- SJA Majerus**, I Makovey, E Ferry, P Wang, B Hanzlicek, M Streicher, WH Ko, H Zhu, MS Damaser, "Cystoscopic implantation and ambulatory demonstration of a wireless pressure sensor for real-time, catheter-free bladder pressure monitoring." *2015 Midwest American Society of Biomechanics Regional Meeting*, Akron, OH, Feb. 17, 2015
- P Wang, **SJA Majerus**, JM Anderson, MS Damaser, CA Zorman, WH Ko, "Long-Term Implant Evaluation of Non-hermetic Micropackage Technology," in *Proc. Ann. Int. Conf. IEEE Eng. Med. Biol. Soc.*, San Antonio, TX, 2014
- E Ferry, **SJA Majerus**, H Zhu, SL Garverick, MS Damaser, "Cystoscopic implantation of a wireless implantable pressure sensor in a large animal model." *29th Eng. and Urology Soc. Ann. Mtg.*, Orlando, FL, May 16–21, 2014
- E Ferry, **SJA Majerus**, H Zhu, SL Garverick, MS Damaser, "Cystoscopic submucosal bladder device implantation." *Soc for Urodynamics, Fem Pelvic Med & Urogenital Reconstruction (SUFU)*, Miami, FL, 2014
- E Ferry, **SJA Majerus**, B Balog, M Streicher, H Zhu, MS Damaser, "Calf urodynamics: a novel large-animal urologic model." *Soc for Urodynamics, Fem Pelvic Med & Urogenital Reconstruction (SUFU)*, Miami, FL, 2014
- P Wang, SB Lachhman, D Sun, **SJA Majerus**, MS Damaser, CA Zorman, PXL Feng, WH Ko, "Non-Hermetic Micropackage for Chronic Implantable Systems." *46th International Symposium on Microelectronics (IMAPS 2013)*, Orlando, FL, September 30 – October 3, 2013
- P Wang, D Sun, **SJA Majerus**, S Lachhman, S Li, MS Damaser, CA Zorman, WH Ko, "Implantable Pressure Telemetry Device with Thin Film Micropackage." *Bio. Eng. Soc. Ann. Mtg. (BMES 2013)*, Seattle, WA, 2013
- SJA Majerus**, PC Fletter, P Zaszczurynski, H Zhu, MS Damaser, SL Garverick, "In vivo demonstration of an implantable bladder pressure sensor in an ambulatory canine subject." *Point-of-Care Technologies Research Network International Forum*, Sacramento, CA, USA, June 24, 2011

PC Fletter, **SJA Majerus**, A Boger, K Gustafson, SL Garverick, H Zhu, MS Damaser, "Feasibility of submucosal bladder pressure sensing." *Society of Urodynamics, Female Pelvic Medicine, and Urogenital Reconstruction 2011 Winter Meeting*, Phoenix, AZ, USA, March 1-5, 2011

PC Fletter, **SJA Majerus**, P Cong, WH Ko, DJ Young, SL Garverick, MS Damaser, "Wireless ambulatory system for chronic bladder pressure monitoring." *BMES 2009 Annual Fall Scientific Meeting*, Pittsburgh, PA, October 7-10, 2009

INVITED PRESENTATIONS

"Wireless and Catheter-Free Conditional Sacral Neuromodulation Using Intravesical Pressure Sensor." *Dept of Physical Medicine and Rehabilitation*, Metrohealth Rehabilitation Institute, Cleveland, Jan. 22, 2020

"Wireless Bladder Pressure Sensing for Conditional Neuromodulation." *Cleveland Clinic Speaker Spotlight Series – Dept of Biomedical Engineering*, Cleveland Clinic Lerner Research Institute, May 20, 2016

"A Creative Approach for a Better Power Source." *MedTechWorld BIOMEDevice Wireless Medical Devices Conference*, San Jose, CA, Dec. 3-4, 2015

"Innovating with the Latest Sensor Technologies." *MedTechWorld BIOMEDevice Wireless Medical Devices Conference*, San Jose, CA, Dec. 3-4, 2014

SERVICE

Reviewer (journals, active)

IEEE Journal of Solid-State Circuits

IEEE Transactions on Biomedical Engineering

IEEE Transactions on Biomedical Circuits and Systems

IEEE Transactions on Neural Systems and Rehabilitation Engineering

IEEE Sensors Journal

IEEE Transactions on Multi-Scale Computing Systems

IEEE Transactions on Microwave Theory and Techniques

IEEE Transactions on Circuits and Systems

IEEE Transactions on Very Large Scale Integration Systems

IEEE Journal on Emerging and Selected Topics in Circuits and Systems

PLoS ONE

Sensors & Actuators: A. Physical

ACM Journal of Emerging Technology in Computing

Biomedical Microdevices

Analog Integrated Circuits and Signal Processing

Conference Activities

IEEE International Biomedical Circuits and Systems Conference, Co-Chair Live Demos & Review Committee

IEEE International Sensors Conference Technical Committee

American Urologic Association Engineering and Urology Conference Technical Committee

SOCIETY MEMBERSHIPS

Senior Member, Institute of Electrical and Electronics Engineers (IEEE)

IEEE Solid-State Circuits Society (SSCS)

IEEE Sensors Council

IEEE Circuits and Systems Society

IEEE Engineering in Medicine and Biology Society (EMBS)

International Continence Society (ICS)

PROFESSIONAL ACTIVITIES

Consultant, Consumer Medical Devices

2008 – present

Consultant, Class-III Medical Devices

2018 – 2019

Consultant, High-Temperature Electronics

2019 – present

Consultant, Patent Litigation, Electronics

2012 – present