

Brian K. Kamusinga

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Education

Southern Illinois University Edwardsville (SIUE)

M.S. CHEMISTRY

Edwardsville, IL USA

Jan. 2014 - Dec. 2014

Principia College

B.S. CHEMISTRY, B.A. PHYSICS MINOR IN MATHEMATICS

Elsah, IL USA

Sept. 2007 - Jul. 2011

Claremont Fan Court School

A-LEVELS IN CHEMISTRY, PHYSICS AND MATHEMATICS

Esher, Surrey UK

Jan. 2005 - Dec. 2007

Experience

Principia College

CHEMISTRY INSTRUCTOR

Elsah, IL

July 2016 - PRESENT

- Developed class content and taught undergraduate Classes in Chemistry, Engineering and computer science, Courses taught include:
 - Fundamentals of Chemistry II and III (CHEM 132 and CHEM 133)
 - Environmental Chemistry (CHEM 111)
 - Introduction to Chemistry (CHEM 115)
 - Non-Renewable Resources (EARTH 260)
 - General Biochemistry (CHEM 274)
 - Food Chemistry (CHEM 117)
 - Introduction to Cyber Security (CSCI 360)
 - Engineering Projects:Solar Car (ENGR 280)
- Solar Car Program Manager

Abu Dhabi Men's College

GUEST LECTURER

Abu Dhabi, UAE

Jan 2015

- Presented lectures on design, manufacture and testing of electronics used in solar powered vehicles

Southern Illinois University Edwardsville

CHEMISTRY TEACHING ASSISTANT

Edwardsville, IL

July 2014 - Dec 2015

- Taught undergraduate chemistry labs

Principia College

VISITING CHEMISTRY INSTRUCTOR

Elsah, IL

Jan 2015 - May 2015

- Developed class content and taught undergraduate chemistry classes
- Served on college committees

The Principia Corporation

CAD OPERATOR

St Louis, MO

Jan 2015 - May 2015

- Made electrical drawings showing the wiring and electronic circuitry inside company owned buildings.

Principia College Chemistry Department

CHEMISTRY LAB COORDINATOR

Elsah, IL

Jan 2011 - May 2012

- Managed lab class set-up, including chemical preparation and disposal
- Coordinated student workers
- Supported students with undergraduate research

Principia College Chemistry Department

CHEMISTRY TEACHING ASSISTANT

Elsah, IL

Jan 2008 - May 2011

- Supervised labs and graded lab notebooks and homework
- Held weekly tutorials to help students understand chemistry concepts

Principia College Facilities Department

DATABASE MANAGEMENT AND DATA ANALYST

Elsah, IL

Dec 2009 - May 2010

- Maintained access database, retrieved and updated building data from CAD drawings
- Analyzed campus energy and space usage and related this to campus occupation, weather conditions etc.

Principia College Academic and Career Advising

Elsah, IL

STUDENT MANAGER

Nov 2007 - May 2010

- Managed student workers at the career center
- Updated online course descriptions

Research

Principia College

Elsah, IL

CURRENT RESEARCH

July 2016 - PRESENT

- Use of low cost potentiostats in undergraduate teaching and biofilm research
- Exploring the use of digital microfluidics in teaching
- Exploring uses of MEMS sensors in solution chemistry

Southern Illinois University Edwardsville

Edwardsville, IL

GRADUATE RESEARCH

July 2014 - Dec 2015

- Advisor: Dr. Robert P. Dixon
 - Synthesized 4 and 2 halo pyridine derivatives for study as possible proteomic in vivo probes for selective inhibition of Dimethylarginine Dimethylaminohydrolase (DDAH-1) like enzymes

Principia College

Elsah, IL

UNDEGRADUATE RESEARCH

Sept 2008 - June 2011

- Advisor: Dr. Jeffrey B. Cornelius
 - Researched the analysis of color degradation in paper and artwork using VISNIR and of atomic emission data from digital images, both of these were presented at the 2010 Biennial Conference for Chemical Education (BCCE)
 - Researched factors affecting the yield in bio-diesel production
- Advisor: Dr. Joseph M. Ritter
 - Observed phase behavior of different mixture compositions of alpha-cyclodextrin in solution with 4-methyl pyridine and water
- Advisor: Dr. Jonathan P. Langton
 - Worked on Computational modeling of Belousov-Zhabotinsky type oscillating reactions

Principia College

Elsah, IL

SUSTAINABILITY RESEARCH ASSISTANT

Jan 2009 - June 2009

- Advisors: Dr. Mike Rechlin, Dr. Jeffrey Cornelius
 - Researched the use of used-vegetable oil in diesel engines: Coached team that converted a vehicle to use straight vegetable oil
 - Researched the synthesis of biodiesel and performed a feasibility study on the possibility of making biodiesel from used vegetable oil on campus
 - Presented biodiesel research weekly to non-chemistry majors in an academic setting
 - Developed a method for remotely collecting data on maple sap production from trees, for research purposes

Abstracts, Posters, Presentations and Courses

Short course on Electrochemically Active Biofilms.

Gene and Linda Voiland School of
Chemical Engineering and
Bioengineering Washington State
University Pullman, WA

PARTICIPANT

Jul 2018

This was a short course on the research methods employed in working with electrochemically active biofilms. Including bio-films on electrodes, reactor configurations, growing electrochemically active biofilms and techniques for studying extra-cellular electron transfer of electrochemically active biofilms.

19th Annual Undergraduate Research Symposium,

Florissant Valley Community
College, ST Louis, MO

KAMUSINGA, BRIAN, AND CORNELIUS, JEFFREY, ANALYSIS OF COLOR DEGRADATION IN PAPER AND ARTWORK USING VISNIR.

2011

21th Biennial Conference on Chemical Education

University of North Texas, Denton, TX

KAMUSINGA, BRIAN, AND CORNELIUS, JEFFREY, ANALYSIS OF COLOR DEGRADATION IN PAPER AND ARTWORK USING VISNIR

ANALYSIS

2010

21st Biennial Conference on Chemical Education

University of North Texas, Denton, TX

KAMUSINGA, BRIAN, AND CORNELIUS, JEFFREY, ANALYSIS OF ATOMIC EMISSION DATA FROM VREELAND SPECTROSCOPE USING

IMAGEJ IMAGE PROCESSING SOFTWARE.

2010

Faculty Committees

Committee on the Assessment of student learning (CASL)

Principia College

MEMBER

June. 2018 - PRESENT

- Committee whose charge is to develop, integrate, and maintain systems, policies, structure, and processes for outcomes-based assessment of student learning and program review. Scope includes all academic programs (including general education, majors/minors, FYE (first year experience), and proficiency requirements) academic graduation requirements, co-curricular programs, and academic support programs/activities. Tasks include: helping faculty improve programs through outcomes-based assessment of student learning; assisting departments through the program review process; evaluating the assessment system; coordinating and supporting programs with assessment activities; facilitating the sharing of assessment practices across disciplines. CASL leads Reaffirmation of Accreditation process, including writing the Assurance Argument and leading the Quality Improvement Initiative for reaffirmation of accreditation.

Affiliations

American Chemical Society (ACS)

MEMBER

2008 - PRESENT

ACS St Louis Section

SERVING ON THE MINORITY AFFAIRS COMMITTEE

2012 - PRESENT

Member of the Midwestern Association of Chemistry Teachers in Liberal Arts Colleges (MACTLAC)

MEMBER, CURRENTLY SERVING AS PRESIDENT ELECT

2016 - PRESENT

Honors & Awards

PRINCIPIA COLLEGE

- 2011 **Robert W. Reese Endowed fellowship,**
- 2009, 2011 **H. Bart Cox Physical Science Award,**
- 2009 **Winifred Membery Hanzlik Award,**
- 2007-2011 **Deans Academic Scholarship,**

OTHER AWARDS

- 2017 **Electrical Design Award**, Formula Sun Grand Prix USA
- 2015 **Shell Innovation Award**, Abu Dhabi Car Challenge UAE
- 2014 **Electrical Design Award**, American Solar Car Challenge USA
- 2012 **3rd**, American Solar Car Challenge USA
- 2011 **Exceptional presentation**, St Louis Section of the American Chemical Society Undergraduate Research Symposium
- 2009 **Safety Award**, World Solar Challenge Australia
- 2008, 2012 **Safety Award**, American Solar Car Challenge USA
- 2015 **Safety Award**, Formula Sun Grand Prix
- 2009 **Delegate award, representing CUBA**, MMUN (Midwest Model United Nations)
- 2008 **2nd**, North American Solar Car Challenge USA and Canada
- 2009 **Principia College ACS Junior Chemist of the Year**, St Louis Section of the American Chemical Society
- 2006 **Millennium Volunteers award**, Awarded for over 200 hours of community service by the United Kingdom UK
- Secretary for Education and Skills

Other Interests

Solar Car Racing

Various Teams

SOLAR CAR TEAM MEMBER, RACE OFFICIAL, FACULTY ADVISOR AND CONSULTANT

Nov. 2007 - PRESENT

- Provided leadership and motivation to a team while planning and leading construction of a solar vehicle.
- Served as Solar Vehicle Electrical Systems Consultant- involved in the design of general vehicle power distribution and control and implementation of lithium polymer battery protection scheme
- Made preparations for the team and equipment, for racing in the 2009 and 2011 World Solar challenge in Australia
- Done research in lithium polymer battery protection

INTEREST IN CYBER SECURITY AND HIGH PERFORMANCE COMPUTING

2013 - PRESENT

- Research Computer Security - notable accomplishment, finding a vulnerability in the 4690 OS ADXCRYPT basic password hash algorithm

REMOTE CHEMICAL SENSORS

2013 - PRESENT

- I have an interest in the design and construction of affordable remote environmental sensors. So far my main focus has been on air quality.

Skills

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| Instrumental methods | HPLC,GCMS,FTIR, RAMAN, UVVIS, 1D and 2D NMR, XRD, Voltametry |
| Programming | Python, C/C++,JAVA,Perl, LaTeX, Tensor-flow |
| Other software | Origin, Mathematica, Spartan, ACDChemskecth, AMDIS, Labview, Linux ,Matlab |
| CAD | NX, Solid Edge, Inventor, Altium, Eagle, Autodesk 360 |
| Languages | English and some Swahili, German and Russian |