Lars Bjorn Laurentius, Ph.D.

Languages: English, German, and Danish

6871 S Virginia Hills Dr. | Cottonwood Heights, UT 84121 | (801) 906-3624 | Lars.Laurentius@utah.edu

ORCID: 0000-0001-8528-5727 ▪ www.LinkedIn.com/in/lars-laurentius ▪ www.researchgate.net/profile/Lars_Laurentius

Education / Work Experience

Chief Technology and Product Development Officer **2021-present**
Sentiomed, Inc.
Salt Lake City, UT 84108, USA

Research Assistant Professor **2018-present**
Electrical & Computer Engineering
University of Utah, Salt Lake City, USA

Postdoctoral Researcher **2013-2018**
Nano Institute of Utah
University of Utah, Salt Lake City, USA
Advisor: Professor Marc D. Porter

Postdoctoral Fellow **2012-2013**
National Institute for Nanotechnology
University of Alberta, Edmonton, Canada
Advisor: Professor Mark T. McDermott

Ph.D. in Chemistry **2006-2012**
Department of Chemistry
University of Alberta, Edmonton, Canada
Advisor: Professor Mark T. McDermott
Thesis entitled: *Modification and Application of Gold Nanoparticles in Surface-Based Immunoassays*
(Electronic version available upon request)

B.Sc. in Chemistry with Honors **2002-2006**
Department of Chemistry
University of Alberta, Edmonton, Canada

Research Experience

The combined research experience in analytical chemistry with focus on surface chemistry, immunological chemistry, polymer chemistry, nanotechnology, and sensor development has provided me with the important and necessary skills to successfully design and implement analyte/disease detection strategies for laboratory-based diagnostics and for rapid, field-deployable tests.

Sentiomed, Inc. (Chief Technology and Product Development Officer):

- Focused on product development activities for a start-up company
- Anticipating and mitigating regulatory challenges
- Sensor development for healthcare applications
- Polymer material design and characterization
- Exploring funding opportunities and approach investors
- Building an infrastructure to drive product development

Electrical & Computer Engineering / University of Utah (Research Assistant Professor):

- Engage in research, design, development and testing of novel hydrogel-based sensors for detection of relevant biomarkers for application in important healthcare related challenges
- Polymer chemistry for medical applications

- Working in a GLP environment and using ISO standards for product development and material evaluation
- Supervising and directing graduate student research
- Grant writing and securing investor funding

Nano Institute of Utah / University of Utah (Postdoctoral Researcher):

- Leading research efforts to develop diagnostic tests for tuberculosis
- Modification and application of nanostructures in pathogen/disease detection for healthcare and security screening
- Expanding and refining knowledge in immunological bioassay work that includes techniques such as surface-enhanced Raman spectroscopy (SERS), surface plasmon resonance, UV-vis spectroscopy, fluorimetry, and enzyme-linked immunosorbent assay (ELISA)
- Handling and processing of biological samples
- Supervising and directing graduate student research
- Extensive training in manuscript and grant writing / reviewing

National Institute for Nanotechnology / National Research Council of Canada (Postdoctoral Fellow):

- Part of a multidisciplinary research team developing a point-of-need test to sense low levels of multiple (>10) metabolites in urine for healthcare screening applications
- Extensive experience using surface plasmon resonance for small molecule detection
- Working with biological samples, synthesizing standards for metabolites, and designing/evaluating different surface capture probes

University of Alberta (Ph.D.):

- Foundation in biosensor design and interdisciplinary collaborations
- Organic synthesis of diazonium salts for modification of gold, silver, carbon, and titanium surfaces
- Electrochemical and spontaneous grafting of organic layers on conductive surfaces
- Modification of nanostructures and extensive characterization using spectroscopy and microscopy techniques
- Development of immunoassays using newly modified nanostructures with SERS and UV-vis detection schemes

Representative Skills

Chemistry:

- In depth knowledge of spectroscopy techniques including infrared, UV-vis, fluorescence, atomic, X-ray, NMR, and Raman spectroscopy, rheology for the analysis of liquid and solid samples
- Experienced in electrochemical techniques at carbon and metal electrodes
- Familiar with chromatography techniques for separation: HPLC, GC, SEC, IEC, and affinity chromatography
- Proficient in modifying surfaces in the macro and nano realm for passivation, reactivity, and biological compatibility
- Skilled in microscopy techniques including optical microscopy, AFM, and SEM
- Familiar with mass spectrometry (MS) in the identification of organic molecules and proteins
- Experienced in laboratory automation using robotic fluid handling systems
- Synthesis of polymers with emphasis on biodegradable formulations

Diagnostics:

- Highly skilled in the development and refinement of ELISA and lateral/vertical flow assays
- In depth knowledge of handling biological samples and sample pretreatment for diagnostics
- Proficient in working in and managing a Biosafety Level 2 enhanced facility
- Experienced in protein analysis using 2-d gel electrophoresis and SPR
- Well-versed in coupling chemistry for proteins, carbohydrates, and DNA
- Designing microfluidic channels for sample pretreatment and analysis

Administrative / Computing:

- Experienced and comfortable in supervisory roles
- Capable of working effectively in a team environment and in an individual research setting
- Skilled in manuscript, progress report, patent, and grant application writing
- Accomplished in delivering presentations, training seminars, and critical evaluations
- Goal-oriented and capable of managing multiple projects concurrently
- Experienced in Microsoft Office, Adobe Creative Suite, OMNIC (Thermo Scientific), SigmaPlot (graphical software), ChemStation (Agilent), AfterMath (Pine Research), Opus (Bruker), Python, and many other programs

Teaching Experience

University of Utah:

- **Guest lecturer** (01/29/2021) Special Topics course on SARS-CoV-2 (CHEM 7590, Prof. Jennifer Shumaker-Parry), University of Utah
- **Guest lecturer** (02/2017, 03/2018, 02/25/2020, 02/27/2020. 03/09/2021, and 03/11/2021) Nanoscience Course (CHEM 6810, Prof. Marc Porter), University of Utah
- **Guest lecturer** (09/2017) Nanoscale Probing and Imaging Course (MSE 6075, Prof. Ling Zang), University of Utah

University of Alberta:

- **Guest lecturer** (2011) Introductory Spectroscopy Course (Prof. Mark. McDermott), University of Alberta, Canada
- **Graduate Teaching Assistant** (2006-2009, 2011-2012), General Chemistry and Quantitative Chemistry laboratory

Continuing Education

- Emergency Medical Technician (EMT) certification in Utah (09/2020)
- Leadership Development Program, Human Resources, University of Utah
- Biosafety Level 2 enhanced Training, Environmental Health and Safety, University of Utah
- Laboratory Leadership and Staffing, Office of Research Education, University of Utah
- Mentoring for Fun and Profit, Office of Research Education, University of Utah
- Grant-Writing Workshop: The National Institute of Health, Office of Research Education, University of Utah
- Getting Published: Responsible Authorship and Peer Review, Office of Research Education, University of Utah
- Understanding Internal Review Board Applications, Office of Research Education, University of Utah

Memberships / Committees / Referee

- American Chemical Society - **Member**
- University of Utah Postdoctoral Association – **Secretary** (2015-2017)
- ***Ad hoc* Reviewer** for Sensors & Actuators: B. Chemical (Elsevier), Analyst (Royal Society of Chemistry), ACS Applied Materials & Interfaces (American Chemical Society), ACS Sensors (American Chemical Society), ACS Omega (American Chemical Society), IEEE Sensors, IEEE Engineering in Medicine and Biology Society, ACS Langmuir, and Nature Communications
- **Selection Committee Member** for the 2015 Distinguished Mentor Award, University of Utah, USA
- **Poster Judge** for the 2018/2019/2020 Undergraduate Research Symposium, University of Utah, Salt Lake City, UT, USA
- **Poster Judge** for the 2015 Postdoc Appreciation Day Event at the University of Utah, USA
- **Poster Judge** for the 2014 nanoUtah Conference & Exhibition in Salt Lake City, UT, USA

Selected Awards / Research Support

2002 Alexander Rutherford Scholarship
2002 University of Alberta Academic Excellence Scholarship
2003 Mildred Rowe Weston Memorial Scholarship
2004 Jason Lang Scholarship (2004-05)
2005 Natural Sciences and Engineering Research Council of Canada Undergraduate Student Research Award
2005 American Chemical Society Undergraduate Analytical Award
2006 Society of Chemical Industry Merit Award
2006 Graduate Student Teaching Assistant Fellowship (2006-09, 2011-12)
2010 56th International Conference on Analytical Sciences and Spectroscopy Oral Presentation Award
2010 93th Canadian Chemistry Conference and Exhibition Graduate Student Poster Award
2011 Department of Chemistry, University of Alberta CHEM 10X Teaching Assistant Excellence
2011 Graduate Student Association, University of Alberta Professional Development Grant
2011 Profiling Alberta's Graduate Student Award, University of Alberta
2012 95th Canadian Chemistry Conference and Exhibition Graduate Student Poster Competition Award
2016 Office of Postdoctoral Affairs, University of Utah, Travel Award for Conference Presentation

Research Support / Funding

Ongoing / Completed Research Support

1. Total amount: $49,758, Funding agency: Nanophilic, LLC.
   Solicitation: Industry Sponsored Project.
   Proposal title: Rapid COVID-19 antigen Test kit Evaluation and Comparison.
   Award year(s): 4 Months (2/01/2021 to 5/31/2022)
   Role: Principal Investigator
2. Total amount: $61,000, Funding agency: NIH via Diabetes Research Center Univ. of Washington St. Louis.
   Solicitation: Pilot and Feasibility Grants.
   Proposal title: Injectable and biodegradable glucose sensors with ultrasound readout.
   Award year(s): 1 year (12/01/2021 to 11/30/2022)
   Role: Principal Investigator
3. Total amount: $45,000, Funding agency: Sentiomed, Inc.
   Solicitation: Industrial sponsored research.
   Proposal title: Hyaluronic Acid Hydrogels.
   Award year(s): 0.5 year (09/01/2021 to 02/28/2022)
   Role: Principal Investigator
4. Total amount: $6,000, Funding agency: NSF through the University of Utah
   Solicitation: I-CORPS.
   Description: Combining several aspects into a single dental appliance to combat caries.
   Award year(s): 0.5 year (11/01/2021 to 04/30/2022)
   Role: Principal Investigator
5. Total amount: $25,000, Funding agency: Internal Seed Grant (University of Utah)
   Solicitation: (3i) Initiative and Molecular Medicine Program.
   Proposal title: Ending the tyranny of molecular recognition elements: New tools for pathogen detection.
   Award year(s): 1 year (07/01/2021 to 06/30/2022)
   Role: Co-PI
6. Total amount: $37,500, Funding agency: Office of the Vice President for Research (University of Utah)
   Solicitation: Special Emphasis: Emerging COVID-19/SARS-CoV-2 Research seed grant program.
   Proposal title: Multiplexed Detection of COVID-19/SARS-CoV-2 Biomarkers for Diagnosis and Surveillance.
   Award year(s): 1 year (05/01/2020 to 04/30/2021)
   Role: Principal Investigator
7. Total amount: $52,500, Funding agency: Industry Research Contract (Sprightly Health, Inc.)
   Solicitation: Industrial sponsored research.
   Proposal title: Design, develop, and test microfluidic system implementation for SARS-CoV-2 antigen detection.
   Award year(s): 0.25 year (02/15/2021 to 04/30/2021)
   Role: Co-I

Pending Grant Proposals

Date: 07/2022-08/2025
Total amount: $3,275,182, Funding agency: DARPA
Solicitation: DARPA BG+
Proposal title: HEPIUS: Holistic Electrical, Ultrasonic and Physiological Interventions Unburdening those with Spinal Cord injury.
Role: Key Personnel, Total planned effort: 1.85 Calendar Months.
Description: Developing smart hydrogel-based sensors for monitoring spinal cord injury biomarkers.

Date: 04/2022-10/2022
Total amount: $255,508, Funding agency: NIH
Solicitation: SBIR Phase I through Sentiomed. Inc.
Proposal title: Passive intracranial pressure sensor for hydrocephalus shunts and cranioplasty implants with ultrasound readout.
Role: Co-I, Total planned effort: 1.0 Calendar Months.
Description: This project’s aims to develop a non-invasive intra cranial pressure monitoring solution.

Date: 05/2022-12/2024

Total amount: $1,730,615, Funding agency: NIH
Solicitation: SBIR fast-track through Sentiomed. Inc.
Proposal title: Injectable and biodegradable hydrogel sensor system for glucose monitoring with wearable ultrasound technology.
Role: Co-PI, Total planned effort: 10.0 Calendar Months.
Description: This project's aims to develop a minimal invasive glucose sensing solution using injectable hydrogels and ultrasound-based readout.

Date: 07/2022-12/2022
Total amount: $255,996, Funding agency: NSF
Solicitation: SBIR Phase 1 through Sentiomed. Inc.
Proposal title: Sentiomed Injectable 14-day Biodegradable Glucose Sensor System.
Role: Co-PI, Total planned effort: 2.0 Calendar Months.
Description: Development of a biodegradable implantable smart hydrogel-based sensing system for continuous monitoring of glucose.

Grants I have actively worked on at the University of Utah

NIH SBIR 10053891 Research Scientist 08/19/2019-07/19/2020
"Mobile Health Point-of-Care Diagnostics for Tuberculosis" – This project focuses on the development of a point-of-care (POC) diagnostic test for tuberculosis (TB) by coupling smartphone technology with a rapid, inexpensive, and easy-to-use POC test for TB that can be performed in any location by minimally trained staff and can provide an accurate diagnosis in under 10 minutes.

NIH 1 UG3 CA211551-01 Research Scientist 05/01/2018-04/30/2020
"Field-deployable platform for prognostic hepatic cancer screening in low-resource settings" – This project focuses on the development of an inexpensive, easy-to-use, and portable point of care platform for screening an underserved population. The approach uses a quantitative vertical flow assay with Raman readout for detecting biomarkers indicative of hepatocellular carcinoma and for Hepatitis B and Hepatitis C.

NIH R01 AI 111495 Research Scientist 05/01/2014-05/31/2020
"Surface-enhanced Raman Spectroscopy Immunoassay for Detection of Category A Pathogens" – This project focuses on the development of the rapid, low-level detection of Category A Priority Pathogens (National Institute of Allergy and Infectious Diseases) using a deployable, nanoparticle-based, surface-enhanced Raman scattering diagnostic test.

NIH (10047537) Research Scientist 01/01/2018-31/12/2021
"Auditory Nerve Implant" – Development and Translation of an Intracranial Auditory Nerve Implant. Development and demonstration in human subjects of an intracranial auditory nerve implant.

DARPA NESD (GG012664) Research Scientist 01/01/2018-31/12/2021
"BISC: Bioelectronic Interfacing to Sensory Cortex with Massive, Fully Implanted, Flexible, Wireless CMOS Surface Recording" – The goal of the project is the development of a 1 Mio channel bidirectional neural interface for use in visual prosthesis.

USANA Health Sciences Postdoctoral Researcher 08/15/2016-08/14/2017
"C-Reactive Protein Detection" – This project has two goals and focuses on the development of tests for quality control of nutraceutical products and point-of-sale tests for USANA, a company that focuses on nutritional supplements and health care products. The tests are based on Raman spectroscopy.

NIH R01 AI 111495 Postdoctoral Researcher 05/01/2014-04/30/2019
"Surface-enhanced Raman Spectroscopy Immunoassay for Detection of Category A Pathogens" – This project focuses on the development of the rapid, low-level detection of Category A Priority Pathogens (National Institute of Allergy and Infectious Diseases) using a deployable, nanoparticle-based, surface-enhanced Raman scattering diagnostic test.

University of Colorado 1551160 Postdoctoral Researcher 10/01/2013-10/31/2015
"Modified DNA Aptamer Affinity Reagents for MTB Biomarker Validation" – This sub-award to the University of Colorado at Boulder for the Gates Foundation grant OPP1039621 (same title) was focused on the development of strategies for the

ultrasensitive detection of potential antigenic markers for the early diagnosis of tuberculosis based on innovative approaches to serum and urine preparation and analysis.

Peer-Reviewed Publications

1. N. Farhoudi, **L. B. Laurentius**, J. J. Magda, C. F. Reiche, and F. Solzbacher; "In vivo Monitoring of Glucose using Ultrasound-induced Resonance in Implantable Smart Hydrogel Microstructures", ACS Sensors, **2021**, 6, 10, 3587-3595.
2. N. Farhoudi, H.-Y. Leu, **L. B. Laurentius**, J. J. Magda, F. Solzbacher and C. F. Reiche; "Smart Hydrogel Micromechanical Resonators with Ultrasound Readout for Biomedical Sensing", ACS Sensors, **2020**, 5 (7), 1882-1889.
3. Owens, N.A., Young, C.C., **Laurentius, L.B.**, De, P., Chatterjee, D., and Marc D. Porter. Detection of the tuberculosis biomarker mannose-capped lipoarabinomannan in human serum: impact of sample pretreatment with perchloric acid. *Analytica Chimica Acta*, **2019**, *1043*, 140-147.
4. Owens, N.A., **Laurentius, L.B.**, Porter, M.D., Li, Q., Wang, S., and Delphi Chatterjee. Handheld Raman spectrometer instrumentation for quantitative tuberculosis biomarker detection: a performance assessment for point-of-need infectious disease diagnostics. *Applied Spectroscopy*, **2018**, *72(7)*, 1104-1115.
5. Amin, A.G., De, P., Spencer, J.S., Brennan, P.J., Daum, J., Andre, B.G., Joe, M., Bai, Y., **Laurentius, L.B.**, Porter, M.D., Honnen, W.J., Choudhary, A., Lowary, T.L., Pinter, A., and Delphi Chatterjee. Detection of lipoarabinomannan in urine and serum of HIV-positive and HIV-negative TB suspects using an improved capture-enzyme linked immune sorbent assay and gas chromatography/mass spectrometry. *Tuberculosis*, **2018**, *111*, 178-187.
6. **Laurentius, L.B.**, Crawford, A.C., Mulvihill, T.S., Granger, J.H., Robinson, R., Spencer, J.S., Chatterjee, D. Hanson, K.E., and Marc D. Porter. Importance of specimen pretreatment for the low-level detection of mycobacterial lipoarabinomannan in human serum. *Analyst*, **2017**, *142*, 177-185.
7. Crawford, A.C., **Laurentius, L.B.**, Mulvihill, T.S., Granger, J.H., Spencer, J.S., Chatterjee, D., Hanson, K.E., and Marc D. Porter. Detection of the tuberculosis antigenic marker mannose-capped lipoarabinomannan in pretreated serum by surface-enhanced Raman scattering. *Analyst*, **2017**, *142*, 186-196.
8. **Laurentius, L.B.**, Owens, N.A., Park, J., Crawford, A.C., and Marc D. Porter. Advantages and limitations of nanoparticle labeling for early diagnosis of infection. *Expert Review of Molecular Diagnostics*, **2016**, *16(8)*, 883-895.
9. Qian, H., **Laurentius, L.**, and Ray F Egerton, Artefacts Induced on Soft Layer of Hybrid Metallic Nanoparticles in TEM. *Microscopy and Microanalysis*, **2015**, *21 (S3)*, 1551-1552.
10. Chizari, K., Vena, A., **Laurentius, L.**, Sundararaj, U. The effect of temperature on the morphology and chemical surface properties of nitrogen-doped carbon nanotubes. *Carbon*, **2014**, *68*, 369-379.
11. **Laurentius, L.**, Stoyanov, S.R., Gusarov, S., Kovalenko, A., Du, R., Lopinski, G.P., and Mark T. McDermott. Diazonium-derived aryl films on gold nanoparticles: Evidence for a carbon–gold covalent bond. *ACS Nano*, **2011**, *5*, 4219-4227.

Intellectual Property

1. Porter, M.D., **L.B. Laurentius**, N. Owens, and R.E. Robinson. Immobilized Enzymatic Digestion of Blood Products for Diagnostic Testing. *U.S. Patent Application US20210033620A1*, **filed Jul 2020**. Pending.
2. C.F. Reiche, F. Solzbacher, N. Farhoudi, S.M. Blair, J.J. Magda, **L.B. Laurentius**, and P.R. Kairy. Implantable and biodegradable smart hydrogel micromechanical resonators with ultrasound readout for biomedical sensing. *U.S. Patent Application US20210267573A1*, **filed May 2021**. Pending.
3. **L.B. Laurentius**, F. Solzbacher, C.F. Reiche, H.Y. Leu, and S. Boroomand. Optical Imaging of Smart Hydrogel Structures for Sensing Applications. *U.S. Provisional Patent Application 63/033,699* **filed Jun 2020**. Pending.

Manuscripts in Preparation

1. **Laurentius, L.B.**, Robinson, R., Owens, N.A., Young, C.C., Amin, A., Chatterjee, D., Pinter, A., Honnen, W.J., and Marc D. Porter. Advancing immunoassays for the low-level detection of the tuberculosis biomarker lipoarabinomannan in human serum. (2022)
2. **Laurentius, L.B.**, Owens, N.A., Young, and Marc D. Porter. A closer look at correctly handling lipoarabinomannan standards in tuberculosis diagnostics. (2022)
3. **Laurentius, L.B.** and Mark T. McDermott. Evidence for Controllable Multilayer Formation of
4. Spontaneously Grafted Diazonium Salt Derived Layers on Gold Nanoparticles. (2022)
5. **Laurentius, L.B.** and Mark T. McDermott. Nanoparticle Labels in Biosensing: UV-vis Detection Based on Localized Surface Plasmon Resonance. (2022)
6. Boroomand, S., Reiche, C.F., Solzbacher, F., and **L. Laurentius**. Design and implementation of a portable, inexpensive, and automated detection platform based in optical imaging of smart hydrogels. (2022)

7. Lambert, C., Patel, D., Clark, E., **Laurentius**, L., Sant, H., and M.D. Porter. Transition to on-chip sample pretreatment for tuberculosis-derived biomarkers out of serum. (2022).
8. Farhoudi, N., Boroomand, S., and **Laurentius, L.** Towards the development of biodegradable hydrogels for injectable glucose sensing systems. (2022)

Presentations

- **L.B. Laurentius**, N. Farhoudi, J. Magda, C.F. Reiche, and F. Solzbacher "Micromechanical Resonators for
- Ultrasound-Based Sensors." 239th ECS Meeting with the 18th International Meeting on Chemical Sensors (IMCS), May 30-June 3, 2021, Digital Meeting. Talk.
- **L.B. Laurentius**, C.F. Reiche, F. Solzbacher, and M. Porter "A closer look at the design requirements and challenges of point-of-care tests for disease detection." PittCon Conference & Expo, March 5-9, 2021, Atlanta, GA (Virtual). Symposium Organizer and Invited Speaker.
- N. Farhoudi, **L.B. Laurentius**, C.F. Reiche, J.J. Magda, and F. Solzbacher, "Ultrasound Imaging of Stimuli-Responsive Hydrogel Structures for Continuous Monitoring of Biomarkers." 5th Annual MarketsandMarkets Biomarker and Companion Diagnostics Conference Feb 6-7, 2020, San Diego, CA. Poster.
- S. Boroomand, L. Priess, J. Körner, C.F. Reiche, **L. B. Laurentius**, H.-Y. Leu, J.J. Magda and F. Solzbacher, "A Smart Hydrogel Sensing Concept Based on Optical Imaging Sensor." Active Polymeric Materials and Microsystems Conference (APMM) Sep 2019, Dresden, Germany. Talk.
- N. Farhoudi, H.-Y. Leu, **L. Laurentius**, J.J. Magda, and F. Solzbacher, "Continuous Glucose Monitoring using Smart Hydrogel Micromechanical Resonators with Ultrasound Readout." Diabetes and Metabolism Fall Retreat Oct 2019, Salt Lake City, UT. Poster.
- **Lars Laurentius**, Alexis Crawford, Ryan Robinson, Nicholas Owens, Jennifer Granger, Delphi Chatterjee, and Marc Porter, *"Diagnostic challenge in blood tests for tuberculosis: Importance of sample pretreatment in overcoming analyte complexation."* 251st ACS National Meeting & Exposition 2016, San Diego, CA. Talk.
- Nicholas Owens, Alexis Crawford, **Lars Laurentius**, Nicholas Schlotter, Aleksander Skuratovsky, and Marc Porter, *"All Solid-phase Immunoassays Are Not Created Equal: A closer look at what determines signal generation,"* 251st ACS National Meeting & Exposition 2016, San Diego, CA. Talk.
- Marc Porter, Alexis Crawford, **Lars Laurentius**, Timothy Mulvihill, Jennifer Granger, John Spencer, Delphi Chatterjee, and Kimberly Hanson, *"Detection of the tuberculosis antigenic marker lipoarabinomannan in infected patient sera by gold nanoparticle labeling and surface-enhanced Raman scattering,"* Pacifichem 2015, Honolulu, HI. Talk.
- Marc Porter, **Lars Laurentius**, Nicholas Owens, Alexis Crawford, and Jennifer Granger, *"Head-to-Head Comparison of the Performance of SERS and ELISA Diagnostic Tests for Infectious Disease,"* SCIX/FACSS 2015, Providence, RI. Talk.
- **Lars Laurentius** and Marc D. Porter, *"Contributions of plasmonic interactions in surface-enhanced Raman scattering immunoassay based on labeled gold nanoparticles and gold capture substrates,"* SCIX/FACSS 2014, Reno-Tahoe, NV. Invited talk presented by Lars Laurentius.
- **Lars Laurentius** and Marc D. Porter, *"Nanoparticle detection as a tool for early diagnosis of infectious disease,"* SCIX/FACSS 2014, Reno-Tahoe, NV. Invited talk presented by Lars Laurentius.
- **Lars Laurentius** and Mark T. McDermott, *"Strategies in the detection of metabolites using surface plasmon resonance,"* University of Alberta "OMICs" Conference 2013, Edmonton, AB. Poster.
- M.T. McDermott, S. Elbayomy, **L. Laurentius**, and Y. Cao, *"Competitive Assays for Metabolites Using Modified Gold Nanoparticles,"* The 96th Canadian Society for Chemistry Conference 2013, Québec, QC. Talk.
- **L. Laurentius** and M. T. McDermott, *"Surface modification of gold and silver nanoparticles with controllable thickness,"* The 95th Canadian Society for Chemistry Conference 2012, Calgary, AB. Poster.
- M. T. McDermott and **L. Laurentius**, *"Covalently bonded films on gold nanoparticles,"* ACS National Meeting & Expo 2012, San Diego, CA. Talk.
- M. T. McDermott, S. Elbayomy, and **L. Laurentius**, *"Modified gold nanorods as extrinsic surface enhanced Raman labels for bioassays,"* ACS National Meeting & Expo 2012, San Diego, CA. Talk.
- **Lars Laurentius**, Jane Cao, and Mark T. McDermott, *"Localized surface plasmon resonance labels in bioassays,"* 85th ACS Colloid and Surface Science Symposium 2011, Montreal, QC. Talk.
- S.R. Stoyanov, O. Zelyak, A. Bonifas, S. Gusarov, A.J. Bergren, M.T. McDermott, R.L. McCreery, A. Kovalenko, **L. Laurentius**, R. Du, and G. Lopinski, *"Multiscale Modeling for Rational Design and Spectroscopic Characterization of Molecular Electronic Junctions,"* The 94th Canadian Society for Chemistry Conference 2011, Montreal, QC. Talk.
- **Lars Laurentius** and Mark McDermott, *"UV-vis detection of nanoparticle-labels in biosensing,"* 56th ICASS International Conference on Analytical Sciences and Spectroscopy 2010, Edmonton, AB. Invited talk.

- **Lars Laurentius** and Mark T. McDermott, *"Gold nanoparticle-labels for multiplexed LSPR biosensing,"* The 93rd Canadian Society for Chemistry Conference 2010, Toronto, ON. Poster.
- M. T. McDermott, **L. Laurentius**, and N. Yang, *"Antibody coated metal nanoparticles for plasmonic based biosensing,"* The 93rd Canadian Society for Chemistry Conference 2010, Toronto, ON. Talk.
- **Lars Laurentius** and Mark McDermott, *"Multiplexed biosensing employing nanoparticle-labels and UV-vis detection,"* Bio-Plasmonics Conference: Functionalized Plasmonic Nanostructures for Biosensing 2010, Monte Veritá, Switzerland. Poster.
- **L. Laurentius**, N. Yang, D. Shewchuk, and M.T. McDermott, *"Modification of gold nanoparticles by the spontaneous grafting of diazonium salts,"* PittCon 2010, Orlando, FL. Poster.
- McDermott, M. T., Lahiji, R., Kaufman, G., **Laurentius, L.**, Boluk, Y., and L. Zhao, *"Spectroscopic and Microscopic Characterization of Nanocrystalline Cellulose,"* PittCon 2010, Orlando, FL. Talk.
- M. T. McDermott, **L. Laurentius**, and N. Yang, *"Antibody nanoparticle conjugates for plasmonic based biosensing,"* Pacifichem 2010, Honolulu, Hawaii, USA. Talk.
- M. T. McDermott, C. F. Grant, N. Yang, F. Nsiah, and **L. Laurentius**, *"Surface Bioassays Using Antibody-Nanoparticle Conjugate,"* The 92nd Canadian Society for Chemistry Conference 2009, Hamilton, ON. Talk.
- **Lars Laurentius** and Mark T. McDermott, *"Development of bioassays utilizing electrochemically grafted layers on thin carbon films,"* The 91st Canadian Society for Chemistry Conference 2008, Edmonton, AB. Talk.
- **Lars Laurentius**, Rongbing Du, Andrew Smith, and Mark McDermott, *"Electrochemically Deposited Aryl Layers for Biomolecule Immobilization in Sensing Applications,"* 58th Annual Meeting of the International Society of Electrochemistry 2007, Banff, AB. Poster.
- McDermott, M.T., Shewchuk, D., Yang, N., **Laurentius, L.B.** *"Aryl Films on Gold Electrodes by Electrochemical and Spontaneous Deposition"* 89th Canadian Chemistry Conference 2006, Halifax, NS. Talk.
- McDermott, M.T., Shewchuk, D., **Laurentius, L.B.** *"Diazonium Derived Aryl Films on Gold Electrodes"* 209th Meeting of the Electrochemical Society 2006, Denver, CO. Poster.