Mutairu Bolaji Olatinwo
Department of Chemistry, Louisiana State University, Baton Rouge, LA 70803
Phone: 225-276-2385 Email: molati1@lsu.edu or slantwealth25@yahoo.com

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OBJECTIVE: Seeking a chemistry position to contribute my knowledge, experience and skills to science and technology for betterment of human experience

EDUCATION:

Louisiana State University, Baton Rouge, LA
Doctor of Philosophy in Chemistry May 2016, GPA: 4.0
Thesis: Use of X-ray K-edge Tomography and Interferometry Imaging Techniques for the Studies of Brominated Flame Retardants.

University of Ibadan, Ibadan, Nigeria
Master of Science in Organic Chemistry September 2010, Distinction
Thesis: Chemistry Constituents and Biological Activities of the Leaves and Bark of Sandbox Tree.

University of Ibadan, Ibadan, Nigeria
Bachelor of Science in Industrial Chemistry July 2007, First Class
Thesis: Isolation, Purification and Toxicity Test Determination on Two Compounds from *Laggera Pterodonta.*

PUBLICATIONS:

1) **Olatinwo**, **Mutairu B**.; Ham, Kyungmin; McCarney, Jonathan; Marathe, Shashidhara; Ge, Jinghua; Knapp, Gerald; Butler, Leslie, Analysis of Flame Retardancy in Polymer Blends Synchrotron X-ray K-edge Tomography and Interferometric Phase Contrast Movies, (*Journal of Physical Chemistry B – ACS*, **2016**, *120*, 2612-24, DOI: 10.1021/acs.jpcb.5b12775).

2) **Olatinwo**, **Mutairu B**.; Ham, Kyungmin; McCarney, Jonathan; Marathe, Shashidhara; Ge, Jinghua; Knapp, Gerald; Butler, Leslie, Study of Brominated Flame Retardant Additives with the Underwriters' Laboratory 94 Burn Test, X-ray K-edge Absorption Tomography, and Phase Contrast Grating Interferometry, (*Royal Society of Chemistry Soft Matter*, *in preparation*).

3) **Olatinwo**, **Mutairu B**.; Ham, Kyungmin; McCarney, Jonathan; Ge, Jinghua; Knapp, Gerald; *et al.*, Brominated Flame Retardants and X-ray Interferometry Development of Image Models for their Performance, (*Nature Chemistry*, *in preparation*).

4) Oloyede, G. K.; Adaramoye, O. A.; **Olatinwo, Mutairu B.**, Chemical Constituents of Sandbox Tree (*Hura crepitans Linn*.) and Anti-hepatotoxic Activity of the Leaves and Stem Bark Extracts. *West Indian Medical Journal*, (*Accepted, in press*, **2015**).

5) Oloyede, G. K.; **Olatinwo, Mutairu B.**, Phytochemical Investigation, Toxicity and Antimicrobial Screening of Essential Oil and Extracts from Leaves and Stem Bark of *Hura Crepitans* (Euphorbiaceae). *Academia Arena* **2014**, 6(5), 7-15.

6) Oloyede, G. K.; **Olatinwo, Mutairu B**., In Vitro Antioxidant Activity of Extracts from the Leaves of Hura Crepitans (Euphorbiaceae) - A Comparison of Two Assay Methods. *Cell Membranes and Free Radical Research* **2011**, 3(1), 133-138.

SELECTED PRESENTATIONS:

1) **Olatinwo, Mutairu B**.; Ham, Kyungmin; McCarney, Jonathan; Marathe, Shashidhara; Ge, Jinghua; Knapp, Gerald; Butler, Leslie, The Advanced Photon Source-Center for Nanoscale Materials Users Meeting, May 9–12, **2016**, Lemont, Illinois, USA, poster presentation on Single-shot Grating Interferometry and X-ray K-edge Absorption Tomography Experiments for Analysis of Flame Retardants.

2) **Olatinwo, Mutairu B**.; Ham, Kyungmin; McCarney, Jonathan; Marathe, Shashidhara; Ge, Jinghua; Knapp, Gerald; Butler, Leslie, The Center for Advanced Microstructures and Devices (CAMD) Annual Users Meeting, April 29, **2016**, Baton Rouge, Louisiana, USA, poster presentation on X-ray Imaging Techniques for Analysis of UL 94 Flame Retardant Samples.

3) **Olatinwo, Mutairu B**.; Ham, Kyungmin; McCarney, Jonathan; Marathe, Shashidhara; Ge, Jinghua; Knapp, Gerald; Butler, Leslie, The 2nd International Conference on Tomography of Materials and Structures, ICTMS, June 29 – July 3, **2015**, Quebec City, Canada, oral presentation on Chemical Analysis of the Flame Retardancy of Brominated Flame Retardants/Antimony Oxide with the Use of X-ray Synchrotron, Phase Contrast Interferometry.

4) **Olatinwo**, **Mutairu B**.; Ham, Kyungmin; McCarney, Jonathan; Marathe, Shashidhara; Ge, Jinghua; Butler, Leslie, 11th National Graduate Research Polymer Conference, June 1–4, **2014**, Lod Cook Conference Center, Louisiana State University, Baton Rouge, LA 70803, poster presentation on Tomographic Phase Contrast Imaging of Flame Retardants in HIPS.

5) **Olatinwo**, **Mutairu B**.; Ham, Kyungmin; McCarney, Jonathan; Marathe, Shashidhara; Ge, Jinghua; Butler, Leslie, First Applied Polymer Technology, APTEC Meeting, November 22, **2013**, University of Southern Mississippi, oral presentation on X-Ray Grating Interferometry for Dynamic Tomography of Brominated Flame Retardant and Antimony Oxide Additives in High Impact Polystyrene, HIPS.

6) **Olatinwo**, **Mutairu B**.; Ham, Kyungmin; McCarney, Jonathan; Marathe, Shashidhara; Ge, Jinghua; Butler, Leslie, The 1st International Conference on Tomography of Materials and Structures, ICTMS, July 1–5, **2013**, Ghent, Belgium, poster presentation on Dynamic Tomography of Flame Retardants.

7) **Olatinwo**, **Mutairu B**.; Ham, Kyungmin; McCarney, Jonathan; Ge, Jinghua; Butler, Leslie, 68th Southwest Regional Meeting of the American Chemical Society, Nov. 4–7, **2012**, Baton Rouge, LA, USA, poster presentation on Temperature Effect for Flame Retarded Polymer Blends.

EXPERIENCE:

Research Assistant January 2012 – Present

Louisiana State University, Department of Chemistry

- Analysis of polymer-blended materials such as brominated flame-retardants, antimony trioxide and high impact polystyrene (HIPS) for their blending, chemical features characterization and flame retardancy performance in collaboration with Albemarle Corporation Company.
- Development and use of the X-ray imaging methods (radiography, tomography and interferometry) for probing the internal structures of the polymer blends and their performance.
- Using visualization software such as FEI Avizo, ImageJ, wolfram Mathematica, LLNL VisIt, Matlab and ParaView to aid understanding of polymer composites, biological materials.
- SEM, EDS, FT-IR, EPR, Raman, microtome, GC-MS, HPLC, UV-Vis spec., UL-94 burn test are being used for surface morphology, chemical analysis of the pristine and burnt polymer samples.

Teaching Assistant August 2013 – May 2016

Louisiana State University, Department of Chemistry

- Teaching CHEM 1212 laboratories (undergraduate general chemistry labs such as synthesis, $_{P}$H titration)

Other Teaching Experience

Lecturer II (teaching position), Kwararafa University, Wukari, Nigeria Feb. 2010 – July 2011

- Taught inorganic, organic chemistry classes and carried out research in medicinal chemistry (natural products)

Undergraduate and Master Student Researcher June 2003 – April 2010

University of Ibadan, Department of Chemistry, Nigeria

- Had worked collaboratively with both Prof. A. A. Adesomoju along with fellow students for isolation, purification and toxicity test determination on two organic compounds from *Laggera pterodonta* using thin layer & column chromatography; prepared TLC plates and did cytotoxic testing and others.

- Had worked collaboratively with Dr. Ganiyat K. Oloyede on chemical constituents and biological activities of the leaves and bark of sandbox tree (*Hura crepitans*); involved collection of plants (leaves & bark stems), extraction of plant ingredients with appropriate organic solvents, separation and purification using column and thin layer chromatography, structural elucidation with UV, GS-MS, IR, MS and carried out tests such as antioxidant, antimicrobial, hepatoprotective activities, brine shrimp lethality test in collaboration with other researchers. I worked by following every detail of procedure and protocols with minimal and or no supervision.

ADDITIONAL SKILLS: Ability to work efficiently within a team or as individual with minimal supervision; strong attention to details; proficient in Word, Excel, PowerPoint; leadership ability through student organizations and activities.

NIPOL Limited (Plastics Manufacturing Company), Nigeria May 2005 – August 2005

- Intent student: Worked in the production department for operating machines for plastic products
- Sorting of materials, mixing of colorants and materials (such as LDPE, HDPE) for production

Pharmaceutical Chemistry and Research Lab Department, LUTH May 2006 – August 2006

- Intent student: Sorting of chemicals and preparation of solutions in pharmaceutical chemistry dept. labs for analyses such as aspirin determination by spectrophotometric analysis (used by students)

AWARDS:

1) Argonne National Laboratory-Advanced Photon Source Student Travel Award (2016).
2) Louisiana State University Graduate Dean's Travel Award (2016).
3) The Alpha Kappa Alpha Educational Advancement Foundation Scholarship (2015).
4) Muzaffar Zafr Educational Scholarship (2015).
5) A. G. Leventis Foundation Grant Scholarship (2012-2015).
6) Oyo State Government Scholarship, Nigeria (2009-2010).

MEMBERSHIPS AND AFFILIATIONS:

1) Golden Key International Honor Society, Member, LSU 2013 – Present
2) The National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE), Member, LSU 2011 – Present
3) National Youth Service Corps (NYSC), Special Marshal Department Federal Road Safety Commission (SMDFRSC), Provost marshal, Nigeria 2007 – 2008
4) Students' Academic Committee, Students' Chemical Society of Nigeria 2004 – 2007

Research Proposal Outline: Mutairu Bolaji Olatinwo
Flame Retardant Analysis

I plan to become indispensable in chemistry, science and technology to immensely contribute my knowledge, experiences and skills to our nations for the betterment of human existence. I like being flexible in research and development to improve problem-solving skills for betterment of existing materials, methods, techniques and discover new efficient systems.

The world is a beautiful place except for the plastic flammability, toxic gas generation and solid waste affecting us in some negative ways. Polymers/plastics are, undoubtedly, a class of materials with numerous applications in all aspects of life. This is because almost everything around us is made of polymers. For example, polymers are used in electronic devices, furniture, printers, textiles, and transportation vehicles to name just a few of their applications.

However, one major problem with these widely used materials is their flammability, which leads to huge losses of life, properties i.e. reaching thousands of lives, billions of dollars and huge recycling problems annually. For instance, according to the U.S. fire statistics in 2011, 1,389,500 fires, 3,005 deaths, 17,500 injuries and $11.7 billion loss of properties (http://www.usfa.fema.gov/data/statistics/) are reported. This also causes damages to our environment, therefore, increasing the solid waste products. Incorporation of safe and efficient flame-retardants (FR) into polymers makes the materials safer, therefore, reducing solid wastes and improving polymer applications. Understanding the mechanisms of safe FR helps to minimize toxic emissions that pose negative effects on humans and environment.

At Louisiana State University, Baton Rouge, USA started in January 2012, I developed interest in using X-ray imaging in materials science, because it is a powerful and complex technique in revealing the internal structures of materials and systems for their understanding and evaluation. The X-ray imaging involves a lot of processes ranging from the data acquisition through reconstruction to material visualization and analysis. Many programs and software are required to perform a meaningful research with the X-ray imaging system.

My PhD research focuses on the use of novel and sophisticated techniques of X-ray imaging techniques to scrutinize the efficiency of brominated flame retardants (BFR) in polymer blends. Another aim is to understand the behavior of FR molecules in polymer composites with ultimate goal of gaining insights that will help make these polymers much safer, economical and effective. Lastly, the objective is to also develop and study more efficient, safe flame-retardants that are non-halogenated using the acquired knowledge, experience and skills gained from BFRs studies. We have been collaborating with Albemarle Corporation (flame retardant manufacturing company) using X-ray imaging techniques for the studies of several BFRs (Saytex-BT93, Saytex-8010, GreenArmor). Possible future plans are to study the new generation flame-retardants, of light elements using a recent X-ray grating interferometry.

I have more than four years of experience working with a major polymer additive company, Albemarle Corporation. I have studied and assessed the performance of various flame

retardant formulations using a novel X-ray interferometry/tomography approach. The studies were performed at two synchrotrons, the Advanced Photon Source (Argonne National Laboratory) and Louisiana State University Center of Advanced Microstructures and Devices (LSU-CAMD). This is the technology that is pushing the X-ray interferometry imaging for low-dose medical applications and rapid image acquisition needed for flame-retardant analysis in polymer matrices.

My knowledge of flame-retardants and their relevance to waste management control can make a great contribution to our nation's health and development. More research is needed to efficiently improve polymer/plastic flame retardancy and recycling of plastics, both high-volume polystyrene, polyethylene terephthalate and low-volume, high-value flame retardant-rich polymers. Safe and efficient flame-retardants for improving the polymer properties and recycling will be achieved with the use of X-ray imaging combined with other methods.

Future studies on Flame Retardants: I will continue to work on analysis of various flame-retardants such as new generation flame retardants (nitrogen-based, phosphorous-based, nanoparticle-fillers etc.), brominated flame retardants and apply the UL 94 burn test, X-ray grating interferometry imaging, optical, near-IR, XANES/EXAFS, XPS, SEM-EDS, GC-MS, ICPMS, GC-MS, HPIC. All these techniques and valuable methods will be used to study low-volume, high-value flame retardant-rich polymers. Aims are to achieve low flammability materials of high industrial applications in electronic devices, aircraft, building and construction, fabric, wire and cables, and furnishings with excellent recycling properties. The techniques will enable us to quantify toxic and non-toxic products generated from various materials under fire conditions to better understand flame retardancy performance and safe flame-retardants.

Alternate Plan As A Second Choice For Research: Medicinal Natural Products Chemistry And Organic Synthesis

In the past few years, my undergraduate and master programs focused on natural-organic compound isolation with synthesis for their medicinal and biological activities. For instance, the aims of master's dissertation (M.Sc.) were to isolate the medicinal plant constituents and essential oils from the leaves and bark of Sandbox tree (*Hura crepitans*) for phytochemical, antimicrobial screening as well as cytotoxic, antioxidant, and hepatoprotective (*in vitro and vivo*) activities. Some characterizations of the isolated compounds and essential oils were also carried out using various methods of column and thin layer chromatography and elucidation techniques (IR, NMR, MS, UV and GC-MS).

Medicinal plants find applications in pharmaceutical, cosmetic, agricultural and food industries. Research has supported the biological activities of some medicinal herbs. Cancer is such a segment where researchers are expecting new molecules from herbs that can provide us with tools/compounds for fighting the dreaded disease. Diabetes mellitus is another area where a lot of research is going on. Hepatoprotective activity of certain botanicals deserves attention now since lots of liver diseases are reported endangering the lives of people. The concept of antioxidants is fastly catching up and latest research has shown that a number of herbal derivatives have excellent antioxidant action. Ancient knowledge coupled with scientific principles can come to the forefront and provide us with powerful remedies to eradicate these fatal diseases and improve our standard of living with potent and effective drug discovery.

Because of versatilities and applications of medicinal plants/natural products, I have the following summaries as the proposed research:

--Collection of plant leaves, roots and stem-barks of wide medicinal uses.

--Extraction/isolation, purification, phytochemical screening of the plant extracts, characterization/structural elucidation (using NMR, UV, IR, MS, etc.) of the isolated pure compounds.

--Collection, characterization of the essential oils from plants.

--Bioassays such as antimicrobial, cytotoxic, antioxidant, anticancer, hepatoprotective activities on the plant extract

--Synthesis of organic compounds isolated from the medicinal plants, improved synthesis of the known compounds and studies of their biological activities.

First of all, medicinal plant extracts will be subjected to phytochemical screening for the presence of secondary metabolites like alkaloids, flavonoids, phenolic compounds, and saponins.

The various isolates or natural products will be collected from medicinal plants/seeds through extraction method. The process involves partitioning into main three fractions of different polarities (non-, moderately and highly polar fractions). The impure isolates will be subjected to separation and purification through the chromatographic techniques. Once the

compounds are pure, spectroscopic analysis (NMR, MS, GS-MS, IR, UV-Vis) is run on the samples to determine their structures. The structurally elucidated compounds will be tested for many bioassays (such as antimicrobial, cytotoxic, antioxidant, anticancer, hepatoprotective etc.) in collaboration with other scientists, toxicologists, biochemists, and pharmacist for more elaborate and meaningful research.

Essential or volatile oils are also useful in research of natural products chemistry. They will be collected from numerous plants, and characterized, and tested for bioassays because of their uses in perfumery industries and other medicinal uses.

Analysis for anticancer activities of the isolates from medicinal plants and synthetic organic compounds is one major area, I want to explore in collaboration with researchers in cancer unit. Cancer is the second leading cause of death by disease in several countries. Under this condition, the discovery and development of novel cancer therapeutics from natural products/plants, or through synthesis with no or negligible side effects, are beneficiary and highly desirable. Other diseases that require more drug design are HIV/AIDS, diarrheal, diabetes, obesity, tuberculosis and many more.

I think none of the millennium development goals is easy to attain with less consideration in chemistry research and other areas of science. Chemistry provides solutions to some daunting problems facing the humanity. There is a tremendous excitement and challenge in isolating and synthesizing molecules never before produced of efficient and multipurpose functions.

I want you to choose me as one of your Ph.D. students to elevate my scientific and innovative potentials, and be an indispensable scientist globally. I absolutely welcome research areas from your own interest. I am ready to make positive changes for the betterment of human race.

Flame-retardant studies are highly significant, because flame-retardants help controlling the properties of intrinsic flammable polymers to be safe, and widely used in electronic devices, airplanes, building and more. In addition, I show interest in medicinal chemistry/organic synthesis because of its priceless contributions to our standard of living in providing medicines to cure our illnesses and provide solutions to pharmaceutical companies.

I will be glad once my application is considered successful.

Thank you for your time and supports.

Mutairu Bolaji Olatinwo.

UNIVERSITY OF IBADAN, IBADAN, NIGERIA

POSTGRADUATE SCHOOL

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Ref:

Date *19th November, 2010*

Mr. Mutairu Bolaji OLATINWO,
(SI. 116595),
Department of Chemistry,
University of Ibadan.

Dear *MR. OLATINWO,*

NOTIFICATION OF HIGHER DEGREE RESULT

I have pleasure in informing you that on the recommendation of the *FACULTY OF SCIENCE* Postgraduate Committee and the Board of the Postgraduate School, Senate has approved the recommendation of the examiners that the degree of Master in ***Science (M.Sc) in Chemistry (Organic Chemistry)*** of this University be conferred on you. The effective date of the award is ***21st September, 2010***

You are also eligible to proceed to ***Ph.D***

On behalf of the Vice-Chancellor, I congratulate you on your success in the Examination.

Yours sincerely

M Abioye

M. Abioye (Mrs.)
Examinations Officer
for: Deputy Registrar/Secretary

SECRETARY
POSTGRADUATE SCHOOL
UNIVERSITY OF IBADAN

University of Ibadan

Mutairu Bolaji Olatinwo

having fulfilled all the requirements of the University and passed the prescribed examinations has this day been admitted to the degree of

Bachelor of Science

in

Industrial Chemistry

with First Class Honours

Matric. No. 116595

VICE-CHANCELLOR

March 23, 2007

REGISTRAR

UNIVERSITY OF IBADAN, IBADAN, NIGERIA

OFFICE OF THE REGISTRAR

Registrar
MRS OMOTAYO O. IKOTUN
B.Ed., M.Ed. (Ibadan),MNIM.

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VISION
To expand the frontiers of knowledge and transform the society through innovation

CONFIDENTIAL

Matric No: SI. 116595 Name: Mutairu Bolaji OLATINWO

Course of Study: Chemistry Faculty: Science

Date of Birth: 5 May, 1981 Sex: Male Nationality: Nigerian

Year of Admission: 2002 Year of Graduation: 2007

Class of Degree Awarded: **B.Sc. (Honours) First Class**

Mode of Entry: Universities Matriculation Examination

COURSES TAKEN AND MARKS OBTAINED

COURSE	YEAR	COURSE DESCRIPTION	UNITS	RESULT	MARKS %
BOT.111	03	Cryptogamic Botany	3.0	PASSED	69
CHE.127	03	Inorganic Chemistry	3.0	PASSED	58
CHE.157	03	Physical Chemistry	4.0	PASSED	68
CHE.177	03	Organic Chemistry	3.0	PASSED	76
CHE.195	03	Practical Chemistry	2.0	PASSED	71
GES.101	03	Use of English	3.0	PASSED	50
GES.102	03	Culture and Civilization	3.0	PASSED	60
MAT.111	03	Algebra	4.0	PASSED	87
MAT.121	03	Calculus and Trigonometry	4.0	PASSED	76
PHY.114	03	Basic Principles of Physics I	3.0	PASSED	64
PHY.115	03	Basic Principles of Physics IV	3.0	PASSED	90
PHY.118	03	Experimental Physics I	3.0	PASSED	75
ZOO.111	03	Principles of Animal Biology	3.0	PASSED	52
BIO.211	04	Introductory Genetics and Cell Physiology	4.0	PASSED	62
CHE.218	04	Introductory Analytical Chemistry	3.0	PASSED	68
CHE.227	04	Inorganic Chemistry II	4.0	PASSED	86
CHE.257	04	Thermodynamics Kinetics and Electrochemistry	4.0	PASSED	84
CHE.277	04	Polyfunctional Groups, Aromatic Chemistry and Reaction Mechanisms	4.0	PASSED	57
CSC.231	04	Scientific Programming: Fortran Programming Language	3.0	PASSED	67
GES.103	04	Government, Society and the Economy	3.0	PASSED	43
ICH.227	04	Chemical Raw Materials I	3.0	PASSED	72
ICH.247	04	Large Scale Chemistry	3.0	PASSED	62
ICH.267	04	Chemical Raw Materials II	3.0	PASSED	68
MAT.241	04	Ordinary Differential Equations	4.0	PASSED	69
MIC.221	04	Introductory Microbiology	4.0	PASSED	60
TFT.211	04	Introduction to Food Technology	2.0	PASSED	73
CHE.318	05	Instrumental Methods of Analysis	4.0	PASSED	75
CHE.327	05	Inorganic Chemistry – III	4.0	PASSED	74
CHE.357	05	Introductory Quantum Chemistry , Statistical Thermodynamics and Electrochemistry	4.0	PASSED	70

Matric No: SI. 116595 Name: Mutairu Bolaji OLATINWO

COURSE	YEAR	COURSE DESCRIPTION	UNITS	RESULT	MARKS %
CHE.358	05	Organic and Physical Chemistry of Macromolecules	3.0	PASSED	60
CHE.377	05	Heterocyclics, Carbocyclics and Reaction Mechanisms	4.0	PASSED	84
ICH.327	05	Heavy Inorganic Chemicals and Utilization of Wastes	3.0	PASSED	73
ICH.347	05	Unit Operation I	3.0	PASSED	63
ICH.367	05	Petrochemicals and Utilization of Wastes	4.0	PASSED	65
ICH.397	05	Industrial Attachment	2.0	PASSED	67
CHE.417	05	Advanced Analytical Chemistry and Applications	4.0	PASSED	70
CHE.427	05	Inorganic Chemistry IV	3.0	PASSED	79
CHE.429	06	Organometalics, Electron Deficient Compounds, Inorganic Reaction Mechanisms	3.0	PASSED	76
CHE.452	06	Molecular Spectroscopy	3.0	PASSED	82
CHE.457	06	Quantum Mechanical Treatment of Chemical Bonding and Kinetics	3.0	PASSED	77
CHE.458	06	Symmetry, Group Theory and Electro-Chemistry	3.0	PASSED	65
CHE.471	06	Applied Spectroscopy	3.0	PASSED	56
CHE.474	06	Pericyclic Reactions, Heterocyclics and Naturally Occurring Compounds	3.0	PASSED	65
CHE.476	06	Photochemistry and Biologically-+ Active Natural Products	3.0	PASSED	82
CHE.481	06	Chemistry Seminar	2.0	PASSED	59
ICH.447	06	Unit Operation II	4.0	PASSED	75
ICH.467	06	Process Chemistry	4.0	PASSED	87
ICH.495	06	Research Project	6.0	PASSED	71

CUMULATIVE GRADE POINT AVERAGE OF COURSE UNITS = 6.0

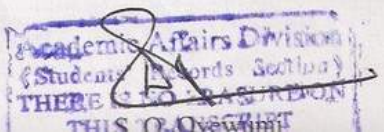
A COURSE UNIT IS DEFINED AS ONE LECTURE/TUTORIAL CONTACT HOUR PER WEEK, OR THREE HOURS OF LABORATORY OR PRACTICAL CLASS PER WEEK THROUGHOUT A SEMESTER OR AN EQUIVALENT AMOUNT OF OTHER ASSIGNED STUDY OR PRACTICAL EXPERIENCE OR ANY COMBINATION OF THE ABOVE.

LETTER GRADE	GRADE-POINT	MARK
A	7	70 AND ABOVE
A-	6	65-69
B+	5	60-64
B	4	55-59
B-	3	50-54
C+	2	45-49
C	1	40-44
D	0	0-39

CUMULATIVE GRADE POINT AVERAGE AND DEGREE CLASSIFICATION

6.0 AND ABOVE	FIRST CLASS
4.6-5.9	SECOND CLASS HONOURS (UPPER DIVISION)
2.6-4.5	SECOND CLASS HONOURS (LOWER DIVISION)
1.6-2.5	THIRD CLASS HONOURS
1.0-1.5	PASS

THE CUMULATIVE GRADE POINT AVERAGE SYSTEM WAS INTRODUCED IN THE 1996/97 SESSION.



UNIVERSITY OF IBADAN, IBADAN, NIGERIA
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PERMANENT POSTGRADUATE STUDENTS' ACADEMIC RECORD AND TRANSCRIPT

NAME (Surname Last) :	Mutairu Bolaji, OLATINWO (Mr)
MAIDEN/FORMER NAME :	Not Applicable
GENDER :	Male
MATRICULATION No. :	S.I. 116595
SESSION ADMITTED :	2008/09
DEPARTMENT :	Chemistry
FACULTY :	Science

COURSE CODE	COURSE TITLE	UNITS	STATUS*	SCORE (%)
CHE 796	Research Project	6	C	78
CHE 705	Separation Methods of Analysis	4	C	77
CHE 765	Advanced Natural Products Chemistry	4	C	67
CHE 770	Advanced Applied Spectroscopy	4	C	63
CHE 771	Petroleum Geochemistry	3	C	68
ICH 727	Homogeneous and Heterogeneous Catalysis	4	R	73
CHE 732	Recent Advances in Coordination Chemistry	4	R	67
CHE 754	Special Topics in Physical Chemistry	4	R	70
CHE 793	Experimental Techniques in Organic Chemistry	1	R	70
CHE 766	Synthetic Methods in Organic Chemistry	4	E	77

Weighted average score for the Degree of Master = 72.3%

Degree/Diploma Awarded	Date of Award
M.Sc (Chemistry)	21 September 2010

Area of Specialization : Organic Chemistry

DEAN, POSTGRADUATE SCHOOL. DATE

30/4/2010

SECRETARY, POSTGRADUATE SCHOOL. DATE

SECRETARY
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UNIVERSITY OF IB...

Detail transcripts of academic records are not available for postgraduate students registered for higher degrees before 30 September 1976.

Postgraduate courses are numbered 400 and above or 700 and above since 1985. Courses are evaluated in units, each unit being defined as one lecture/tutorial contact hour per week, or three hours of laboratory or practical class per week throughout a semester of 15 teaching weeks OR a series of ten one-hour lectures, tutorials or a series of ten three-hour laboratory practical classes or an equivalent amount of other assigned study or practical experience or any combination of these throughout a term of 4 (four) months.

The marking scheme is interpreted as follows

0	-	39%	-	F	(Fail)
40	-	49%	-	C	(Pass)
50	-	59%	-	B	(Good)
60	-	69%	-	AB	(Very Good)
70	-	100%	-	A	(Excellent)

Candidates who, having satified all requirements for the one Calender Year degree of Master, and are eligible could be recommended to proceed to the degree of Master of Philosophy (M.Phil), or M.Phil/Ph.D, or Ph.D. The following guidelines are followed, in this respect.

40	-	49.9%	-	Terminal Master
50	-	54.9%	-	M. Phil
55	-	59.9%	-	M. Phil/Ph.D

60% and above - Ph.D.

* *Please Note*

C= Compulsory or Core Courses

R= Required Courses

E= Elective Courses

P= Pass

LOUISIANA STATE UNIVERSITY

College of Basic Sciences

February 26, 2015

To Whom It May Concern:

At the request of Mutairu Bolaji Olatinwo I am providing this letter of recommendation for his application to your Fellowship Program. Mutairu recently joined LSU as a graduate student, and I was able to observe his abilities in organic synthesis and mechanistic organic chemistry in a student seminar class we both attended, and as part of his graduate committee. I could tell he was motivated, and very dedicated to do the best job possible, and voted a pass for his successful general exam.

After receiving his MS degree at University of Ibadan in Nigeria, Mutairu became an assistant lecturer at Kwararafa University. Mutairu's abilities have been awarded by the Oyo State Scholarship for M. Sc. Student in Nigeria. He has also participated in the National Youth Service Corps and the Students' Academic Committee of Students' Chemical Society of Nigeria. All of these activities show the initiative and dedication that Mutairu has for the chemistry profession and the people involved.

With this brief background, I recommend Mutairu Bolaji Olatinwo for your Ph.D. dissertation fellowship.

Sincerely,

David A. Spivak
Associate Professor, Department of Chemistry-LSU

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LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
Department of Chemistry

30 May 2016

RE: Mr. Mutairu Bolaji Olatinwo
Biology and Synchrotron Radiation 2016 conference travel support

Dear Review Committee:

I am extremely happy to nominate Mr. Mutairu Bolaji Olatinwo for Biology and Synchrotron Radiation 2016 travel support grant to present a poster of his work at the Biology and Synchrotron Radiation 2016 Conference at the SLAC National Accelerator Laboratory.
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Bolaji is, in my opinion, the world's expert on the use of advanced X-ray imaging methods to study the effectiveness of flame retardants in polymers. Flame retardants are everywhere, for example, in the polymers in seat cushions and walls of commercial aircraft and in the plastic case around the laser printer. One of the next technology advances in 3D printed polymers will be imbedded electrical wiring with flame retardants selectively protecting the polymer device. Bolaji's experience will be key to efficient and safe use of flame retardants, especially the new, non-brominated flame retardants designed for a sustainable economy.

As he finishes his graduate research, he is spending a few months applying X-ray interferometry/tomography to the study of brown adipose tissue (brown fat) in a collaboration with the LSU Pennington Biomedical Facility. A series of mouse brown, beige, and white fat samples have been extracted from mice raised in cold and warm environments. Bolaji is leading the 3D imaging studies of these samples and is using an interferometer he helped to construct at the LSU CAMD synchrotron. Bolaji is exceptionally well situated to benefit from travel to SLAC to attend the Biology and Synchrotron Radiation 2016 Conference. He will present a poster on the brown fat X-ray interferometry imaging.

Bolaji has performed imaging experiments at the Argonne National Lab's Advanced Photon Source synchrotron and at the National Institute of Standard and Technologies neutron imaging center. Here at LSU, we have a new W.M. Keck Foundation grant to build a novel X-ray imaging system and Bolaji is part of the ~15-person international team building the hardware and software. One instrument is now operational in a low-power mode and he is collecting flame retardant and brown fat data.

Bolaji is breaking new ground with his research. First, the X-ray imaging method he is using, grating-based X-ray interferometry was invented in 2006 (slow method) and then improved in 2010 (fast method). The slow method generates better quality images; the fast method is perfect for X-ray movies. Bolaji has used both. The APS has the intense X-rays for movies. Our Keck system uses an X-ray tube with a high efficiency detector and gives very reliable results with the 2006 method.

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Since he is breaking new ground, a lot of data must be acquired to defend this new analysis of flame retardants/polymer blends. In his first paper, he assembled about 50 tomography volumes, some from APS and some from the LSU CAMD synchrotron. It is a massive paper, but exceptionally well presented. The time between submission to acceptance pending minor revisions was three weeks. That is the fastest acceptance I have ever seen! The journal, *Journal of Physical Chemistry B*, is the best journal in the American Chemistry Society for physical experiments on polymer systems. Bolaji is the lead author and co-authors include a flame retardant chemist at Albemarle Corporation here in Baton Rouge.

He has two more papers in preparation. The second paper is in preparation for the *Royal Society of Chemistry Soft* Matter and at the final stage of review among co-authors at LSU and Albemarle. The third paper is at the second draft stage and we have plans to submit to a very high impact journal, *Nature Chemistry*. In my opinion, his research will define the future of performance analysis of flame retardants.

In Year 2 of his research, Bolaji presented his tomography results at several conferences, including one tomography meeting in Ghent, Belgium, the "1st International Conference on Tomography of Materials and Structures (July 1-5, 2013). I enjoyed watching Bolaji "working the conference" for all five days and making connections with other young tomographers. This was a right-size meeting, about 250 attendees. It was large enough to have some of the leaders of the field, and yet small enough to interact. I was impressed with Bolaji's courage during the Q&A in the mostly single-session meetings; Bolaji asked five questions of the speakers. No other young tomographer asked so many questions. This is a fantastic indicator of his growing leadership in the field of materials science tomography.

This past June, Bolaji gave a talk on his work at another international meeting. I chaired the session and noted that the speakers were Bolaji (US, Nigeria) and the Germans. I thought he gave a great talk and additional evidence is this: That night, I got an email from one of the Germans inviting me to give a keynote lecture in a related meeting in Germany. Clearly, Bolaji made me look good.

I think Bolaji shows every sign of becoming an exceptionally productive scientist with the opportunities to contribute to growth of materials science tomography.

Sincerely Yours,

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THE JOURNAL OF PHYSICAL CHEMISTRY B

Article

pubs.acs.org/JPCB

Analysis of Flame Retardancy in Polymer Blends by Synchrotron X-ray K-edge Tomography and Interferometric Phase Contrast Movies

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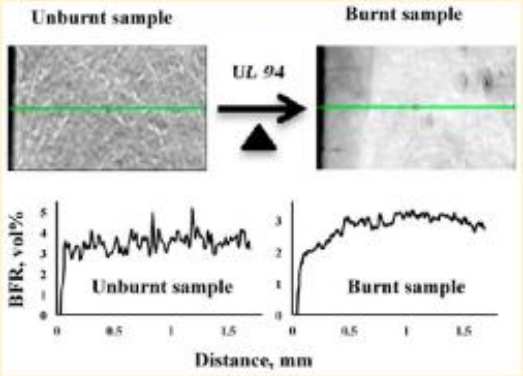
S *Supporting Information*

ABSTRACT: Underwriters Laboratories 94 test bars have been imaged with X-ray K-edge tomography between 12 and 32 keV to assess the bromine and antimony concentration gradient across char layers of partially burnt samples. Phase contrast tomography on partially burnt samples showed gas bubbles and dark-field scattering ascribed to residual blend inhomogeneity. In addition, single-shot grating interferometry was used to record X-ray movies of test samples during heating (IR and flame) intended to mimic the UL 94 plastics flammability test. The UL 94 test bars were formulated with varying concentrations of a brominated flame retardant, Saytex 8010, and a synergist, Sb_2O_3, blended into high-impact polystyrene (HIPS). Depending on the sample composition, samples will pass or fail the UL 94 plastics flammability test. Tomography and interferometry imaging show differences that correlate with UL 94 performance. Key features such as char layer, gas bubble formation, microcracks, and dissolution of the flame retardant in the char layer regions are used in understanding the efficiency of the flame retardant and synergist. The samples that pass the UL 94 test have a thick, highly visible char layer as well as an interior rich in gas bubbles. Growth of gas bubbles from flame-retardant thermal decomposition is noted in the X-ray phase contrast movies. Also noteworthy is an absence of bubbles near the burning surface of the polymer; dark-field images after burning suggest a microcrack structure between interior bubbles and the surface. The accepted mechanism for flame retardant activity includes free radical quenching in the flame by bromine and antimony species. The imaging supports this as well as provides a fast inspection of other parameters, such as viscosity and surface tension.



In vitro antioxidant activity of extracts from the leaves of *Hura crepitans* (Euphorbiaceae) - a comparison of two assay methods

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[1]The work was performed at the Department of Chemistry, University of Ibadan, Ibadan, Oyo State, Nigeria
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List of abbreviations

A_{DPPH}; Absorbance of DPPH
BHA; Butylatedhydroxyanisole
DNA; Deoxyribonucleic acid
DPPH; 2, 2-diphenylpicrylhydrazyl radical
HCl; Hydrochloric acid
NaOH; Sodium hydroxide
ROS; Reactive oxygen species
RSA; Radical scavenging activity
TLC; Thin Layer Chromatography
UV; Ultraviolet Visible Spectrophotometer
PBS; Phosphate-buffered saline

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Abstract

Hura crepitans (Sandbox tree) of the family of Euphorbiaceae has enjoyed many ethnomedicinal applications but little is known about its chemistry and pharmacology. This research reports the *in vitro* antioxidant activity of this plant using two different assay methods. Scavenging effect on 2, 2-diphenylpicrylhydrazyl (DPPH) radical at 517 nm and on hydroxyl radical generated by hydrogen peroxide at 285 nm in a UV-Visible spectrophotometric assay. Butylatedhydroxyanisole (BHA), vitamin C and α-tocopherol were used as reference standards. There is generally decrease in absorption of DPPH caused by the extracts. The percent inhibition of the crude extract increases with a decrease in concentration in the DPPH photometric assay. The percent inhibition of hexane, ethylacetate and butanol fractions was low except for the butanol fraction (50.7 % at 1.0 mg/ml) when compared with standards vitamin C (90.8 % at 1.0 mg/ml) and BHA (95.4 % at 1.0 mg/ml). In the hydrogen peroxide assay however, the hexane, ethylacetate and butanol fractions scavenged hydroxyl radical more effectively than the standards. The crude extract possessed maximum %

Phytochemical investigation, toxicity and antimicrobial screening of essential oil and extracts from leaves and stem bark of *Hura crepitans* (Euphorbiaceae)

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Abstract: The crude methanol extract of *Hura crepitans* was obtained and screened for the presence of secondary plant metabolites. The leaf essential oil was also obtained by hydro-distillation and GC and GC/MS analysis of the colourless essential oil showed the presence of seven compounds with ethyl propionate (39.6%) and isopentyl alcohol (10.6%) being the major constituents. The LC_{50} obtained from brine shrimp lethality test indicated that all the extracts were toxic at varied degrees. The hexane extract of the bark of *H. crepitans* was the most toxic with LC_{50} 0.001 µg/ml. The partitioned extracts and essential oil were subjected to antimicrobial screening against 10 microorganisms; 6 bacteria and 4 fungi at 6.25 - 200 mg/ml and 3.125 - 200 mg/ml respectively. Appreciable *in vitro* activity was observed in the antimicrobial tests. The ethylacetate extract of the stem bark was the most active in the antimicrobial screening as it inhibited *A. niger* and *C. albicans* at all concentrations suggestive of a selective antifungal activity, when compared to standards; gentamicin for bacteria and tioconazole for fungi. Alkaloids, steroids and phenolic compounds were found in the methanol extracts of *H. crepitans* leaves and stem bark but flavonoids and tannins were only present in the bark. Lastly, the presence of ethyl propionate and isopentyl alcohol in this plant oil showed that it can be a useful source of preservative or flavoring agent in feed and food industry. This study apparently highlights the biochemical basis for possible use of the *H. crepitans* in ethno-medicine.
[Oloyede GK., Olatinwo M. B. **Phytochemical investigation, toxicity and antimicrobial screening of essential oil and extracts from leaves and stem bark of *Hura crepitans* (Euphorbiaceae).** *Academ Arena* 2014;6(5):7-15] (ISSN 1553-992X). http://www.sciencepub.net/academia. 2

Key words: Alkaloids, flavonoids, ethyl propionate, isopentyl alcohol, essential oil, toxicity, antimicrobial, *Hura crepitans*

1. Introduction

Medicinal plants have been used traditionally in the treatment of numerous human diseases and are the primary source of medicine in rural areas of the developing countries. Natural products derived from medicinal plants are also sources of biologically active compounds, many of which have been the basis for the development of new lead chemicals for pharmaceuticals (Michael, 1990, Hamburger and Hostettmann, 1991, Negi, et al, 1993, Baker et al., 1995, Yue-Zhong Shu, 1998, Pamploma-Roger, 1999, Chitme et al., 2003, Ayuveda and Verpoorte, 2005).

The screening of plant extracts for antimicrobial activities is of significant importance toxicity test (BST) has been used for screening of biological and toxic activities (Meyer et al, 1982, De Rosa et al, 1994, Sahpaz et al, 1994, Colman-Saizarbitoria et al, 1995, Siqueira et al, 1998).

Hura crepitans (Sandbox tree) of the family Euphorbiaceae has enjoyed many ethno-medicinal applications as emetic, purgative, antimicrobial, anti-inflammatory and used in the treatment of leprosy. Phytochemical, antibacterial and toxicology studies have also been investigated (Burkill, 2000, Lasisi et al, 2001, Oderinde et al., 2009). The juice from the plant contains two lectins which have haema-glutinating activity that inhibits protein synthesis. Huratoxin, a piscicidal constituent (widely used to catch fish in