

**Dr. James Keffa Kariuki**  
**Associate Professor of Chemistry**

University of Alberta, Augustana Campus  
4901-46 Avenue, Camrose, Alberta, Canada T4V 2R3  
780-679-1550; [jkariuki@ualberta.ca](mailto:jkariuki@ualberta.ca)

[Web Profile](#)

---

**EDUCATIONAL BACKGROUND**

**Ph.D., Analytical Chemistry**

University of Alberta	2001
Dissertation Advisor: Dr. Mark T. McDermott	
Dissertation Title: <i>Characterization of Chemically Bound Thin Films on Carbon Electrodes.</i>	

**M.Sc., Analytical Chemistry**

Kenyatta University, Nairobi, Kenya	1991
Dissertation Advisor: Prof. Keith L. Ormand	
Thesis Title: <i>Distribution of Fungicide Derived Copper in a Coffee Farm in Kiambu District.</i>	

**B.Sc., Major in Chemistry, Minor in Mathematics**

Kenyatta University, Nairobi, Kenya	1989
-------------------------------------	------

---

**AWARDS AND HONOURS**

- |   |             |
|---|-------------|
| • Graduate Student Association Teaching Award in Chemistry, University of Alberta   | 2000        |
| • Graduate Teaching Assistantship, Department of Chemistry, University of Alberta   | 1995 - 2001 |
| • German Academic Exchange Service (DAAD) scholarship for Graduate Studies in Kenya | 1989 - 1991 |
| • Top Student in the Graduating Class, Faculty of Science, Kenyatta University      | 1989        |

## EMPLOYMENT HISTORY

---

### **Associate Professor of Chemistry**

University of Alberta, Augustana Campus

2011 - present

### **Assistant Professor of Chemistry**

University of Alberta, Augustana Campus

2005 - 2011

### **Natural Sciences Instrument Coordinator (Part-time position)**

The King's University College, Edmonton, AB, Canada

2004 - 2005

- Trained students to use NMR, GC-MS, HPLC, and other instruments.
- Performed maintenance service on the above instruments.
- Taught the Analytical Chemistry I lab section in the 2004/2005 academic year.

### **Sessional Lecturer in Analytical Chemistry**

University of Alberta, Augustana Campus, Camrose, AB, Canada

2004

- Taught both the lecture and laboratory sections of AUCHE 220 to students in their 2<sup>nd</sup> to 4<sup>th</sup> years of study.
- Revised and updated the AUCHE 220 laboratory manual.

### **Assistant Professor**

Department of Chemistry, University of Nebraska at Kearney

Kearney, Nebraska, USA

2003 - 2004

- Taught both the lecture and laboratory sections of analytical chemistry to students in their 2<sup>nd</sup> to 4<sup>th</sup> years of study.
- Taught both the lecture and laboratory sections of general chemistry.
- Supervised undergraduate research students.
- Served as co-advisor of the Chemistry Club.

### **Postdoctoral Fellow**

Dr. Jed Harrison's laboratory, Analytical Division

Department of Chemistry, University of Alberta, Edmonton, AB, Canada

2001 - 2003

- Developed a label-free array protein chip method.
- Trained new graduate students on lithographic techniques.

### **Graduate Research Assistant**

Dr. Mark McDermott's laboratory, Analytical Division

Department of Chemistry, University of Alberta, Edmonton, AB, Canada

1995 - 2001

- Learned several electrochemical and surface characterization analytical techniques.
- Proposed a new mechanism of formation of multilayers films on carbon surfaces.

### **Sessional Lecturer in Analytical Chemistry**

The King's University College, Edmonton, AB, Canada

2000 - 2001

- Taught analytical chemistry to students in their 2<sup>nd</sup> to 4<sup>th</sup> years of study.

### **Graduate Teaching Assistant in Analytical and General Chemistry**

Department of Chemistry, University of Alberta

1995 - 2000

- Trained undergraduate students to effectively conduct experiments in the lab.
- Marked lab reports and exams.

### **Lecturer in Analytical Chemistry**

Jomo Kenyatta University of Agriculture and Technology

Nairobi, Kenya

1992 - 1995

- Taught analytical and general chemistry courses to students in their 1<sup>st</sup> to 4<sup>th</sup> years of study.
- Effectively taught chemistry to students from the faculties of engineering and agriculture whose background was not chemistry.
- Learned large-class (> 100 students) management skills.
- Headed a library committee that was involved in ordering relevant chemistry textbooks for the university library.
- Served as an academic adviser to undergraduate students.

### **Secondary School Chemistry Teacher**

- Muslim Girls' School, Nairobi, Kenya
- City High School, Nairobi, Kenya

1992

1989

## **TEACHING AND PEDAGOGY**

---

### **1) Courses taught, 2005 - present**

My normal workload includes **3 lectures and/or labs per semester**. I have taught the following courses at the University of Alberta, Augustana Campus:

- AUIDS 101, Topics in Liberal Studies, First-Year Seminar, "Food for Thought," *(Taught in the three-week block, first-time offering)*
- AUCHE 110, General Chemistry I, both lecture and lab, *(Completely revised)*
- AUCHE 112, General Chemistry II, both lecture and lab, *(Completely revised)*
- AUCHE 220, Analytical Chemistry I, both lecture and lab, *(Course designer)*
- AUCHE 222, Instrumental Analysis, both lecture and lab, *(Course designer)*

- AUCHE 279, Physical Chemistry, both lecture and lab, (*Completely revised*)
- AUCHE 320, Analytical Chemistry III, (*Course designer*)
- AUCHE 324, Research Techniques in Analytical Chemistry, (*Lab-based course taught in the three-week block, first-time offering*)
- AUCHE 405, Selected Topics in Chemistry, (*Course designer*)
- AUCHE 410, Senior Mentorship Experience, (*Course co-designer, first-time offering in Fall 2019*)
- AUCHE 420, Selected Topics in Analytical Chemistry, (*Course designer*)
- AUCHE 390, Senior Project I
- AUCHE 397, Directed Reading I
- AUCHE 490, Advanced Project 1
- AUCHE 497, Directed Reading III

## 2) First-Year Seminar: A High Impact Practice

**Introduction:** Starting in the fall of 2017, Augustana Campus introduced a New Calendar and First-Year Seminar in which students take a three-week block course followed by a more traditional eleven-week session. All new students in their first year at Augustana are required to enroll in a seminar course during their first three-week block. The seminars are small, intensive, and discussion-based, and are set to introduce students to the high-impact learning that they should anticipate, and need to be familiar with during university studies. Although focused on one topic, these First-Year Seminars are interdisciplinary in nature and ensure that students begin their University career in an exciting way that promotes a successful journey throughout the remainder of their time in university. I was one of the faculty members who taught in the first round of First-Year Seminars. **In the three-week block, 2019, I will be teaching the course for the third time.** The **learning objectives** of the First-Year Seminar enable students to:

- Acquire intellectual and work habits necessary for academic success.
- Analyse, evaluate, and appropriately use information and ideas.
- Examine issues from multiple perspectives.
- Discuss, debate, and defend ideas, including the students' own views, with clarity and reason.
- Write in a clear and coherent manner.

**Topic Approach and Learning Strategies:** The topic for my course, food, was approached from a multidisciplinary perspective. Topics included sustainable farming, foods from around the world, historical uses of food items, food additives, and ethical considerations regarding

food imbalance in the world. In class, I employ multiple learning strategies, including small group discussions, think-pair-share, and both scaffolded oral and written presentations. Guest speakers and field trips are also integral components of the course. Students are also required to write a reflective assignment of the overall course experience.

### 3) Guest Lecturer, University of Alberta, Augustana Campus

- AUPED 344, Human Nutrition, Fall 2015.
- AUPHI 350, Philosophy of Science, Winter 2009.
- AUENG 380, African Literature, Fall 2008.

### 4) Summary of Student Course Evaluations

The numerical student feedback (USRIs) and the written student comments regarding my courses, as expressed through the formal student evaluations at the University of Alberta, tend to be positive and in support of my teaching style. An attempt at a summary would likely identify the following common threads throughout my courses that characterize me as an instructor who is:

- Passionate about chemistry
- Providing engaging learning activities
- Accommodating different student learning styles, strengths and weaknesses
- Organized and provides clear course objectives and clear course notes
- Using excellent demonstrations to enable students' visualization of chemical concepts
- Employing a variety of learning methodologies and assessments
- Respectful
- A person with a sense of humour

### 5) Student Awards

- Benjamin Schmidt, Chemical Institute of Canada (CIC) Analytical Chemistry Division Undergraduate Student Travel Award, Travel award to present at *102<sup>nd</sup> Canadian Chemistry Conference and Exhibition (CSC)*, Quebec City 2019 conference, taking place in Quebec City, QC, Canada, 2019.
- Benjamin Schmidt, *2<sup>nd</sup> Place* in the Undergraduate Student Poster Award Competition, in **both** the Chemistry Education and Analytical Chemistry Divisions, *101<sup>st</sup> CSC*, Edmonton, AB, Canada, 2018.
- Carly Olafson, *Honourable Mention* Student Poster Award Competition, Analytical Chemistry Division, *98<sup>th</sup> CSC*, Ottawa, ON, Canada, 2015
- Emily Ervin, *1<sup>st</sup> Place Winner*, Undergraduate Student Poster Award Competition, *28<sup>th</sup> Western Canadian Undergraduate Chemistry Conference*, Victoria, BC, Canada, 2014.

- Emily Ervin, Outstanding Undergraduate Research Award, *Student Academic Conference*, Augustana Campus, Fall 2013.

**6) Undergraduate Supervision (Directed Studies and Senior Projects)**

- Sydney Oswald: Literature review of the development of the periodic table and the chemistry of cannabis, Offered in lieu of AUCHE 405, Winter 2019.
- Benjamin Schmidt: AUCHE 390, Senior Project I, Student Teaching Assistant in a senior lab-based chemistry class, Winter 3-week block, 2018.
- Cole Smith: AUCHE 390, Senior Project I, Fabrication and testing of low-cost reference electrodes, Winter 2017.
- Caela Marynowski: AUCHE 397, Directed Reading I, Utilization of chemistry demonstrations to enhance students learning, Fall 2015.
- Carly Olafson: AUCHE 397, Directed Reading I, Literature review of common electroanalytical methods utilized for the determination of antioxidants, Winter 2014.
- Emily Ervin: AUCHE 490, Advanced Project I, Development of methods for coating pencil graphite electrodes with polydimethylsiloxane (PDMS) polymer, Winter 2014.
- Emily Ervin: AUCHE 497, Directed Reading III, Electrochemical determination of extraction method and growing condition impact on antioxidants in produce, Fall 2013.
- Shawn Jacklin: AUCHE 497, Directed Reading III, Literature review of the contamination of drinking water and surrounding land by landfills, Fall 2013.
- Matthew Shelton: AUCHE 497, Directed Reading III, The history of chemistry, Offered in lieu of AUCHE 405, Winter 2011.
- Michael Rothfus: AUCHE 397, Directed Reading I, Literature review of the manufacture and uses of carbon nanotubes, Winter 2010.
- Jeffrey Friend: AUCHE 390, Senior Project I, Determination of uric acid using an inexpensive pencil lead electrode, Winter 2010.
- Julia Esch: AUCHE 397, Directed Reading I, Analytical methods utilized for trace metal analysis, Fall 2010.
- Jeffrey Friend: AUCHE 397, Directed Reading I, Literature review of the determination of uric acid using electrochemical techniques, Fall 2009.

## 7) Membership in Teaching-Related Committees

- Member of *Committee on the Learning Environment*. Responsible for the promotion of excellence in teaching and of an optimal learning environment, as well as with the provision of appropriate information resources to the university community as a whole, 2012 - 2015; 2018 - 2021.
- Member of the *Augustana Faculty Evaluation Committee*. The committee is responsible for evaluating research, teaching, and service for all faculty members in a given academic year, 2015 - 2018.
- Member of the *International Students Engagement Committee*. The committee's duties are to champion, promote, and support initiatives aimed at fostering greater international students' participation and engagement on campus. It also aims to help develop strategies that will help the academic success of international students enrolled on campus, 2015 - 2018.
- Member of the *Curriculum Committee*. The mandate is to study the purpose, direction, and policies of, and to make recommendations for the continuing development of the academic curriculum. To achieve this purpose, the committee studies general curriculum developments to ensure that these reflect the mission and vision of the Faculty, 2006 - 2008.
- Member of the *Combined BSc/BEd Degree Ad Hoc Committee*. The mandate was to establish the curriculum requirements for a combined BSc/BEd program that was offered for the first time at Augustana Campus, 2008.

## 8) Professional Development and Pedagogical Renewal

### a) Conference or Workshop Presentation (students underlined)

- Kariuki, J.; McGinitie, E.; Nickel, S.; Schmidt, B. Undergraduate Research: Benefits and Challenges of a High-Impact Practice, 102<sup>nd</sup> *Canadian Chemistry Conference and Exhibition (CSC)*, Chemistry Education Division, Quebec City, QB, Canada, June 3-7, 2019. **Co-presenter.**
- Kariuki, J.; McGinitie, E.; Nickel, S.; Schmidt, B. Triumphs and Challenges of Undergraduate Research, High Impact Practices in Higher Education: Research and Application, Augustana Conference on Undergraduate Research and Innovative Teaching (ACURIT), Augustana Campus, May 14-15, 2019. **Co-presenter.**
- Kariuki, J. The testing effect: An Intervention on Behalf of Low-Skilled Comprehenders In General Chemistry, Scholarship of Teaching and Learning (SoTL) Journal Club, Augustana Campus, Winter 2019. **Presenter and attendance.**
- Kariuki, J.; Rempel, B. Chemistry Demonstrations to showcase The

Role of Chemistry in Our Daily Lives. University of Alberta Alumni Weekend, September 22, 2018. ***Co-presenter.***

- Kariuki, J. Learning Chemistry Through the Joy of Chemistry Demonstrations. Malmo School Science Outreach Day, Edmonton, AB, Canada, March 13, 2018. ***Presenter.***
- Kariuki, J.; Rempel, B.; Schmidt, B. Teaching Chemistry Via Chemical Demonstrations. Augustana Campus Science Fair, February 13, 2018. ***Co-presenter.***
- Kariuki, J.; McGinitie, E.; Rempel B. Two-Stage Exams as a New Tool for Student Assessment. *Augustana Conference on Undergraduate Research and Innovative Teaching (ACURIT)*, University of Alberta, Augustana Campus, May 13-15, 2018. ***Co-presenter.***
- Kariuki, J.; Audet, D.; Rempel, B. Collaborative Student Teams for Science Research, *ACURIT*, Camrose, AB, Canada, May 3-4, 2017. ***Presenter and co-investigator.***
- Kariuki, J.; Manaloor, V. Sand Dams, Sand Dunes and Safari: Experiencing Colour and its Beauty in Natural Surroundings. University of Alberta, Augustana Campus Faculty Talk Series, Camrose, AB, Canada, October 28, 2016. ***Co-presenter.***
- Kariuki, J.; Rempel, B.; McGinitie, E. Colour in Our World: Using Colour Changes to Visualize Chemical Reactions. University of Alberta, Augustana Campus, Faculty Talk Series, Camrose, AB, Canada, September 19, 2016. ***Co-presenter.***
- Kariuki, J.; Marynowski, C. Utilizing Chemistry Demonstrations to Enhance Student Learning. Our Lady of Mount Pleasant Catholic School Chemistry Demonstrations Presentation, Camrose, AB, Canada, November 3, 2015. ***Co-presenter.***
- Kariuki, J.; Olafson, C.; Ervin, E.; Duan, J.; Marsden, N. Chemistry That You Can See: Chemistry Demonstrations. Junior High Grade 9 School Children Augustana Campus Tour, Camrose, AB, Canada, June 1, 2015. ***Co-presenter.***
- Kariuki, J.; Rempel, B. When Your Eyes Deceive You: Fooling the Audience to Teach Chemistry. Augustana Campus Faculty Colloquium, Camrose, AB, Canada, November 24, 2014. ***Co-presenter.***
- Kariuki, J.; Rempel, B. Fun with Chemistry: Chemistry Demonstrations. Augustana Campus Science Olympics, Camrose, AB, Canada, November 5, 2014. ***Co-presenter.***
- Kariuki, J.; King, D. The Magic of Chemistry. Camrose Elementary Schools' University Visit Event, Camrose, AB, Canada, April 23, 2014. ***Co-presenter.***



- Kariuki, J. Pencil-Based Electrochemistry: A Model of Encouraging Undergraduate Research. *International Augustana Undergraduate Conference*, Camrose, AB, Canada, April 27-29, 2014. **Presenter.**
- Kariuki, J. K. Choosing the Right Project for an Undergraduate Student. Oral presentation to faculty members during Faculty Research Showcase Days, University of Alberta, Augustana Campus, Camrose, AB, Canada, January 12-13, 2010. **Presenter.**
- Teaching seminar, “How to Interpret the Term Liberal Arts and Sciences,” University of Alberta, Augustana Campus, January 28, 2013. **Presenter.**

**b) Conference or Workshop Participation**

- Teaching methodology sessions, Chemical Education Division, *102<sup>nd</sup> Canadian Chemistry Conference (CSC)*, Quebec City QB, Canada, June 3-7, 2019. **Attendance.**
- Teaching Squares, Augustana Campus, Fall 2018. **Participant.**
- Teaching methodologies and assessment sessions, Augustana Conference on Undergraduate Research and Innovative Teaching (ACURIT), Augustana Campus, May 13-15, 2018. **Attendance.**
- Teaching methodology sessions, Chemical Education Division, *101<sup>st</sup> Canadian Chemistry Conference (CSC)*, Edmonton, AB, Canada, May 27-31, 2018. **Attendance.**
- Teaching seminar, “Did You Read the Textbook?,” University of Alberta, Augustana Campus, October 20, 2017. **Attendance.**
- First-Year Seminar instructors meeting to exchange ideas of improving delivery of course material, University of Alberta, Augustana Campus, September 28, 2017. **Attendance.**
- Teaching methodology sessions, Chemical Education Division, *100<sup>th</sup> CSC*, Toronto, ON, Canada, May 29-June 1, 2017. **Attendance.**
- Augustana Faculty Spring Workshop on student-centered learning. Workshop was given by Dr. Maryellen Weimer, May 2, 2017. **Attendance.**
- First-Year Seminar instructors’ meetings. Activities included syllabus development and designing effective evaluation techniques, Augustana Campus, October 24, 2017, December 8, January 31, and April 18, 2018. **Attendance.**
- Teaching seminar by Dr. Janice Miller-Young, Director of Centre for Teaching and Learning (CTL), Augustana Campus, January 30, 2017. **Attendance.**
- Teaching Squares, Augustana Campus, Fall 2016. **Participant.**

- Teaching methodology sessions, Chemical Education Division, 99<sup>th</sup> CSC, Halifax, NS, Canada, June 5-9. The sessions included first-year experience and teaching of analytical chemistry, 2016. *Attendance.*
- Teaching Consultation with Dr. Dustin Moore, Educational Developer, CTL, University of Alberta, Augustana Campus, October 19, 2015. *Attendance.*
- Writing workshop by Dr. Chris Thaiss of the University of California, Davis, Festival of Teaching Event, Augustana Campus, November 21, 2015. *Attendance.*
- Teaching seminar by Dr. Kim Misfeldt, Augustana Campus, on awareness of teaching approaches, January 12, 2015. *Attendance.*
- Teaching seminar by Dr. Tom Terzin and Justin Reinke, Augustana Campus. The seminar was on different ways students learn, 2015. *Attendance.*
- Teaching methodology sessions at the Chemical Education Division of the 98<sup>th</sup> CSC, Ottawa, ON, Canada, June 13-17, 2015. *Attendance.*
- Teaching methodologies sessions, Chemical Education Division, 97<sup>th</sup> CSC, Vancouver, BC, Canada, June 2014. *Attendance.*
- CTL learning and evaluation workshop, Augustana Campus, May 16, 2013. *Attendance.*
- Workshop on teaching statistics, Augustana Campus, March 24, 2013. *Attendance.*
- Teaching seminar on conducting Directed Study courses, Augustana Campus, March 25, 2013. *Attendance.*
- Festival of Teaching Augustana Day event, April 4, 2013. *Attendance.*
- Walter Harris Chemistry Teaching workshop, Department of Chemistry, University of Alberta, Edmonton, AB, Canada, May 9-10, 2013. *Attendance.*
- Teaching seminar on conducting a community service-learning course, Augustana Campus, October 29, 2012. *Attendance.*
- Moodle training course, Augustana Campus, August 14, 2012. *Attendance.*
- Consultation with Dr. Craig Peterson of the Writing Centre. Created rubric used for AUCHE 425 writing assignments, Augustana Campus, August 29, 2012. *Attendance.*
- Teaching seminar about the difficulties encountered by foreign students in writing assignments, Augustana Campus, September 17, 2012. *Attendance.*
- Teaching seminar titled: "Peer review as an effective learning tool across disciplines," Augustana Campus, January 21, 2011. *Attendance.*

- Teaching workshop by Geoffrey Rayner-Canham (Memorial University) titled, “Turning students on to chemistry in the community and in the classroom,” University of Alberta, Edmonton, AB, Canada, February 17, 2011. **Attendance.**
- Science 100 class during the Festival of Teaching week, University of Alberta, Edmonton, AB, Canada, March 8, 2011. **Attendance.**
- Teaching seminar titled: “Use of contemplative practices and techniques within university teaching & within inquiry in general,” Augustana Campus, March 25, 2011. **Attendance.**
- Spring Teaching Workshop. Learned about ePortfolios, giving feedback in class, and writing techniques, Augustana Campus, May 10, 2011. **Attendance.**
- Teaching methodologies sessions at the Chemical Education Division of the 93<sup>rd</sup> CSC, Toronto, Ontario, June 2010. **Attendance.**
- Teaching Workshop offered by the Committee on the Learning Environment, Augustana Campus, May 2010. **Attendance.**
- Moodle learning management tool workshop, Augustana Campus, October 29, 2010. **Attendance.**
- Teaching seminar titled: “Task-based instruction & experiential learning in classroom teaching,” Augustana Campus, November 26, 2010. **Attendance.**
- Teaching methodology workshop on dealing with student evaluations, Augustana Campus, September 2009. **Attendance.**
- Chemical Safety Training Course offered by the Office of Environmental Health and Safety, University of Alberta, August 2009. **Attendance.**
- The Teaching Professor Conference, Washington, DC, USA, June 2009. **Attendance.**
- The Alberta Chemistry Educators Meeting, Red Deer College, Red Deer, AB, Canada, June 2009. **Attendance.**
- Teaching Workshop offered by the Committee on the Learning Environment, Augustana Campus, May 2009. **Attendance.**
- Teaching portfolio compilation meeting with other Augustana non-tenured faculty, Augustana Campus. Student evaluation methods were discussed, January 2009. **Attendance.**
- Teaching Workshop offered by the Committee on the Learning Environment, Augustana Campus. Attended the community service learning session, May 2008. **Attendance.**

- The 7<sup>th</sup> Annual Augustana Information Literacy Workshop, Augustana Campus. Topic: Enhancing student engagement in class, December 2007. **Attendance.**
- Attended several teaching methodologies sessions at the Chemical Education Division of the 91<sup>st</sup> CSC, Edmonton, Alberta, May 2008. **Attendance.**
- The 6<sup>th</sup> Annual Augustana Information Literacy Workshop, Augustana Campus. Topic: Supporting Undergraduate Research Experiences, November 2006. **Attendance.**
- Natural Science and Engineering Research Council of Canada (NSERC) grants workshop, Augustana Campus, September 2006. **Attendance.**
- WebCT Vista training workshop, Augustana Campus, August 2006. **Attendance.**
- University Teaching Services (UTS) Mentor Program. My mentor was Dr. Glen Hvenegaard, December 2005 - May 2007. **Participant.**

## RESEARCH

---

### 1. Current Research Programs and Interests

- Development of low-cost and reliable electroanalytical methods
  - Developing disposable pencil graphite electrodes
  - Fabricating low-cost electrodes utilizing electrode components printed with a 3D printer
  - Interfacing low-cost electrochemical instrumentation with disposable electrodes
  - Developing portable electroanalytical kits
- Surface chemistry: The modification and characterization of carbon electrodes using several techniques, including:
  - Cyclic voltammetry
  - Infrared spectroscopy
- Electroanalytical studies of vitamin content in a variety of foods, including:
  - Fruits and vegetables
  - Juices
  - Health supplement tablets
- Water and soil pollution studies to measure the amounts of metal ions in drinking and groundwater using
  - Atomic absorption spectroscopy
  - Ion-selective electrodes
  - Titration methods
- Nanotechnology
  - Fabrication of miniaturized devices using microfluidics

## 2. Research and Pedagogical Grants

- 2019: University of Alberta, Office of the Provost and VP (Academic), Teaching and Learning Enhancement Fund (TLEF): **\$2,600**, for PI to attend the *101<sup>st</sup> Canadian Society for Chemistry National Meeting (CSC)*, Quebec City, QB, Canada.
- 2018: University of Alberta, Charles Lucy Electrochemistry Labs Development Fund, **\$3,000**, Funds for the purchase of equipment and reagents for developing low-cost electroanalytical labs.
- 2017: Augustana Faculty, University of Alberta: **\$1,600**, Conference travel grant for PI to attend *100<sup>th</sup> CSC* conference in Toronto.
- 2016: University of Alberta, Office of the Provost and VP (Academic), Teaching and Learning Enhancement Fund (TLEF): **\$2,600**, for PI to attend the *99<sup>th</sup> Canadian Society for Chemistry National Meeting (CSC)*, Toronto, ON, Canada.
- 2015: Augustana Faculty, University of Alberta: **\$1,200**, Conference travel grant for PI to attend *98<sup>th</sup> CSC* conference in Ottawa.
- 2014: Faculty of Agriculture, Life & Environmental Sciences, University of Alberta, Vitamin Fund: **\$20,086**, Research support that includes student stipends to conduct research involving the determination of antioxidants in foods.
- 2014: University of Alberta, Office of the Provost and VP (Academic), TLEF: **\$2,463**, for PI to attend the *97<sup>th</sup> CSC*, Vancouver, BC, Canada.
- 2012: Lund University Antidiabetic Food Centre, Lund, Sweden: **\$5,750**, Partial funding of sabbatical visit as a visiting professor in Dr. Charlotta Turner's lab at Lund University.
- 2010: Faculty of Agriculture, Life & Environmental Sciences, University of Alberta, Vitamin Fund: **\$27,986**, Research support that includes student stipends to conduct research involving vitamin C in foods.
- 2009: Augustana Faculty, University of Alberta: **\$995**, Purchase of a computer program to conduct specialized electrochemistry experiments.
- 2008: Augustana Faculty, University of Alberta: **\$6,500**, One-course teaching release.
- 2006: Augustana Faculty, University of Alberta: **\$2,500**, Funding to purchase ion-selective electrodes.
- 2006: Augustana Faculty, University of Alberta: **\$10,000**, Faculty Start-up Grant, Funding to purchase a potentiostat.

- 2005: University of Alberta, Office of the Provost and VP (Academic): **\$5,000**, Funding to purchase a variety of research electrodes.
- 2003: University of Nebraska at Kearney: Research Services Council (RSC), **\$2,000**, Funding to purchase electrochemistry electrodes.

### 3. Undergraduate Supervision (Summer Student Research)

- Michaela Pacholok: Development of low-cost electroanalytical methods for use in the food industry, **Summer 2019**, Right Honourable Don Mazankowski Summer Research Assistantship: **\$7,500**.
- Benjamin Schmidt: Fabrication and testing of a low-cost electroanalytical kit, **Summer 2019**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Shaylynn Nickel (co-supervision with Dr. Elizabeth McGinitie): Synthesis of metal-organic framework heterogeneous catalysts via for use in electrocatalysis, **Summer 2019**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Benjamin Schmidt: Development of low-cost electroanalytical methods, **Summer 2018**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Tetiana Davydiuk: Optimization of analytical methods for the determination of antioxidants in foods, **Summer 2018**, Mathematics of Information Technology and Complex Systems (MITACS) Globalink Research Internship: **\$7,500**.
- Benjamin Schmidt: Development of analytical methods for measuring trace concentrations of metals in a variety of samples, **Summer 2017**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Jiahui Li: Development of analytical methods for the determination of antioxidants in foods, **Summer 2017**, MITACS Globalink Research Internship: **\$7,500**.
- Emily Ervin: The development of a novel, low-cost pencil graphite electrode (PGE) suitable for research and instruction, **Summer 2015**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Carly Olafson: Utilization of low-cost pencil PGEs for the determination of antioxidants in coffee and tea, **Summer 2015**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Jinyuan Duan: Application of PGEs for the determination of antioxidants in fruits and vegetables, **Summer 2015**, China Scholarship Program (CSC) Summer Research Assistantship: **\$7,500**.
- Uyen Hoang: Application of PGEs for the determination of antioxidants in fruits and vegetables, **Summer 2015**, MITACS Globalink Research Internship: **\$7,500**.

- Emily Ervin: Development of low-cost electroanalytical methods for the determination of antioxidants in food samples, **Summer 2014**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Carly Olafson: Development of low-cost electroanalytical methods for the determination of antioxidants in food samples, **Summer 2014**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Emily Ervin: Voltammetric determination of antioxidants in food samples, **Summer 2013**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Jeffrey Friend: Voltammetric detection of vitamin C using modified carbon electrodes, **Summer 2010**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Julia Esch: Voltammetric detection of vitamin C using modified carbon electrodes, **Summer 2010**, Augustana Faculty Summer Student Research Assistantship: **\$7,500**.
- Jeffrey Friend: Potentiometric determination of fluoride, nitrate, and calcium in drinking water, **Summer 2008**, Augustana Faculty Summer Student Research Assistantship: **\$6,500**.

#### 4. International and Local Collaborations

- Dr. Charlotta Turner, Chemistry Department, Lund University, Sweden, 2012 - present.
- Dr. Sulayman Oladepo, Chemistry Department, King Fahd University of Petroleum & Minerals, Saudi Arabia, 2017 - present.
- Dr. Samuel Mugo, MacEwan University, Edmonton, AB, Canada, 2014 - present.

#### **PATENTS, PUBLICATIONS, AND PRESENTATIONS**

---

##### a) **Patent: Portable Electroanalytical Field Kit, Canada, Patent #2018058.**

- Under Review by TEC Edmonton.
- The invention includes a 3D-printed shell of a reference electrode which is one component of an electroanalytical field-kit. The Ag/AgCl reference electrode is fabricated by printing an electrode shell using a 3D printer. The modular design of the casings allows for the electrodes to be easily disassembled for the replacement and recycling of expensive components, including metals such as silver and platinum. Due to the ability to recycle these components, the electrodes can be fabricated for a fraction of the cost of commercially available counterparts.

## b) Peer-Reviewed Articles and Chapters

- Highly qualified personnel (HQP) that I have supervised are underlined. For each publication, my **role** is indicated.
1. Schmidt, B.; King, D.; Kariuki, J. Designing and Using 3D-Printed Components That Allow Students to Fabricate Low-Cost, Adaptable, Disposable, and Reliable Ag/AgCl Reference Electrodes. *J. Chem. Educ.* **2018**, 95(11), 2076-2080. **My role: Primary author and PI.**
  2. Ervin, E. M.; Kariuki, J. K. Demonstrating the Minimal Impact of Cultivation Conditions on Antioxidants in Fruits and Vegetables by Differential Pulse Voltammetry. *Int. J. Food Prop.* **2016**, 19, 826-836. **Primary author and PI.**
  3. Kariuki, J.; Ervin, E.; Olafson, C. Development of a Novel, Low-Cost, Disposable Wooden Pencil Graphite Electrode for Use in The Determination of Antioxidants and Other Biological Compounds (*Invited*). *Sensors*. **2015**, 15, 18887-18900. **Primary author and PI.**
  4. Merichel, M.; Kariuki, J.; Turner, C. Quantification of Individual Phenolic Compounds' Contribution to Antioxidant Capacity in Apple: A Novel Analytical Tool Based on Liquid Chromatography with Diode Array, Electrochemical, and Charged Aerosol Detection. *J. Agric. Food Chem.* **2014**, 62(2), 409-418. **Co-investigator and co-author.**
  5. Ervin, M. E.; Kariuki, J. K. Effect of Extraction Method on Antioxidant Determination in Produce by Differential Pulse Voltammetry. *Int. J. Electrochem. Sci.* **2014**, 9, 6235-6245. **Primary author and PI.**
  6. Kariuki, J. K. An Electrochemical and Spectroscopic Characterization of Pencil Graphite Electrodes. *J. Electrochem. Soc.* **2012**, 159(9), H747-H751. **Primary author and PI.**
  7. Esch, J. R.; Friend, J. R.; Kariuki, J. K. Determination of the Vitamin C Content of Conventionally and Organically Grown Fruits by Cyclic Voltammetry. *Int. J. Electrochem. Sci.* **2010**, 5, 1464-1474. **Primary author and PI.**
  8. King, D.; Friend, J.; Kariuki, J. K. Measuring Vitamin C Content of Commercial Orange Juice Using a Pencil Lead Electrode. *J. Chem. Educ.* **2010**, 87(5), 507-509. **Primary author and PI.**
  9. Kanda, V.; Kariuki, J. K.; Harrison, D. J.; McDermott, M. T. Label-Free Reading of Microarray-Based Immunoassays with Surface Plasmon Resonance Imaging. *Anal. Chem.* **2004**, 76(24), 7257-7262. **Co-author.** [Cited **168 times**, *Web of Science*, June 2019].



10. Furdui, V. I.; Kariuki, J. K.; Harrison, D. J. Microfabricated Electrolysis Pump System for Isolating Rare Cells in Blood. *J. Micromech. Microeng.* **2003**, *13*, S164-S170. **Co-author**.
11. Kariuki, J. K.; McDermott, M. T. Formation of Multilayers on Glassy Carbon. *Langmuir*, **2001**, *17*, 5947-5951. **Co-author**. [Cited **254 times**, *Web of Science*, June 2019].
12. Goh, A. Y. L.; Kariuki, J. K.; Skelhorne, A. W.; Bhattacharyya, A.; McDermott, M. T.; Forest, T. W.; Steadman, G. Preliminary Results on the Effect of Methanol-Based Fuels on the Tensile Properties of FRP Micro-Specimens. *Advanced Composites Letters*, **2001**, *10*(4), 155-169. **Co-author**.
13. Kariuki, J. K.; McDermott, M. T. Nucleation and Growth of Functionalized Aryl Films on Graphite Electrodes. *Langmuir*, **1999**, *15*, 6534-6540. **Co-author**. [Cited **244 times**, *Web of Science*, June 2019].
14. Kiema, G. K.; Kariuki, J. K.; McDermott, M. T. Compositional Mapping of Chemically Modified Glassy Carbon Electrodes with Tapping-mode Scanning Force Microscopy. In *Fundamental and Applied Aspects of Chemically Modified Surfaces*; Blitz, J. P.; Little, B. C. Ed.; Royal Society of Chemistry: Cambridge, England, **1999**, pp 280-289. **Co-author**.

#### c) Manuscripts Under Preparation

1. Schmidt, B.; King, D.; Kariuki, J. 3D Printers in the Lab: Using Printed Components to Fabricate Low-cost Electrodes for Undergraduate Experiments and Research. To be submitted to the *Journal of Chemical Education*.

#### d) Conference Proceedings

1. **Kariuki, J. K.**; Kiema, G. K.; McDermott, M. T. Correlating Electrochemical and Scanning Force Microscopic Characterizations in the Evaluations of Modified Carbon Electrode Surfaces. In *New Directions in Electroanalytical Chemistry II*, Leddy, J. Vansek, P.; Porter, M. D. Ed.; The Electrochemical Society Inc: Pennington, NJ, **1999**, pp 23-32. **My role: Co-author**.
2. Finot, M. O.; **Kariuki, J. K.**; McDermott, M. T. Chemical Mapping of Surface-Bound Functional Groups Using Tapping-Mode Scanning Force Microscopy. *Proc. Microsc. Soc. Canada* **1997**, *24*, 58-9. **Co-author**.
3. Ta, T.; **Kariuki, J. K.**; Sykes, M.; McDermott, M. T. The Influence of Surface Chemistry on the Orientation of Adsorbed Plasma Proteins. *Proc. Microsc. Soc. Canada* **1997**, *24*, 60-1. **Co-author**.

### e) Presentations

1. Kariuki, J.; Schmidt, B.; King D. Development and Testing of Low-Cost Electrodes and Components for Use in Electroanalytical Sensors, *102<sup>nd</sup> Canadian Chemistry Conference and Exhibition (CSC)*, Quebec City, QB, Canada, June 3-7, 2019. **Presenter.**
2. Schmidt, B. (*Three-minute invited flask talk*); King D.; Kariuki, J. Fabrication of Low-Cost Electrodes for Electroanalytical Techniques and Undergraduate Labs Utilizing 3D Printers. *102<sup>nd</sup> Canadian Chemistry Conference and Exhibition (CSC)*, Quebec City, QB, Canada, June 3-7, 2019. **PI**
3. Kariuki, J.; Schmidt, B. Development of Low-Cost Electroanalytical Sensors. *101<sup>st</sup> Canadian Chemistry Conference and Exhibition (CSC)*, Edmonton, AB, Canada, May 27-31, 2018. **Presenter.**
4. Smith, C.; Kariuki, J. Evaluating the Electrochemical Performance of Pencil Graphite Electrodes as Electroanalytical Sensors. *Augustana Faculty Student Academic Conference*, April 10, 2017. **PI.**
5. Kariuki, J.; Olafson, C.; Ervin, E. Development and Electroanalytical Applications of Low-Cost Pencil Graphite Electrodes. *100<sup>th</sup> CSC*, Toronto, Canada, May 28-June 1, 2017. **PI.**
6. Olafson, C.; Kariuki, J. Analyzing the Effect of Brewing Method on Antioxidant Content of Coffee Using Activated Pencil Graphite Electrodes. *30<sup>th</sup> Western Canadian Undergraduate Chemistry Conference*, Winnipeg, MB, Canada, May 5-7, 2016. **PI.**
7. Kariuki, J.; Olafson, C.; Ervin, E. Utilization of a Low-Cost Pencil Graphite Electrode for Electroanalytical Analysis. *99<sup>th</sup> CSC*, Halifax, NS, Canada, June 5-9, 2016. **PI.**
8. Kariuki, J.; Ervin, E.; Olafson, C. Low-Cost Electrochemistry: Current and Future Applications. *International Symposium on Chemical Innovation, Education and Commercialization*, Canmore, AB, Canada, July 10-12, 2015. **PI.**
9. Kariuki, J.; Ervin, E.; Olafson, C. Voltammetric Determination of Antioxidants with a Low-Cost Pencil Graphite Electrode. *98<sup>th</sup> CSC*, Ottawa, ON, Canada. June 13-17, 2015. **PI.**
10. Ervin, E.; Olafson, C.; Kariuki, J. Chemistry the 'Write' Way: The Development of Pencil-Graphite Electrodes for Antioxidant Determination in Produce Samples. *4<sup>th</sup> University of Alberta Undergraduate Research Symposium*, Edmonton, AB, Canada, November 13, 2014. **PI.**
11. Ervin, E. (*Presenter, Winner of Independent Research Student Award*); Kariuki, J. Using Pencil Graphite Electrodes for the Determination of Antioxidants in Fruits and Vegetables. *Student Academic Conference*, Augustana Campus, University of Alberta, Camrose, Canada, April 7, 2014. **PI.**

12. Kariuki, J. K.; Ervin, E. Comparison of the Effectiveness of a Disposable Pencil Graphite Electrode with Commercial Carbon Electrodes for the Voltammetric Determination of Antioxidants, *97<sup>th</sup> CSC*, Vancouver, BC, Canada, June 1-5, 2014, Abstract 01384. **PI.**
13. Ervin, E.; Kariuki, J. Effect of Extraction Methods and Growing Conditions on Antioxidant Amounts of Produce Samples Measured by Differential Pulse Voltammetry. *28<sup>th</sup> Western Canadian Undergraduate Chemistry Conference*, Victoria, BC, Canada, May 1-3, 2014. **PI.**
14. Ervin, E. (*Presenter*); Kariuki, J. Food for Thought: Progress Towards Improved Nutrition Through the Development of Low-Cost Analytical Techniques for Antioxidant Determination. *International Augustana Undergraduate Conference*, Camrose, AB, Canada, April 7, 2014. **PI.**
15. Ervin, E.; Kariuki, J. Development of a Method for Coating Pencil Graphite Electrodes. *Student Academic Conference*, Augustana Campus, University of Alberta, Camrose, Canada, April 8, 2013. **PI.**
16. Kariuki, J. K. Disposable Pencil Graphite Electrode versus Commercial Carbon Electrodes and its Application for the Determination of Antioxidants, *Analysdagarna (Analytical Days)*, Uppsala University, Uppsala, Sweden, June 11-13, 2012. **Presenter and co-investigator.**
17. Kariuki, J. K.; Friend, J.; King, D. Electron-Transfer Kinetics at a Pencil Lead Electrode, *93<sup>rd</sup> CSC*, Toronto, ON, Canada, May 29-June 2, 2010, Abstract 265. **Presenter and PI.**
18. Kariuki, J. K.; King, D. Voltammetric Determination of Vitamin C in Orange Juice Using a Pencil Lead Electrode, *91<sup>st</sup> CSC*, Edmonton, AB, Canada, May 24-28, 2008, Abstract 1014. **Presenter and PI.**
19. Kariuki, J. K.; Furdai, V. I.; Harrison, D. J. Integrated System for Rare Cell Capture from Blood. *The Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (PITTCON) 2003*, Orlando, Florida, USA, March 9-13, 2003, Abstract 1710-6. **Presenter and co-investigator.**
20. Kariuki, J. K.; Kanda, V.; McDermott, M. T.; Harrison, D. J. Development of a Label-Free Protein Array Chip. *Sixth International Conference on Miniaturized Chemical and Biochemical Analysis Systems*, Nara New Public Hall, Nara, Japan, November 3-7, 2002, Abstract B-M-7. **Presenter.**
21. McDermott, M. T.; Kariuki, J. K.; Kanda, V. Development of Label-Free Protein Microarrays. *The Second Annual International Conference of the Canadian Proteomics Initiative*, TELUS Center, University of Alberta, Edmonton, AB, Canada, May 11-14, 2002. **Co-author.**

22. Kariuki, J. K.; McDermott, M. T. Formation of Multilayers on Glassy Carbon, *International Conference on Electrified Interfaces, 9<sup>th</sup> in a Series of Non-Traditional Methods*, Wolfville, NS, Canada, July 8-13, 2001. **Presenter.**
23. McDermott, M. T.; Kariuki, J. K.; Ta, T.; Chowdhury, R. Electrochemical Attachment of Functional Groups to Carbon Surfaces for Controlling Protein Adsorption, 220<sup>th</sup> *American Chemical Society, (ACS) National Meeting*, Washington, DC, USA, August 20-24, Paper 169 (Analytical. Division), 2000. **Co-author.**
24. Kariuki, J. K.; McDermott, M. T. Electrochemical, Microscopic and Spectroscopic Characterization of Chemically Bound Aryl Films on Carbon Electrodes, 197<sup>th</sup> *Electrochemical Society Meeting*, Toronto, ON, Canada, May 14-18, 2000. **Presenter.**
25. McDermott, M. T.; Kariuki, J. K. Binding Organic Films to Carbon Surfaces, 83<sup>rd</sup> *Canadian Society for Chemistry National Meeting*, Calgary, AB, Canada, May 27-31, 2000, Abstract 580. **Co-author.**
26. Kariuki, J. K.; McDermott, M. T. Controlling Protein Adsorption on Carbon Surfaces via Electrochemical Modification, 83<sup>rd</sup> CSC, Calgary, AB, Canada, May 27-31, 2000, Abstract 009. **Presenter.**
27. Finot, M. O.; Kariuki, J. K.; McDermott, M. T. Controlling the Chemistry of Carbon Electrodes, *Federation of Analytical Chemistry and Spectroscopy Society (FACSS)*, 1999, Vancouver, BC, Canada, October 24-29, 1999, Abstract 274. **Co-author.**
28. Kariuki, J. K.; McDermott, M. T. Nucleation and Growth of Chemically Bound Aryl Groups on Graphite Electrodes, 82<sup>nd</sup> CSC, Toronto, ON, Canada, May 30-June 2, 1999, Abstract 843. **Co-author.**
29. McDermott, M. T.; Kariuki, J. K.; Kiema, G. K. Correlating Electrochemical and Scanning Force Microscopic Characterizations in the Evaluation of Modified Carbon Electrode Surfaces, 195<sup>th</sup> *Meeting of the Electrochemical Society*, Seattle, Washington, USA, May 2-6, 1999. **Co-author.**
30. Kiema, G. K.; Kariuki, J. K.; McDermott, M. T. Compositional Mapping of Chemically Modified Glassy carbon electrodes with Tapping-mode Scanning Force Microscopy, 7<sup>th</sup> *International Symposium on Chemically Modified surfaces*, Chicago, IL, USA, June 24-26, 1998. **Co-author.**
31. Kariuki, J. K.; McDermott, M. T. Characterization of Chemically Modified Monolayers on Glassy Carbon, 81<sup>st</sup> CSC, Whistler, BC, Canada, May 31-June 4, 1998, Abstract AN8. **Presenter.**
32. McDermott, M. T.; Kiema, G. K.; Kariuki, J. K. High-Resolution Compositional Mapping of Modified Glassy Carbon, *PITTCON 98*, New Orleans, LA, USA, March 1-5, 1998, Abstract 550. **Co-author.**

33. Finot, M. O.; Kariuki, J. K.; McDermott, M. T. Chemical Mapping of Surface-Bound Functional Groups Using Tapping-Mode Scanning Force Microscopy, *24<sup>th</sup> Annual Microscopical Society of Canada National Meeting*, Edmonton, AB, Canada, June 4-7, 1997, Abstract T30. **Co-author.**
34. Ta, T.; Kariuki, J. K.; Sykes, M. T.; McDermott, M. T. The Influence of Surface Chemistry on the Orientation of Adsorbed Plasma Proteins, *24<sup>th</sup> Annual Microscopical Society of Canada National Meeting*, Edmonton, AB, Canada, June 4-7, 1997, Abstract T31. **Co-author.**

**f) Research Assistants' Poster Presentations (HQP presenters underlined)**

- Schmidt, B.; King D.; Kariuki, J. Fabrication of Low-Cost Electrodes for Electroanalytical Techniques and Undergraduate Labs Utilizing 3D Printers. *102<sup>nd</sup> Canadian Chemistry Conference and Exhibition (CSC)*, Quebec City, QB, Canada, June 3-7, 2019.
- Schmidt, B. (Winner of 2<sup>nd</sup> Place in the Undergraduate Student Poster Award, Chemistry Education Division of the Chemical Institute of Canada); Kariuki, J. The Role of an Undergraduate Student Mentor in a Senior Analytical Chemistry Course, *101<sup>st</sup> CSC*, Edmonton, AB, Canada, June 2018.
- Schmidt, B. (Winner of 2<sup>nd</sup> Place in the Undergraduate Student Poster Award, Analytical Chemistry Division of the Chemical Institute of Canada); Kariuki, J. Production of Low-Cost Electrodes for Electroanalytical Techniques Utilizing 3D Printers, *101<sup>st</sup> CSC*, Edmonton, AB, Canada, June 2018.
- Olafson, C.; Kariuki, J. Carbon with Your Coffee: Electrode Activation and Antioxidant, *Undergraduate Research in Science Conference of Alberta (URSCA)*, Edmonton, AB, Canada, April 2016.
- Olafson, C.; Kariuki, J. Carbon with Your Coffee: Electrode Activation and Antioxidant Determination, *Festival of Undergraduate Research & Creative Activities (FURCA)*, Edmonton, AB, Canada, March 2016.
- Marynowski, C.; Kariuki, J. Impact of Chemical Demonstrations on Student Learning. University of Alberta, Augustana Campus, *Student Academic Conference*, Camrose, AB, Canada, December 2015.
- Nguyen, U.; Duan, J.; Olafson, C.; Kariuki, J. Can a pencil electrode measure antioxidants better than a glassy carbon electrode? *University of Alberta Research Experience (UARE) Poster Symposium*, Edmonton, AB, Canada, August, 2015.
- Olafson, C. (Honourable mention Analytical Undergraduate Poster), Ervin, E.; Kariuki, J. Analyzing Antioxidant Content in Coffee and Tea Using Square-Wave

Voltammetry and Pencil Graphite Electrodes. 98<sup>th</sup> CSC, Ottawa, ON, Canada, June 2015.

- Olafson, C.; Ervin, E.; Kariuki, J. Application of Square Wave Voltammetry for the Determination of Antioxidants in Coffee and Tea. 4<sup>th</sup> University of Alberta Undergraduate Research Symposium, Edmonton, AB, Canada, November 2014.
- Ervin, E. (1<sup>st</sup> prize winner in poster presentation); Kariuki, J. Eating "Write": The Use of Pencil Electrodes in Antioxidant Measurement in Fruits and Vegetables. 28<sup>th</sup> Western Canadian Undergraduate Chemistry Conference, Victoria, BC, Canada, May 2015.
- Ervin, E.; Kariuki, J. Electrochemical Determination of Extraction Method and Growing Condition Impact on Antioxidants in Produce. 97<sup>th</sup> CSC, Vancouver, BC, Canada, June 2014.
- Friend, J.; Kariuki, J. Detection of Uric Acid Using an Inexpensive Pencil Lead Electrode. Western Canadian Undergraduate Chemistry Conference, Lethbridge, AB, Canada, May 2010.
- Friend, J.; Kariuki, J. Determination of Fluoride in Selected Camrose and Edmonton Water using Ion-Selective Electrodes. Western Canadian Undergraduate Chemistry Conference, Kamloops, BC, Canada. May 2009.

**g) Popular Articles**

1. Faculty and Students Shine at Annual National Chemistry Conference, *University of Alberta Alumni Magazine*, Fall 2018, Section 1-19.
2. Kariuki, J. K. To fluoridate or not to fluoridate. Second Thought Column, *Camrose Booster*, December 2, 2008, p 14.
3. Kariuki, J. K. Consider Packing Your Fluoride Toothpaste on Your Next Trip to Edmonton. Letters to the Editor, *Camrose Booster*, July 1, 2008, p 8.

## PROFESSIONAL AFFILIATIONS

---

- Chemical Institute of Canada (CIC) / Canadian Society for Chemistry (2000 - present)
- Electrochemical Society (2008 - present)
- American Chemical Society (2002 - 2007)

## UNIVERSITY AND SCIENTIFIC COMMUNITY SERVICE

---

### 1. Committee Memberships

#### a) Augustana committees

- Member of the Augustana Committee on the Learning Environment (CLE), 2018 - present.
- Member of the Faculty Evaluation Committee (FEC), 2015 - 2018.
- Member of the Augustana International Students Engagement Committee, 2015 - 2018.
- Member of the Annual Augustana Theme Committee (Colour), 2015 - 2017.
- Member of CLE, 2012 - 2015.
- Member of the Augustana Curriculum Committee, 2006 - 2008.
- Member of the Combined BSc/BEd Degree Ad Hoc Committee, 2008.

#### b) University-wide committees

- Member of the University of Alberta Standing Committee on Convocation, 2015 - present.
- Member of the University of Alberta Festival of Teaching Organizing Committee, 2012.

#### c) Science Department/Chemistry committees

- Member of the Science Department Chair Hiring Committee, 2015.
- Member of the search committee for the Chemistry Lab Coordinator, 2015.
- Member of an ad hoc Science Department Website Review Committee, 2015.
- Member of the Science Department Chair Review Committee, 2011.
- Member of Hiring Committee for the AUCHE 110/112 Lab Instructor, 2012.
- Member of the Hiring Committee for tenure-track position in chemistry, 2009.

### 2. University, Campus, and Department Service

- University of Alberta, North Campus Convocation Marshal, June 7, 2018.
- Acting Science Department Chair, June 5-8, 2018.
- Judged poster presentations at the Augustana Campus Science Fair for Grade 7 Junior High Students, 2016.

- Student Academic Information Launch (SAIL) and opening convocation Faculty Cohort Leader, 2015.
- Departmental representative during Preview Day, Augustana Campus, February 3, 2017; October 15, 2010; November 19, 2010; March 5, 2010; November 21, 2008; October 20, 2006; and November 17, 2006.
- Chemistry faculty representative at the University of Alberta Open House, Universiade Pavilion, Edmonton, October 20, 2012; October 23, 2010; October 3, 2009; and September 20, 2008.
- Volunteered as a “living book” during the Augustana Living Library week. Members of the public invited to discuss topics of interest, September 29-October 2, 2009.

### **3. Journal and Manuscript Refereeing, 2010-2019**

- a) *Journal of Chemical Education*
- b) *Journal of Electroanalytical Chemistry*
- c) *Electrochimica Acta*
- d) *Journal of Analytical Chemistry*

### **4. PhD and MSc Thesis Committee Membership**

- a) PhD Committee Defense Committee for Brandon Weber, University of Alberta, 2016.
- b) Reviewer for a thesis paper for CHEM 4480. This is a senior chemistry course at Thompson Rivers University, Kamloops, BC, Canada, 2015.
- c) MSc Defense Committee for Amna Farooq, Thompson Rivers University, Kamloops, Canada, 2013.

### **5. Event Administration**

- a) Co-organized and chaired a symposium titled, “Electrochemistry: Fundamentals, Current and Future Applications” at the 101<sup>st</sup> CSC, Edmonton, AB, Canada, May 27-31, 2018.
- b) Organized and chaired a symposium titled, “Analytical and Physical Electrochemistry of Materials” at the 100<sup>th</sup> Canadian Chemistry Conference and Exhibition (CSC), Toronto, ON, Canada, May 31, 2017.



## 6. Service to the Community

- Volunteer judge for analytical chemistry graduate student's poster competition at the *102<sup>nd</sup> Canadian Chemistry Conference and Exhibition (CSC)*, Quebec City, QB, Canada, 2019.
- Our Lady of Mount Pleasant Junior and High School Science Awards presenter, Camrose, Alberta, June 25, 2019.
- Volunteer Judge for Analytical Chemistry and Chemistry Education Divisions graduate student's poster competition at the *101<sup>st</sup> CSC*, Edmonton, AB, Canada, 2018.
- Volunteer Judge for Analytical Chemistry Posters at the *99<sup>th</sup> CSC*, Halifax, NS, Canada. Judged analytical chemistry posters for both graduate and undergraduate students, 2016.
- Volunteer Judge for analytical chemistry graduate and undergraduate posters at the *100<sup>th</sup> CSC*, Toronto, ON, Canada, 2017.
- Participated as a judge for the analytical chemistry oral talks and poster sessions at the *Western Canadian Undergraduate Chemistry Conference* at the University of Manitoba, Winnipeg, MB, May 1-3, 2011.
- Judged both the analytical chemistry oral talks and poster sessions at the *Western Canadian Undergraduate Chemistry Conference*, Thompson Rivers University, Kamloops, BC, Canada, May 7-9, 2009.
- Judged both the analytical chemistry oral talks and poster sessions at the *Western Canadian Undergraduate Chemistry Conference*, University of Lethbridge, Lethbridge, AB, May 6-8, 2010.
- Volunteered during the National Chemistry Week with the local Canadian Society of Chemistry (CSC) Edmonton Section. Carried out chemistry demonstrations for the public and school children, TELUS World of Science, Edmonton, October 24, 2009.
- Volunteer director of the board of Lansdowne Child Care and Family Center in Edmonton, 1997-2000.
- Volunteer Chemistry Demonstrator with Edmonton Science and Technology Hotline, 1999.

## CERTIFICATIONS

---

- Supervisory Professional Development, Environment, Health & Safety (EHS) Certificate, 2018.