

## Curriculum Vitae

**ALVIN A. HOLDER, Ph.D., MRSC, CChem**

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### EDUCATION

05/94: Ph.D. (Inorganic Chemistry), University of the West Indies (U.W.I.), Mona Campus, Jamaica. Advisor: Professor Tara P. Dasgupta. Thesis title: "*Synthesis, Characterisation, and Reactivity of some Coordinated Oxo-Molybdenum(VI) Complexes in Aqueous Solution.*"

07/89: B.Sc. (Special Chemistry), upper second class honors, U.W.I., Mona Campus, Jamaica.

### RESEARCH INTERESTS

My area of research revolves around biological and inorganic chemistry, bioinorganic and inorganic reaction mechanisms, which includes the following:

- Synthesis and characterization of supramolecular polypyridyl osmium(II), palladium(II), platinum(II), ruthenium(II), vanadium(IV), and vanadium(V) complexes for bioinorganic studies of DNA recognition and reactions by metallointercalators, followed by their uses as anti-cancer agents in photodynamic therapy; also the synthesis, characterization, and anti-cancer studies of cobalt(III)-, copper(II)-, and gallium(III)-containing complexes with **natural products-derived** thiosemicarbazones as ligands.
- The synthesis, characterization, and biomedical uses of cobalt, copper, vanadium, and zinc complexes in alleviating diabetes.
- The synthesis, characterization, reactivity, and biomedical uses of NO<sub>x</sub>-containing compounds.
- Synthesis and characterization of novel non-hydrolyzable nucleotides (inclusive of C-13 labeled nucleotides); also cobalt(III), chromium(III) and vanadium(IV/V) complexes. Their uses as inhibitors of the enzymatic synthesis of DNA through the use of DNA polymerase β.
- The synthesis, characterization, and use of mixed-metal binuclear photocatalysts for the production of H<sub>2</sub> and O<sub>2</sub> from water (artificial photosynthesis) with the use of photocatalysts that contain polyoxometallates and ruthenium(II) and cobalt(II)/cobalt(III) metal centers. Multinuclear NMR (<sup>11</sup>B, <sup>19</sup>F, <sup>31</sup>P, and <sup>59</sup>Co, to name a few), EPR, cyclic voltammetry, electron transfer reactions in aqueous media are used to characterize species in solution. In essence we are embarking on the use of nanoparticles to make renewable energy. There is an interest in photochemistry, and the use of X-rays to map out metal centers in solution, and Raman spectroscopy.
- Metallomesogens: Design and synthesis of metallomesogens for CO<sub>2</sub> sequestering and production of biodegradable polymers.

- The use of EPR {V(IV), Co(II), Cu(II), and Mo(V) at ambient and liquid nitrogen temperatures}, NMR ( $^1\text{H}$ ,  $^{11}\text{B}$ ,  $^{13}\text{C}$ ,  $^{15}\text{N}$ ,  $^{19}\text{F}$ ,  $^{31}\text{P}$ ,  $^{49}\text{Ti}$ ,  $^{51}\text{V}$ ,  $^{59}\text{Co}$ ,  $^{95}\text{Mo}$ ,  $^{119}\text{Sn}$ , and  $^{195}\text{Pt}$ ), and other physical means in the structural elucidation of various transition metal complexes.
- The synthesis, characterization, reactivity, and biomedical uses of metallomesogens.

## RESEARCH EXPERIENCE

05/04-06/06: **Postdoctoral Fellow**, Department of Chemistry, Colorado State University, Fort Collins, Colorado 80523, U.S.A., with Professor Debbie C. Crans.

- Synthesized and characterized novel non-hydrolyzable nucleotides (inclusive of C-13 labeled nucleotides) and chromium(III) complexes, which were tested as inhibitors of the enzymatic synthesis of DNA through the use of DNA polymerase  $\beta$ .
- Synthesized and characterized vanadium complexes, which were tested as alleviators of diabetes.
- Characterized transition metal complexes in aqueous solution utilizing EPR {V(IV) at ambient and liquid nitrogen temperatures}, UV/Visible,  $^{31}\text{P}$ ,  $^1\text{H}$ ,  $^{13}\text{C}$ , and  $^{51}\text{V}$  NMR spectroscopy.
- Supervised undergraduate students in the research area of vanadium chemistry.
- Participated as a judge in an undergraduate research poster competition.

09/03-04/04: **Postdoctoral Fellow**, Department of Biochemistry, The Ohio State University, Columbus, Ohio 43210, U.S.A., with Professor Peng George Wang.

- Studied the binding of some known intercalators of DNA with the use of isothermal titration calorimetry and the quartz crystal microbalance.
- Studied enzymatic processes involving the enzyme,  $\alpha$ -1,3-galactosyltransferase.

08/02-06/03: **Research Scientist**, Department of Chemistry, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061, U.S.A., with the late Professor Karen J. Brewer.

- Synthesized and characterized supramolecular polypyridyl ruthenium(II)/rhodium(III) complexes, which were used in the photocleavage of pUC18 and pBluescript DNA plasmids.
- Utilized photochemical, fluorescence microscopy, and electrochemical techniques in the research area of DNA recognition and reactions by metallointercalators.
- Utilized agarose gel electrophoresis, polyacrylamide gel electrophoresis, and chromatography in the separation of photocleaved DNA.
- Carried out experiments involving the growing of Vero cells, and the inhibition of cell growth of Vero cells *in vitro* with ruthenium(II) and osmium(II) complexes in aqueous solution.
- Supervised undergraduate students in the research area of ruthenium chemistry, the photocleavage of pUC18 and pBluescript DNA plasmids, and the inhibition of cell growth of Vero cells *in vitro* with ruthenium(II) and osmium(II) complexes.

08/96-08/97: **Postdoctoral Fellow/Visiting Professor**, ExxonMobil Research and Engineering Company, New Jersey 08801, U.S.A., with the late Dr. Edward I. Stiefel.

- Synthesized, characterized, and studied the reactivity of nitrosyl complexes, molybdenum, rhenium, and tungsten supramolecular clusters.
- Application of such clusters as potential anti-friction agents.

06/95-09/95: **Leverhulme Fellow**, Department of Chemistry, University of Newcastle, Newcastle upon Tyne, NE1 7RU, U.K., with the late Professor A. Geoffrey Sykes.

- Synthesized, characterized, and studied the reactivity of molybdenum and tungsten supramolecular clusters (incomplete and complete cuboidal clusters) in aqueous solution.

10/90-05/94: **Graduate student**, U.W.I., Mona Campus, Jamaica, with Professor Tara P. Dasgupta.

- Synthesized some novel cobalt/chromium(III) ammine complexes, containing the molybdate(VI) oxoanion as monodentate and bidentate ligands; then characterized the complexes by UV/Visible spectroscopy, infrared spectroscopy,  $^{95}\text{Mo}$  NMR spectroscopy, and X-Ray Powder Diffraction.
- Carried out electrochemical studies on the cobalt/chromium(III) ammine complexes.
- Carried out kinetic studies on the formation and acid/base hydrolysis of the cobalt/chromium(III) ammine complexes using stopped-flow and conventional spectrophotometry.
- Carried out kinetic studies of the electron-transfer reactions between  $[(\text{H}_3\text{N})_5\text{Co}^{\text{III}}\text{OMo}^{\text{VI}}\text{O}_3]^+$  and (1) aqueous sulfite, (2)  $\text{K}_4\text{Fe}(\text{CN})_6$ , (3) *L*-ascorbic acid, and (4) *L*-cysteine using stopped-flow and conventional spectrophotometry.
- Carried out EPR studies for the reaction involving  $[(\text{H}_3\text{N})_5\text{Co}^{\text{III}}\text{OMo}^{\text{VI}}\text{O}_3]^+$  and *L*-cysteine in order to detect the very reactive Mo(V) monomer.

## TEACHING EXPERIENCE

07/25/13-present: *Associate Professor in Chemistry*, Old Dominion University (ODU), Norfolk, Virginia 23529, U.S.A.

- Teaching and researching in inorganic chemistry.

08/21/06-08/12/13: *Assistant Professor in Chemistry*, Department of Chemistry and Biochemistry, The University of Southern Mississippi, Hattiesburg, Mississippi 39406, U.S.A.

- Teaching and researching in inorganic chemistry.

05/02-06/02: **Visiting Professor in Chemistry**, Department of Chemistry, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061, U.S.A.

- Lectured the course General Chemistry 1035 in the first summer session.

08/01-05/02: **Visiting Assistant Professor in Chemistry/Research Assistant Professor**, The University of Toledo, College of Arts and Sciences, Department of Chemistry, Toledo, Ohio 43606, U.S.A.

- Lectured general chemistry courses.
- Supervised the general chemistry laboratory course CHEM-1150: Concepts in Chemistry Laboratory.
- Supervised the general chemistry laboratory course CHEM 1260: Chemistry for Life Sciences Laboratory I and II.

- Supervised the advanced inorganic chemistry course: CHEM 3870: Advanced Laboratory II.
- Lectured the graduate course: CHEM 4980/6330/8330: Special Topics in Chemistry (Spectroscopic Methods and Analysis of Spectra).
- Conducted recitation classes in Chemistry 1090, Chemistry 1230, and Chemistry 1240.

01/10/94-08/01/01: **Temporary Assistant Lecturer in Physical Chemistry, Lecturer in Physical and Inorganic Chemistry**, U.W.I., Cave Hill Campus, Barbados.

- Lectured several courses in analytical, inorganic, and physical chemistry.
- Single-handedly developed, coordinated, and lectured a bioinorganic chemistry course.
- Instrumental in co-developing and co-lecturing a transition metal chemistry II course.
- Conducted recitation classes for courses involving analytical, inorganic, and physical chemistry.
- Supervised laboratory courses involving analytical, inorganic, and physical chemistry.
- Directly supervised a Ph.D. student, two M.Phil. students, and 14 undergraduate students.
- Instrumental in coordinating the first chemistry seminar series.

10/93-01/94: **Tutor in Chemistry**, U.W.I., Mona Campus, Jamaica.

- Conducted recitation classes in inorganic, organic, and physical chemistry courses at the introductory and advanced levels.
- Supervised and graded inorganic, organic, and physical laboratories at the introductory and advanced levels.

10/90-01/94: **Teaching Assistant (Demonstrator)**, U.W.I., Mona Campus, Jamaica.

- Supervised and graded inorganic, organic, and physical laboratory courses at the introductory and advanced levels.

09/89-07/91: **High School Chemistry Teacher**.

- Taught the equivalent of general chemistry at various secondary schools in Barbados and Jamaica.

## SYNERGISTIC ACTIVITIES

**At The University of Southern Mississippi (USM) (2006-2013)**

**Active member of Committees:**

**2006**

- Graduate Committee Member
- Graduate Recruiting Committee Member
- Faculty of Science and Technology Council Committee Member

**2007**

- Graduate Admissions Committee Member
- Graduate Committee Member
- Graduate Recruiting Committee Member
- Faculty of Science and Technology Council Committee Member

**2008**

- Faculty Search Committee Member
- General Chemistry Committee Member
- Graduate Admissions Committee Member
- Graduate Committee Member
- Graduate Recruiting Committee Member
- Faculty of Science and Technology Council Committee Member

**2009**

- Faculty Search Committee Member
- General Chemistry Committee Member
- Graduate Admissions Committee Member
- Graduate Committee Member
- Graduate Recruiting Committee Member
- Faculty of Science and Technology Council Committee Member

**2010**

- General Chemistry Committee Member
- Instrumentation Committee Member
- Faculty of Science and Technology Council Committee Member
- ACS Student Affiliates Mentor
- Graduate Admissions Committee Member
- Graduate Committee Member
- Graduate Recruiting Committee Member

**2011**

- General Chemistry Committee Member
- Instrumentation Committee Member
- Faculty of Science and Technology Council Committee Member
- ACS Student Affiliates Mentor
- Graduate Recruiting Committee Member
- Faculty of Science and Technology Research Committee Member
- Undergraduate Recruiting Committee Member
- Underrepresented Students Committee Member

**2012**

- General Chemistry Committee Member
- ACS Student Affiliates Mentor
- Undergraduate Recruiting Committee Member
- Underrepresented Students Committee Member

## **At Old Dominion University (ODU) (2013-present)**

### **September 2014-present**

- Instrumentation Committee Member
- Graduate Admissions Committee Member
- Graduate Committee Member
- Graduate Recruiting Committee Member

### **June 2015-present**

- Diversity Leader for The College of Sciences

### **January 2016-present**

- Graduate Program Internal and External Review Committee Member
- Research Committee Member
- Chair, Outreach Committee
- Graduate Studies Committee

## **FULBRIGHT FELLOW(S)**

At USM:

Dr. Varma H. Rambaran, University of Trinidad and Tobago (05/11-07/11).

Fulbright NEXUS Scholar: Ms. Megan Cox, Caribbean Institute for Meteorology and Hydrology (CIMH), Husbands, St. James, Barbados (approved for 02/01/13-04/30/13).

## **POSTDOCTORAL FELLOWS**

Dr. Varma H. Rambaran at USM (06/07-08/07)

Dr. Sarmistha Halder-Sinha at USM (2008-2008)

Dr. Lesley Lewis-Alleyne at USM (2009-2009)

Dr. Mark Lawrence at ODU (2014-2015)

## **GRADUATE COMMITTEE MEMBER**

At ODU

08/14-present: Mentor of Raj Gurung (Ph.D.)

08/13-present: Mentor of Michael Celestine (Ph.D.) and Jimmie Bullock (M.S.)

07/14-present:

Ashley Shoaf (Ph.D.)

02/14-12/14:

Hari Prasad Reddy Mangunuru (Ph.D. in chemistry)

Dong Liu (M.S. in chemistry)

02/14-present:  
Kristen Bashaw (Ph.D.)

01/16-present  
Cosuleo Garcia (M.S.)

At USM

2011-2012: Joshua Phillips

2011-2013: Erendra Manandhar (Ph.D. in chemistry)

2010-2013: Stephen Foster, USM Ph.D. student

2008-2011: Suman Parajuli (Ph.D. in chemistry)

2007-2008: Sandipan Dawn

2008-2008: Shanna L. Nesser (M.S., Forensics Sciences)

### **SUPERVISION/MENTORING OF GRADUATE STUDENTS:**

Supervised seven (8) rotating graduate students (LaMaryet Moody, Shawna Balof, Subir Kapuria, Liu Yang, Nerissa Lewis, Joshua Phillips, LaCrissia Bridges, and Yiliyasi Wusimanjiang) between the period, 08/21/2006-09/19/2012, at the University of Southern Mississippi.

### **Graduate Dissertations**

10/03: Sophia C. Marshall, Ph.D. (Inorganic Chemistry), U.W.I., Cave Hill Campus, Barbados.  
Thesis title: *“The Kinetics and Mechanism of the Decomposition of Several Vasodilators by a Bronchoconstrictor, Aqueous Sulphite.”*

11/07: Gabriel Harewood, Ph.D. (Inorganic Chemistry), U.W.I., Mona Campus, Jamaica.  
Thesis title: *“Synthesis, Characterisation, and Structural Elucidation of Some Salicylaldehyde-based Ligands and their Corresponding Metal Complexes.”*

12/07: Ross F.G. Brown, M.Phil. (Inorganic Chemistry), U.W.I., Mona Campus, Jamaica.  
Thesis title: *“Kinetics and Mechanisms of Reactions of Sodium Diaquo-4,4',4'',4'''-Tetrakis(phenylthio)phthalocyaninecobaltate(II) and its Nitrosated Analogue with Various Nitric Oxide Donors and Selected Thiols.”*

06/08: Vince C.R. Payne, Ph.D. (Inorganic Chemistry), U.W.I., Cave Hill Campus, Barbados.  
Thesis title: *“The Synthesis and Structural Characterisation of some 2,6-Pyridinedicarboxylate-containing Complexes of Chromium, Cobalt, Copper, and Nickel.”*

12/09: LaMaryet Moody (M.S.). Thesis title: *“Development of New Photodynamic and Therapeutic and Anti-bacterial Agents.”* The University of Southern Mississippi, Department of Chemistry and Biochemistry, Hattiesburg, MS 309401, U.S.A.

12/11: Nerissa Lewis (M.S.). Thesis title: *“Chemical, Biological and Preliminary In Vitro Studies of Novel Vanadium(IV) Complexes With Schiff Bases and Thiosemicarbazone Ligands.”* The University of Southern Mississippi, Department of Chemistry and Biochemistry, Hattiesburg, MS 309401, U.S.A.

## **UNDERGRADUATE SUPERVISION**

USM: Supervised 73 undergraduate students at The University of Southern Mississippi (USM) for the period 08/21/2006-08/12/2013.

ODU:

Fall 2013: Courtney Baxter, Dominique' Washington, and Dennis J Houghton

Spring 2014: Dominique' Washington, Edward Artis, and Dennis J Houghton

Summer 2014: Lorne Joseph and Deisy Esquivel

Fall 2014: Matthew Brewer and Kathy Currie

Spring 2015: Kathy Currie, Jere Combs, and Caitlyn Galbraith

Summer 2015: Lorne Joseph

Fall 2015: Kathy Currie, Halie Maas, and Maeva Mbongo

Spring 2016: Kathy Curry, Jaya Chhabra, Deondra Brown, Kimberly Aguilar, Maeva Mbongo, Brianne Nunez, Audrey Wells, and Katrina Wesley

### **Undergraduate students' awards while at ODU**

12/22/14: An Old Dominion University (ODU) Spring 2014 Undergraduate Research Grant to Ms. Kathy Currie. **\$1,500.**

10/03/14: A partial travel award to Ms. Deisy Esquivel to attend the Annual Biomedical Research Conference for Minority Students, San Antonio, Texas, November 12-15, 2014. I was a mentor for Ms. Deisy Esquivel, an underrepresented undergraduate student at Johnson C. Smith University, Charlotte, North Carolina, who carried summer research in my laboratory in summer 2014

12/13/13: An Old Dominion University (ODU) Spring 2014 Undergraduate Research Grant to Ms. Dominique' Washington. **\$1,500.**

11/16/13: An award to Ms. Laura Menocal for an outstanding presentation at the Annual Biomedical Research Conference for Minority Students, Nashville, Tennessee, November 13-16, 2013. I was a co-mentor for Ms. Laura Menocal, a former underrepresented undergraduate student at State University of New York, Stony Brook.

10/03/13: A partial travel award to Ms. Tiera Corey to attend the Annual Biomedical Research Conference for Minority Students, Nashville, Tennessee, November 13-16, 2013. I was a mentor for Ms. Tiera Corey, an underrepresented undergraduate student at The University of Southern Mississippi.

### **Undergraduate students' awards under my supervision at USM**

12/07/12: The Department of Chemistry and Biochemistry Chair's award to Mr. Stuart E. Ramsdale for the best oral presentation in the capstone course, CHE 496: Undergraduate Research in Chemistry/Biochemistry.

05/11-08/11: American Chemical Society (ACS), ACS Global Research Experiences, Exchanges, and Training (GREET) Pilot Program Winner for 2011. Title: Synthesis,



Characterization, and CO<sub>2</sub> Sequestering Studies of Cobalt(III)-Containing Metallomesogens. PI. **\$9,500.00**. Part of the award allowed Ms. Dorothy Horton to spend eight weeks at The University of York, U.K. in order to carry out research in the laboratory of Professor Duncan Bruce.

06/07-08/07: 2007 Moissan Summer Undergraduate Research Fellowship in Fluorine Chemistry, The American Chemical Society, Division of Fluorine for the synthesis and characterization of novel fluorine-containing trinuclear ruthenium(II)/rhodium(III) complex. PI. **US\$3,500**. This award allowed Mr. Mauro Davis to carry out ten weeks of undergraduate research in my laboratory in the summer of 2007.

**Former Undergraduate students, Department of Chemistry, Colorado State University, Fort Collins, Colorado 80523, U.S.A.**

05/04-06/06: Barbara K. Hughes and Shelly Hay.

**Former Undergraduate Students, U.W.I., Cave Hill Campus, Barbados (Out of a total of 14)**

00-01: Robin-Simone Rocke (U.W.I., St. Augustine Campus, Trinidad and Tobago), Celina Franklin, and Ezra Maynard.

99-00: Martin Hall and Gabriel Harewood (U.W.I., Mona Campus, Jamaica).

98-99: Ross F.G. Brown (U.W.I., Mona Campus, Jamaica), Maria D. Cozier, Walter Alleyne Jnr. (U.W.I., Mona Campus, Jamaica), and Christopher O. Bovell (University of Bristol, U.K.).

97-98: Alex Waterman (University of Surrey).

95-96: Junior Welch.

94-95: Shawn Phillips (University of Newcastle, U.K.), Leslie Wellington, and Kendi Cumberbatch-King

### **COURSES TAUGHT at USM:**

Spring 2007: CHE 106-General Chemistry I

Fall 2007: CHE 100-Introductory Chemistry

Spring 2008: CHE 106-General Chemistry I

Summer 2008: CHE 332-Natural Products Chemistry in the Caribbean

Fall 2008: CHE 100-Introductory Chemistry

Spring 2009: CHE 332-Natural Products Chemistry in the Caribbean

Spring 2009: CHE 106-General Chemistry I

Spring 2009: CHE 332-Natural Products Chemistry in the Caribbean

Fall 2009: CHE 107-General Chemistry II

Spring 2010: CHE 331-Descriptive Inorganic Chemistry

Spring 2010: CHE 332-Natural Products Chemistry in the Caribbean

Fall 2010: CHE 107-General Chemistry II

Spring 2011: CHE 331-Descriptive Inorganic Chemistry

Spring 2011: CHE 332-Natural Products Chemistry in the Caribbean

Fall 2011: CHE 107-General Chemistry II

Fall 2011: CHE 400/500- Chemical Literature

Spring 2012: CHE 331-Descriptive Inorganic Chemistry

Spring 2012: CHE 332-Natural Products Chemistry in the Caribbean

Fall 2012: CHE 107-General Chemistry II  
Fall 2012: CHE 400/500- Chemical Literature  
Spring 2013: CHE 331-Descriptive Inorganic Chemistry  
Spring 2013: CHE 332-Natural Products Chemistry in the Caribbean

#### **COURSES TAUGHT at ODU:**

Fall 2013: CHEM 352-Inorganic Chemistry Laboratory  
Spring 2014: CHEM 724 Bioinorganic Chemistry  
Fall 2014: CHEM 352-Inorganic Chemistry Laboratory  
Spring 2015: CHEM 756-Inorganic Reaction Mechanisms  
Spring 2016: CHEM 740-Coordination and Transition Metal Chemistry

#### **SKILLS**

- Excellent communicative and collaborative skills (grant proposals and publications).
- Extensive experience in the use of conventional and stopped-flow UV/Visible spectrophotometers, Schlenk lines, glove box, and infrared spectrometers.
- Extensive experience in techniques involving isothermal titration calorimetry (ITC), quartz crystal microbalance (QCM), mass spectrometry, Raman spectrometry, cyclic voltammetry, crystal growth for X-ray crystallography, syntheses and chromatographic separations under oxygen free conditions.
- Extensive experience in the use of biological protocols, for example, fast liquid chromatography (FPLC), electrophoresis, dialysis, equilibrium dialysis, and ultrafiltration, to name a few.
- Extensive experience in the isolation and purification of DNA plasmids from *E. coli*.
- Very proficient in molecular biology, fluorescence microscopy, handling of cells *in vitro*, photochemistry, enzymology, and many other protocols, which are all biochemically related.
- Synthetic inorganic chemist, utilizing various organic ligands for catalytic processes, bioinorganic/medicinal chemistry, and photodynamic therapy.
- Extensive experience in EPR {V(IV), Cu(II), and Mo(V) at ambient and liquid nitrogen temperatures} and NMR measurements ( $^1\text{H}$ ,  $^{11}\text{B}$ ,  $^{13}\text{C}$ ,  $^{19}\text{F}$ ,  $^{31}\text{P}$ ,  $^{51}\text{V}$ ,  $^{59}\text{Co}$ ,  $^{95}\text{Mo}$ ,  $^{119}\text{Sn}$ , and  $^{195}\text{Pt}$ ) for structural elucidation of organometallic compounds.
- Experience in the synthesis and characterization of nucleotides, and their coordination complexes with transition metal ions.
- Trained at ExxonMobil Research and Engineering Company, New Jersey 08801, in the safe use of a nitric oxide producing apparatus for the synthesis of nitrosyl complexes.

#### **HONORS and AWARDS**

04/24/2015: A fellowship to participate in the 2015 STAR Fellowship Program on behalf of the Training and Education Core of the University of North Texas Health Science Center's Center of Excellence on Health Disparities. The year-long program commenced on July 10, 2015.

04/09/2015: The President John R. Broderick's "A Champion of Diversity" award recipient for Spring 2015 at ODU.

01/19/2015: Awarded the status of Fellow of The Royal Society of Chemistry (FRSC) from The Royal Society of Chemistry.

11/14: A travel subsidy to attend the ASM-LINK Mentoring Strategies Workshop and the 2014 Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-15 at the Henry B. Gonzalez Convention Center in San Antonio, Texas.

2008: Selected for inclusion in the 2008-2009 edition of Madison Who's Who of Professionals.

08/05: American Chemical Society Biological Chemistry Division Travel Award to attend the 230<sup>th</sup> American Chemical Society National Meeting, Washington, D.C., August 28-September 01, 2005.

03/03: Postdoctoral Travel Grant from Virginia Polytechnic Institute and State University to attend the 225<sup>th</sup> American Chemical Society National Meeting, New Orleans, Louisiana, March 23-27, 2003.

07/01-08/01: Recipient of an award from the Caribbean Academy of Sciences (CARISCIENCE) for research conducted at the University of the West Indies, Mona Campus, with Professor Tara P. Dasgupta.

07/00-08/00: Recipient of the American Chemical Society International Initiatives Program for collaborative visits to New York University and Wayne State University, Detroit, Michigan.

08/96-08/97: U.W.I./Inter-American Development Bank Staff Training Program Award: Postdoctoral Fellow/Visiting Professor at ExxonMobil Research and Engineering Company, Clinton Township, New Jersey, U.S.A., with the late Dr. Edward I. Stiefel. **US\$39,000**

06/95-09/95: Leverhulme Fellowship for research with the late Professor A. Geoffrey Sykes at the University of Newcastle, Newcastle upon Tyne, U.K.

### **AFFILIATIONS**

08/01/1997-present: The Royal Society of Chemistry, U.K. (Admitted as a Fellow of the Royal Society of Chemistry (FRSC) on January 19, 2015)

08/01/1997-present: The American Chemical Society.

11/13/2010-present: American Society for Microbiology.

11/25/2013-12/06/2014: The American Association for Cancer Research.

01/06/2014-present: The American Society for Biochemistry and Molecular Biology.

### **PROFESSIONAL SERVICE**

10/29/15-11/01/15: Represented The College of Sciences at the 22<sup>st</sup> Annual Compact for Faculty Diversity - Institute on Teaching and Mentoring, Arlington, Virginia.

12/22/14: Appointed to the Steering Committee for the American Society for Microbiology Leaders Inspiring Networks and Knowledge (ASM-LINK) for two years, beginning January 01, 2015, and ending on December 31, 2016.

10/30/14-11/02/14: Represented The College of Sciences at the 21<sup>st</sup> Annual Compact for Faculty Diversity - Institute on Teaching and Mentoring, Omni CNN Center, Atlanta, Georgia.

06/03/13-08/09/13: Conducted research with two underrepresented undergraduate students through the Visiting Faculty Program at Brookhaven National Laboratory, Upton, New York. Students: Ms. Altramiese Tippie (Mountain View College) and Ms. Tiera Corey (Southern Miss).

06/01/10-08/06/10: Conducted research with three underrepresented undergraduate students as the Faculty and Student Team (FaST) Program at The Argonne National Laboratory, Argonne, Illinois. Students: Ms. Ashlynn Boler (Johnson C. Smith University), Mrs. Jessica Adams-Alexander (Fayetteville State University) and Ms. Lauren House (Southern Miss).

09/09-10/11: Presentation Chair, Chemical Sciences Division, the Annual Biomedical Research Conference for Minority Students.

05/25/09-07/31/09: Conducted research with two underrepresented undergraduate students the FaST Program at The Argonne National Laboratory, Argonne, Illinois. Students: Ms. Toyketa Horne (Alcorn State University) and Dorothy Horton (Southern Miss).

11/07-present: Poster and oral talk judge for the Annual Biomedical Research Conference for Minority Students (ABRCMS).

09/02: Wrote questions for a general chemistry text ("*General Chemistry*", 7<sup>th</sup> edition by Kenneth W. Whitten, Raymond E. Davis, Larry M. Peck, and George G. Stanley), Brooks/Cole Publishing, U.S.A.

12/99-08/01: Secretary of the University Staff Gym Committee, U.W.I., Cave Hill Campus, Barbados.

09/98-05/99: Chairman, Department of Biological and Chemical Sciences' Safety Committee, U.W.I., Cave Hill Campus, Barbados.

09/95-08/01: Chemistry Seminar Coordinator, Department of Biological and Chemical Sciences, U.W.I., Cave Hill Campus, Barbados.

09/95-05/96: Dean's Nominee for the Library Advisory Committee, U.W.I., Cave Hill Campus, Barbados.

03/95-08/06: Assistant Chief Examiner in Chemistry (the Caribbean Secondary Education Certificate) for the Caribbean Examinations Council, Barbados.

09/94: Co-developed the first undergraduate chemistry research projects in the Department of Chemistry, U.W.I., Cave Hill Campus, Barbados.

**RESEARCH GRANTS**

07/01/14-08/08/14: National Science Foundation CAREER Award Summer REU supplement. Title: CAREER: Ruthenium(II)-cobalt(II)/cobalt(III) mixed-metal complexes for photocatalytic hydrogen production from water. PI. **\$12,000.**

09/01/12-08/31/17: National Science Foundation CAREER Award. Title: CAREER: Ruthenium(II)-cobalt(II)/cobalt(III) mixed-metal complexes for photocatalytic hydrogen production from water. PI. **\$530,000.** Former grant number: CHE-1151832. Present grant number: CHE-1431172.

06/12-05/13: MS-INBRE Biomedical Seed Grant Award. PI. **\$15,000.**

03/28/12-09/30/12: Department of the Army, Engineer Research and Development Center, Corps of Engineers, Construction Engineering Research Laboratory. Title: Photosynthesis at the Microscale. PI. **\$89,446.00.**

08/02/11-12/31/11: Department of the Army, Engineer Research and Development Center, Corps of Engineers, Construction Engineering Research Laboratory. Title: Photosynthesis at the Microscale. PI. **\$35,413.00.**

06/11-05/12: MS-INBRE Biomedical Seed Grant Award. PI. **\$20,000.**

05/11-08/11: American Chemical Society (ACS), ACS Global Research Experiences, Exchanges, and Training (GREET) Pilot Program Winner for 2011. Title: Synthesis, Characterization, and CO<sub>2</sub> Sequestering Studies of Cobalt(III)-Containing Metallomesogens. PI. **\$9,500.00.**

11/01/10-05/31/10: MS-INBRE Biomedical Seed Grant Award. PI. **\$20,000.**

11/01/10-03/31/11: The Boeing project with Dr. Jeffrey Wiggins. **\$28,180.53.**

11/10-08/02/11: Department of the Army, Engineer Research and Development Center, Corps of Engineers, Construction Engineering Research Laboratory. The Department of the Army purchased supplies as required by the PI.

08/01/08-07/31/11: National Science Foundation CRIF: MU. Acquisition of an EPR spectrometer at Southern Miss. Co-PI. **\$215,350.00.**

09/08-12/08: ExxonMobil Research and Engineering Company, acquisition of a PAR electrochemical system for teaching and research. PI. **\$26,195.**

09/08-08/09: Oak Ridge Associated Universities, The Ralph E. Powe Junior Faculty Enhancement Awards. Title: Development of multimodal nanoparticle probes for *in vivo* bioimaging applications. **\$5,000**, funded by USM as provided by Dr. Burge.

06/08-08/08: The Royal Society of Chemistry Journals Grants for International Authors. Title: Synthesis, characterisation, and liquid phase studies of Schiff base complexes of novel titanium(IV) metallomesogens. PI. **\$2,251.19.**

06/06/08-08/07/08: The Royal Society of Chemistry JWT Jones Travelling Fellowship. Title: Synthesis, characterisation, and liquid phase studies of Schiff base complexes of novel titanium(IV) metallomesogens. PI. **\$1,663.93.**

09/07-08/08: ExxonMobil Research and Engineering Company, Knowledge Build Grant for use of selected transition metals in catalysis and the fight against cancer and diabetes. PI. **US\$10,000.**

06/07-08/07: 2007 Moissan Summer Undergraduate Research Fellowship in Fluorine Chemistry, The American Chemical Society, Division of Fluorine for the synthesis and characterization of novel fluorine-containing trinuclear ruthenium(II)/rhodium(III) complex. PI. **US\$3,500.**

05/07-05/08: USM Lucas Endowment Grant for the fight against cancer with ruthenium compounds. PI. **US\$3,800.**

12/99-12/00: A Royal Society of Chemistry John William Thomas Jones Research Fund Grant for studies on the chemistry of rhenium complexes. PI. **US\$1,800.**

12/98-12/99: A Royal Society of Chemistry John William Thomas Jones Research Fund Grant for studies on the chemistry of rhenium complexes. PI. **US\$1,800.**

10/98-10/00: A Wellcome Trust International Research Development Award. Research involving the bioinorganic chemistry of purple acid phosphatase isolated from soybeans, sweet potatoes, and the porcine uterine fluids. A collaborative effort with the late Professor A. Geoffrey Sykes of the Department of Chemistry, University of Newcastle, Newcastle upon Tyne, NE1 7RU, U.K. Co-PI. **US\$62,000.**

06/98-09/98: A Wellcome Research Travel Grant. Research involving the bioinorganic chemistry of purple acid phosphatase isolated from soybeans, sweet potatoes, and the porcine uterine fluids. A collaborative effort with the late Professor A. Geoffrey Sykes at the Department of Chemistry, University of Newcastle, Newcastle upon Tyne, NE1 7RU, U.K. PI. **US\$2,800.**

## **PUBLICATIONS**

**ResearcherID URL: <http://www.researcherid.com/rid/B-6329-2016>**

63. Dutta, Shovan; Huddleston, Alexis; Arca, Jessa Faye; Mitra, Amlan; Heller, Loree; Ledizet, Michel; Anderson, John F.; Neelakanta, Girish; Holder, Alvin A.; Sultana, Hameeda "Mosquito repelling citral-based compounds and complexes with Cu(II) and Co(III) metal centers enhances dengue virus infection in human keratinocytes." *PLoS Neglected tropical Diseases* (open Access) **2016**. Submitted.

62. Williams, Jennie L.; Lewis-Alleyne, Lesley C.; Solomon, Melinda; Nguyen, Long; Johnson, Robert; Vital, Jennifer; Ji, Ping; Durant, John; Cooper, Camille; Cagle, Patrice; Martin, Patrick; VanDerveer, Don; Jarrett, William L.; Holder, Alvin A. "An *in vitro* study on the effect of synthesized tin(IV) complexes on glioblastoma, colorectal, and skin cancer cell lines." *Biomedical Research and Clinical Practice* **2016**. Submitted.
61. Boodram, Shivani; Bullock, Jimmie L.; Rambaran, Varma H.; Holder, Alvin A. "The Use of Inorganic Compounds for the Photodynamic Treatment of Cancer and Microbial Infections." *Recent Pat. Nanotechnol.* **2016**. Submitted.
60. Hussain, Kashif Ijaz; Usman, Muhammad; Siddiq, Mohammad; Rasool, Nasir; Nazar, Muhammad Faizan; Ahmad, Iqbal; Holder, Alvin A.; Altaf, Ataf Ali "Application of micellar enhanced ultra-filtration for the removal of sunset yellow dye from aqueous media." *J. Dispers. Sci. Technol.* **2016**, in press.  
URL: <http://dx.doi.org/10.1080/01932691.2016.1146616>
59. Sandhaus, Shayna; Taylor, Rosella; Edwards, Tiffany; Huddleston, Alexis; Wooten, Ykeysha; Venkatraman, Ramaiyer; Weber, Ralph T.; González-Sarriás, Antonio; Martin, Patrick M.; Cagle, Patrice; Tse-Dinh, Yuk-Ching; Beebe, Stephen J.; Seeram, Navindra; Holder, Alvin A. "A novel copper(II) complex identified as a potent drug against colorectal and breast cancer cells and as a poison inhibitor for human topoisomerase II $\alpha$ ." *Inorg. Chem. Commun.* **2016**, 64, 45-49.
58. Lawrence, Mark A.W.; Holder, Alvin A. "Assessing the stability of the Co(I) species of two mononuclear dichlorocobalt(II) compounds bearing 2,2'-bipyridine and trans-2-(2'-quiolyl)methylene-3-quinuclidione ligands via  $^{59}\text{Co}$  NMR spectroscopy, electrochemical, and catalyzed proton electroreduction studies." *Inorg. Chim. Acta* **2016**, 441, 157-168.
57. Abzianidze, Victoria V.; Prokofieva, Daria S.; Chisty, Leonid A.; Bolshakova, Ksenia P.; Berestetskiy, Alexander O.; Panikorovskii, Taras L.; Bogachenkov, Alexander S.; Holder, Alvin A. "Synthesis of natural *phaeosphaeride A* derivatives and an *in vitro* evaluation of their anti-cancer potential." *Bioorg. Med. Chem. Lett.* **2015**, 25, 5566-5569.
56. Lawrence, Mark A. W.; McMillen, Colin D.; Gurung, Raj K.; Celestine, Michael J.; Arca, Jessa F.; Holder, Alvin A. "Synthesis, X-ray crystallographic, electrochemical, and spectroscopic studies of bis-(1,10-phenanthroline)(2,2'-bipyridine)cobalt(III) hexafluorophosphate." *J. Chem. Crystallogr.* **2015**, 45(8), 427-433.
55. Ingram, Conrad W.; Kybakaya, Geoffrey; Bacsá, John; Mathis, Stephan; Holder, Alvin A.; Rambaran, Varma H.; Dennis, Brandon; Castaneda, Esmeralda "Complex three-dimensional lanthanide metal-organic frameworks with variable coordination spheres based on pyrazine-2,3,5,6-tetracarboxylate." *CrystEngComm* **2015**, 17, 5377-5388.
54. Celestine, Michael J.; Bullock, Jimmie L.; Boodram, Shivani; Rambaran, Varma H.; Holder, Alvin A. "Interesting properties of p-, d-, and f-block elements when coordinated

- with dipicolinic acid and its derivatives as ligands: their use as inorganic pharmaceuticals." *Rev. Inorg. Chem.* **2015**, 35(2), 57-67.
53. Kumar, Kewal; Schniper, Sarah; González-Sarriás, Antonio; Holder, Alvin A.; Sanders, Natalie; Sullivan, David; Jarrett, William L.; Davis, Krystyn; Bai, Fengwei; Seeram, Navindra P.; Kumar, Vipin "Highly potent anti-proliferative effects of a gallium(III) complex with 7-chloroquinoline thiosemicarbazone as a ligand: Synthesis, cytotoxic and antimalarial evaluation." *Eur. J. Med. Chem.* **2014**, 86, 81-86.
  52. Yuan, Hao; Newton, De'Andra L.; Seymour, Luke A.; Metz, Anja; Cropek, Donald; Holder, Alvin A.; Ofoli, Robert Y. "Characterization and functional assessment of a cobalt(III)-oxo cubane cluster water oxidation catalyst immobilized on ITO." *Catal. Commun.* **2014**, 56, 76-80.
  51. Horton, Dorothy C.; VanDerveer, Don; Krzystek, Jurek; Telsler, Joshua; Pittman, Thomas; Crans, Debbie C.; Holder, Alvin A. "Spectroscopic Characterization of *L*-ascorbic Acid-induced Reduction of Vanadium(V) Dipicolinates: Formation of V(III) and V(IV) Complexes from V(V) Dipicolinate Derivatives." *Inorg. Chim. Acta.* **2014**, 420, 112-119.
  50. Rambaran, Varma H.; Erves, Travis R.; Grover, Kristy; Balof, Shawna; Moody, LaMaryet V.; Ramsdale, Stuart E.; Seymour, Luke A.; VanDerveer, Don; Cropek, Donald M.; Weber, Ralph T.; Holder, Alvin A. "A Comparison of the Self Assembled Frameworks of Three Cobalt(II) Coordination Compounds Bearing Dipicolinic Acid and Chelidamic Acid Ligands" *J. Chem. Cryst.* **2013**, 43, 509-516.
  49. Holder, Alvin A.; Taylor, Patrick; Magnusen, Anthony R.; Moffett, Erick T.; Meyer, Kyle; Hong, Yiling; Ramsdale, Stuart E.; Gordon, Michelle; Stubbs, Javelyn; Seymour, Luke A.; Acharya, Dhiraj; Weber, Ralph T.; Smith, Paul F.; Dismukes, G. Charles; Ji, Ping; Menocal, Laura; Bai, Fengwei; Williams, Jennie L.; Cropek, Donald M.; Jarrett William L. "Synthesis, characterisation, and preliminary photodynamic therapeutic *in vitro* studies of mixed-metal binuclear ruthenium(II)-vanadium(IV) complexes." *Dalton Trans.* **2013**, 42, 11881-11899.
  48. Holder, Alvin A. "Inorganic Pharmaceuticals." *Annu. Rep. Prog. Chem., Sect. A* **2013**, 109, 317-339.
  47. Holder, Alvin A. "Chromium, molybdenum, and tungsten." *Annu. Rep. Prog. Chem., Sect. A* **2013**, 109, 119-130.
  46. Cropek, Donald M.; Metz, Anja; Müller, Astrid M.; Gray, Harry B.; Horne, Toyketa; Horton, Dorothy C.; Poluektov, Oleg; Tiede, David M.; Weber, Ralph T.; Jarrett, William L.; Phillips, Joshua D.; Holder, Alvin A. "A novel ruthenium(II)-cobaloxime supramolecular complex for photocatalytic H<sub>2</sub> evolution: Synthesis, characterisation, and mechanistic studies." *Dalton Trans.* **2012**, 41(42), 13060-13073.



45. Holder, Alvin A. "Chromium, molybdenum and tungsten." *Annu. Rep. Prog. Chem., Sect. A* **2012**, 108, 166-175.
44. Holder, Alvin A. "Inorganic Pharmaceuticals." *Annu. Rep. Prog. Chem., Sect. A* **2012**, 108, 350-358.
43. Beckford, Floyd A; Thessing, Jeffrey; Stott, Alyssa; Holder, Alvin A.; Poluektov, Oleg G.; Li, Liya; Seeram, Navindra P. "Anticancer activity and biophysical reactivity of copper complexes of 2-(benzo[d][1,3]dioxol-5-ylmethylene)-N-alkylhydrazinecarbothioamides." *Inorg. Chem. Commun.* **2012**, 15, 225-229.
42. Lewis, Nerissa A.; Liu, Fange; Seymour, Luke; Magnusen, Anthony; Erves, Travis R.; Arca, Jessa Faye; Beckford, Floyd A.; Venkatraman, Ramaiyer; González-Sarrías, Antonio; Fronczek, Frank R.; VanDerveer, Don G.; Seeram, Navindra P.; Liu, Aimin; Jarrett, William L.; Holder, Alvin A. "Synthesis, characterization and preliminary *in vitro* studies of vanadium(IV) complexes with a Schiff base and thiosemicarbazones as mixed-ligands." *Eur. J. Inorg. Chem.* **2012**, 2012, 664-677.
41. Holder, Alvin A. "Chromium, molybdenum and tungsten." *Annu. Rep. Prog. Chem., Sect. A* **2011**, 107, 163-172.
40. Holder, Alvin A. "Inorganic Pharmaceuticals." *Annu. Rep. Prog. Chem., Sect. A* **2011**, 107, 359-378.
39. Kumar, Amit; Olaivar, Jason F.; Lewis, Nerissa A.; Khade, Rahul L.; Holder, Alvin A.; Zhang, Yong; Rangachari; Vijayaraghavan "Bi-metal complex containing Pt(II) and Ru(II) inhibits A $\beta$ 42 peptide aggregation: Potential for multi-metal organometallics as anti-amyloid agents." *ACS Chem. Neurosci.* **2010**, 1, 691-701.
38. Holder, Alvin A. "Inorganic Pharmaceuticals." *Annu. Rep. Prog. Chem., Sect. A* **2010**, 106, 504-525.
37. Holder, Alvin A. "Chromium, molybdenum, and tungsten." *Annu. Rep. Prog. Chem., Sect. A* **2010**, 106, 176-185.
36. Cohen, Mitchell D.; Sisco, Maureen; Prophete, C.; Yoshida, Koturo; Chen, Lung-chi; Zelikoff, Judith T.; Smee, Jason; Holder Alvin A.; Stonehuerner, Jacqueline; Crans, Debbie C.; Ghio, Andrew J. "Effects of Metal Compounds With Distinct Physicochemical Properties on Iron Homeostasis and Anti-Bacterial Activity in the Lungs: Cr and V." *Inhalation Toxicol.* **2010**, 22(2), 169-178.
35. Gaidamauskas, Ernestas; Parker, Helen; Kashemirov, Boris A.; Holder, Alvin A.; Saejueng, Kanokkarn; McKenna, Charles E.; Crans, Debbie C. "Complexation of bisphosphonates with ytterbium(III): Application of phosphate and ATP detection assay based on Yb<sup>3+</sup>-pyrocatechol violet." *J. Inorg. Biochem.* **2009**, 103(12), 1652-1657.

34. Beckford, Floyd; Shaloski, Jr.; Michael; Leblanc, Gabriel; Thessing, Jeffrey; Lewis-Alleyne, Lesley C.; Holder, Alvin A.; Li, Liya; Seeram, Navindra P. "Microwave synthesis of mixed ligand diimine-thiosemicarbazone complexes of ruthenium(II): biophysical reactivity and cytotoxicity." *Dalton Trans.* **2009**, 10757-10764.
33. Moody, LaMaryet; Holder, Alvin A. "Inorganic Pharmaceuticals." *Annu. Rep. Prog. Chem., Sect. A* **2009**, 105, 505-524.
32. Holder, Alvin A. "Chromium, molybdenum, and tungsten." *Annu. Rep. Prog. Chem., Sect. A* **2009**, 105, 201-210.
31. Wang, Shijun; Milam, Jenifer; Ohlin, C. André; Rambaran, Varma; Clark, Eva; Ward, Woodrow; Seymour, Luke; Casey, William H.; Holder, Alvin A.; Miao, Wujian. "Electrochemical and Electrogenerated Chemiluminescent Studies of a Trinuclear Complex- $[(\text{phen})\text{Ru}(\text{dpp})_2\text{RhCl}_2]^{5+}$  and Its Interactions with Calf Thymus DNA." *Anal. Chem.* **2009**, 81, 4068-4075.
30. Brown, Ross F.; Dasgupta, Tara P.; Maragh, Paul T.; Holder, Alvin A. "Dynamic studies of transnitrosation of thiols of biological importance by the Nitrosated 4,4',4'',4'''-tetrasulfophthalocyaninecobaltate(III) anion in aqueous solution." *Biophys. Chem.* **2009**, 141(2-3), 198-202.
29. Rambaran, Varma H.; Balof, Shawna; Moody, LaMaryet; VanDerveer, Don; Holder, Alvin A. "A new and efficient synthetic route for the synthesis of 3,6-dimethylpyrazine-2,5-dicarboxylic acid hydrate: molecular structure and unique supramolecular interactions." *CrystEngComm* **2009**, 11, 580-582.
28. Gaidamauskas, Ernestas; Saejueng, Kanokkarn; Holder, Alvin A.; Bharuah, Subalita; Kashemirov, Boris A.; Crans, Debbie C.; McKenna, Charles E. "Metal complexation chemistry used for phosphate and nucleotide determination: an investigation of the  $\text{Yb}^{3+}$ -pyrocatechol violet sensor." *J. Biol. Inorg. Chem.* **2008**, 13 (8), 1291-1299.
27. Moody, LaMaryet; Holder, Alvin A. "Inorganic Pharmaceuticals." *Annu. Rep. Prog. Chem., Sect. A* **2008**, 104, 477-497.
26. Holder, Alvin A. "Chromium, molybdenum, and tungsten." *Annu. Rep. Prog. Chem., Sect. A* **2008**, 104, 167-177.
25. Moody, LaMaryet; Balof, Shawna; Smith, Shanika; Rambaran, Varma H.; VanDerveer, Don; Holder, Alvin A. "Tetra- $\mu$ -aqua-octaaquabis( $\mu$ -4-chloropyridine-2,6-dicarboxylato)-bis(4-chloropyridine-2,6-dicarboxylato)tricobalt(II)disodium(I)-bis[triaqua-bis(4-chloropyridine-2,6-dicarboxylato)cobalt(II)] hexahydrate." *Acta Crystallogr. E* **2008**, E64, m262-m263.

24. Payne, Vince C.R.; Stibrany, Robert T.; Holder, Alvin A. "Synthesis and Crystal Structure of Tris(1,10-phenanthroline)iron(II) perchlorate ethanol monosolvate hemihydrate" *Anal. Sci.: X-ray Structure Analysis Online* **2007**, 23, x169-x170.
23. Holder, Alvin A.; VanDerveer, Don "Potassium (4-carboxypyridine-2,6-dicarboxylato)dioxidovanadate(V) monohydrate." *Acta Crystallogr.E* **2007**, E63 (8), m2051-m2052.
22. Holder, Alvin A. "Chromium, molybdenum, and tungsten." *Annu. Rep. Prog. Chem., Sect. A* **2007**, 103, 159-169.
21. Crans, D.C.; Holder, A.A.; Saha, T.K.; Prakash, G.K.; Yousufuddin, M.; Kultyshev, R.; Ismail, R.; Goodman, M.F.; Borden, J.; Florián, F. "Chelation of Vanadium(V) by Difluoromethylene Bisphosphonate, a Structural Analog of Pyrophosphate." *Inorg. Chem.* **2007**, 46, 6723-6732.
20. Holder, Alvin A.; Zigler, David F.; Tarrago-Trani, Maria T.; Storrie, Brian; Brewer, Karen J. "Photobiological Impact of  $[(bpy)_2Ru(dpp)]_2RhCl_2]Cl_5$  and  $[(bpy)_2Os(dpp)]_2RhCl_2]Cl_5$  on Vero Cells, bpy = 2,2'-bipyridine, dpp = 2,3-bis(2-pyridyl)pyrazine." *Inorg. Chem.* **2007**, 46, 4760-4762.
19. Cohen, Mitchell D.; Sisco, Maureen; Prophete, Colette; Chen, Lung-Chi; Zelikoff, Judith T.; Smee, Jason J.; Holder, Alvin A.; Ghio, Andy J.; Stonehuerner, J.D.; Crans, Debbie C. "Pulmonary Immunotoxic Potentials of Metals Are Governed by Select Physicochemical Properties: Vanadium Agents." *J. Immunotoxicol.* **2007**, 4, 49-60.
18. Payne, Vince C.R.; Headley, Oliver St.C.; Stibrany, Robert T.; Maragh, Paul T.; Dasgupta, Tara P.; Newton, Anthony M.; Holder, Alvin A. "The Crystal Structure of a Bis(2,6-pyridinedicarboxylato)chromate(III) Anion with an Elaborate Network of Hydrogen Bonding and  $\pi$  Stacking." *J. Chem. Cryst.* **2007**, 37, 309-314.
17. Holder, Alvin A. "Chromium, molybdenum, and tungsten." *Annu. Rep. Prog. Chem., Sect. A* **2006**, 102, 194-220.
16. Storrie, Brian; Holder, Alvin; Brewer, Karen J. "Ru, Os, Rh mixed-metal complexes are a potential novel class of oxygen independent photosensitizers for photodynamic therapy (PDT)." *Proc. SPIE-The International Society for Optical Engineering* **2006**, 6139, 336-342.
15. Cohen, Mitchell D.; Prophete, Colette; Sisco, Maureen; Chen, Lung-Chi; Zelikoff, Judith T.; Smee, Jason J.; Holder, Alvin A.; Crans, Debbie C. "Pulmonary Immunotoxic Potentials of Metals Are Governed by Select Physicochemical Properties: Chromium Agents." *J. Immunotoxicol.* **2006**, 3, 69-81.

14. Wilkins, Patricia C.; Johnson, Michael D.; Holder, Alvin A.; Crans, Debbie C. "Reduction of Vanadium(V) by *L*-Ascorbic Acid at Low and Neutral pH: Kinetic, Mechanistic and Spectroscopic Characterization." *Inorg. Chem.* **2006**, 45, 1471-1479.
13. Bakir, Mohammed; Harewood, Gabriel .R.; Holder, Alvin; Hassan, Ishmael; Dasgupta, Tara; Maragh, Paul; Singh-Wilmot, Marvadeen "Synthesis, spectroscopic and structural analysis of 5-(4-methylphenyldiazenyl)salicylaldehyde." *Acta Crystallogr. E* **2005**, E61, o1611-o1613.
12. Holder, Alvin A. "Chromium, molybdenum, and tungsten." *Annu. Rep. Prog. Chem., Sect. A* **2005**, 101, 161-163.
11. Holder, Alvin A.; Stibrany, Robert T.; Bolotina, Nadejda; Hall, Martin; Payne, Vince C.R.; Kirschbaum, Kristin; Pinkerton, A. Alan; Newton Anthony M. "Synthesis and structure of [(nitrito-O,O')bis(di-2-pyridylamine)copper(II)] nitrite." *J. Chem. Cryst.* **2004**, 34, 383-386.
10. Holder, Alvin A.; Swavey, Shawn; Brewer, Karen J. "Design Aspects for the Development of Mixed-Metal Supramolecular Complexes Capable of Visible Light Induced Photocleavage of DNA." *Inorg. Chem.* **2004**, 43, 303-308.
9. Holder, Alvin A.; Marshall, Sophia C.; Wang, Peng George; Kwak; Chee-Hun "The Mechanism of the Decomposition of a Bronchodilator, *S*-Nitroso-*N*-acetyl-*D,L*-penicillamine (SNAP) by a Bronchoconstrictor, Aqueous Sulfite:- Detection of the *N*-nitrosohydroxylamine-*N*-sulfonate ion." *Bull. Korean Chem. Soc.* **2003**, 24, 350-356.
8. Fang, Zhenglai; Swavey, Shawn; Holder, Alvin; Winkel, Brenda; Brewer, Karen J. "DNA Binding of Mixed-Metal Supramolecular Ru,Pt Complexes." *Inorg. Chem. Commun.* **2002**, 5, 1078-1081.
7. Holder, Alvin A.; Dasgupta, Tara P. "Kinetics and Mechanism of the Reduction of the Molybdato-pentaamminecobalt(III) Ion by Aqueous Sulfite and Aqueous Potassium Hexacyanoferrate(II)." *Inorg. Chim. Acta* **2002**, 331, 279-289.
6. Holder, Alvin A.; Brown, Ross F.G.; Marshall, Sophia C.; Payne, Vince C.R.; Cozier, Maria D.; Alleyne, Walter A.; Bovell, Christopher O. "Mechanism of the oxidation of *L*-ascorbic acid by the bis(pyridine-2,6-dicarboxylate)cobaltate(III) ion in aqueous solution." *Transition Met. Chem.* **2000**, 25, 605-611.
5. Holder, Alvin A.; Dasgupta, Tara P. "Synthesis, Acid Hydrolysis and Formation of the Molybdato-pentaamminechromium(III) Ion in Aqueous Solution." *Inorg. Reaction Mech.* **1999**, 1, 177-188.
4. Holder, Alvin A.; Dasgupta, Tara P.; McFarlane, William; Rees, Nicholas H.; Enemark, John H.; Pacheco, Andy; Christensen; Kenner. "Syntheses, Characterisation, Infrared and <sup>95</sup>Mo NMR of Some Coordinated Oxo-Molybdenum(VI) Complexes." *Inorg. Chim. Acta* **1997**, 260, 225-228.

3. Holder, Alvin A.; Dasgupta, Tara P. "Mechanism of the Oxidation of *L*-Ascorbic Acid by the Molybdatopentaamminecobalt(III) Ion in Aqueous Solution." *Transition Met. Chem.* **1997**, 22, 135-140.
2. Varey, Jane E.; Lamprecht, Gert J.; Fedin, Vladimir P.; Holder, Alvin A.; Clegg, William; Elsegood, Mark R.J.; Sykes, A. Geoffrey. "Interconversion and Reactivity of Two Heterometallic Tin-Containing Cuboidal Clusters from  $[\text{Mo}_3\text{S}_4(\text{H}_2\text{O})_9]^{4+}$ : X-ray Structure of the Single Cube with an  $\text{Mo}_3\text{SnS}_4$  Core." *Inorg. Chem.* **1996**, 35, 5525-5530.
1. Holder, Alvin A.; Dasgupta, Tara P. "Synthesis, acid hydrolysis and formation of the  $[(\text{H}_3\text{N})_5\text{CoOMoO}_3]^+$  ion in aqueous solution." *J. Chem. Soc., Dalton Trans.* **1996**, 2637-2643.

#### CHAPTERS IN TEXTBOOKS

1. "NO and NO Donors" Cai, Tingwei Bill; Wang, Peng George; Holder, Alvin A. in "Nitric Oxide Donors for Pharmaceutical and Biological Applications." Wang, Peng George; Cai, Tingwei Bill, Taniguchi, Naoyuki, Eds, Wiley-VCH Verlag GmbH & Co. KgaA., Weinheim, Germany, **2005**, Chapter 1, pp. 3-31. Web page: <http://www.wiley.com/WileyCDA/WileyTitle/productCd-3527603840.html>.
2. "Do vanadium compounds drive reorganization of the plasma membrane and activation of insulin receptors with lipid rafts?" Roess, Deborah A.; Smith, Steven M. L.; Holder, Alvin A.; Baruah, Bharat; Trujillo, Alejandro M.; Gilsdorf, Daniel; Stahla, Michelle L.; Crans, Debbie C. ACS Symposium Series, **2007**, 974(Vanadium), pp. 121-134. Web page: <http://pubs.acs.org/doi/abs/10.1021/bk-2007-0974.ch010>.
3. "Dipicolinic acid, its analogues, and derivatives: aspects of their coordination chemistry." Holder, Alvin A.; Lewis-Alleyne, Lesley C.; VanDerveer, Don; Singh-Wilmot, Marvadeen. Publishers: Nova Science Publishers, Inc., **2010**. Web page: [https://www.novapublishers.com/catalog/product\\_info.php?products\\_id=24773](https://www.novapublishers.com/catalog/product_info.php?products_id=24773)
4. **Accepted for publication:** Book title: Ruthenium: Synthesis, Physicochemical Properties and Applications. Editor: Gary P. Keeler. Book chapter: "Solving some of the world's problems with ruthenium complexes: Their role in imaging and biomedical applications." Bullock Jimmie L.; Celestine, Michael J.; Holder, Alvin A. Publishers: Nova Science Publishers, Inc., **2014**. Web page: [https://www.novapublishers.com/catalog/product\\_info.php?products\\_id=50892%7B5%7D10&osCsid=](https://www.novapublishers.com/catalog/product_info.php?products_id=50892%7B5%7D10&osCsid=).
5. **Accepted for publication:** Book title: Ruthenium: Synthesis, Physicochemical Properties and Applications. Editor: Gary P. Keeler. Book chapter: "Solving some of the world's problems with ruthenium complexes: Their use in solar energy capture and production of hydrogen."

Celestine, Michael J.; Bullock, Jimmie L.; Holder, Alvin A. Publishers: Nova Science Publishers, Inc., 2014. Web page: [https://www.novapublishers.com/catalog/product\\_info.php?products\\_id=50892%7B5%7D10&osCsid=](https://www.novapublishers.com/catalog/product_info.php?products_id=50892%7B5%7D10&osCsid=).

### Submitted for publication:

1. Book title: “*Ruthenium Complexes–Photochemical and Biomedical Applications*”. Editors: Alvin A. Holder, Wesley Browne, Lothar Lilge, Mark A.W. Lawrence, and Jimmie L. Bullock. Book chapter: “Coordination chemistry of ruthenium” by Mark A.W. Lawrence, Jimmie Bullock, and Alvin A. Holder. Publishers: Wiley-VCH Verlag GmbH & Co. KGaA, 2015.
2. Book title: “*Ruthenium Complexes–Photochemical and Biomedical Applications*”. Editors: Alvin A. Holder, Wesley Browne, Lothar Lilge, Mark A.W. Lawrence, and Jimmie L. Bullock. Book chapter: “Photodynamic therapy in medicine with mixed-metal/supramolecular complexes” by Jimmie L. Bullock and Alvin A. Holder. Publishers: Wiley-VCH Verlag GmbH & Co. KGaA, 2015.
3. Book title: “*Ruthenium Complexes–Photochemical and Biomedical Applications*”. Editors: Alvin A. Holder, Wesley Browne, Lothar Lilge, Mark A.W. Lawrence, and Jimmie L. Bullock. Book chapter: “Ruthenium-containing complexes with cobalt and hydrogenases for hydrogen production” by Michael J. Celestine, Raj Gurung, and Alvin A. Holder. Publishers: Wiley-VCH Verlag GmbH & Co. KGaA, 2015.

### PUBLISHED TEXTBOOKS:

1. “Dipicolinic acid, its analogues, and derivatives: aspects of their coordination chemistry.” Holder, Alvin A.; Lewis-Alleyne, Lesley C.; VanDerveer, Don; Singh-Wilmot, Marvadeen. Publishers: Nova Science Publishers, Inc., 2011. Web page: [https://www.novapublishers.com/catalog/product\\_info.php?products\\_id=24773](https://www.novapublishers.com/catalog/product_info.php?products_id=24773)
2. Molybdenum: Its Biological and Coordination Chemistry and Industrial Applications. Editor: Alvin A. Holder.  
Chapter 01: Dedications and memories of two icons of Moly, Holder, Alvin A.  
Chapter 02: Molybdenum (*Molybdaenum*): Its history, occurrence, brief inorganic and bioinorganic chemistry, Broome, J. Hugh; Ramsdale, Stuart E.; Holder, Alvin A.; Dasgupta, Tara P.; Hinton, Daniel; Davis, Aaron; Gresham, Amber W.; Shattles, Michael; Wusimanjiang, Yiliyasi; Evans, Bradley; Spangler, Joseph; Holcomb, Mark; Dobbs, Tiffany; Burrell, Jo T.; Arca, Jessa Faye; Rogers, Mallory; Satcher; Nathaniel. Publishers: Nova Science Publishers, Inc., 2013. Web page: [https://www.novapublishers.com/catalog/product\\_info.php?products\\_id=38238](https://www.novapublishers.com/catalog/product_info.php?products_id=38238)

**CONFERENCE PRESENTATIONS**

1. 205<sup>th</sup> Spring Meeting of the American Chemical Society, Denver, Colorado, March 28-April 2, 1993. Title: "Oxidation of *L*-ascorbic acid by the molybdatopentaamminecobalt(III) ion in aqueous solution." Authors: Alvin A. Holder and Tara P. Dasgupta.
2. 11<sup>th</sup> Caribbean Conference of Chemistry and Chemical Engineering, St. Augustine, Trinidad and Tobago, March 6-10, 1995. Title: "Kinetics and Mechanism of the Acid Catalysed Hydrolysis of the molybdatopentaamminecobalt(III) ion in aqueous solution." Authors: Alvin A. Holder and Tara P. Dasgupta.
3. 4<sup>th</sup> International Congress on Chemistry/13<sup>th</sup> Caribbean Conference on Chemistry and Chemical Engineering, Havana International Conference Center, Cuba, April 16-20, 2001. Title: "The use of Tunicates as Indicators of Water Quality along the North and West Coasts of Barbados." Authors: Harold A.A. Gibbs, Maurice A. Campbell, and Alvin A. Holder.
4. 222<sup>nd</sup> American Chemical Society National Meeting, Chicago, Illinois, August 26-30, 2001. Title: "Kinetics and Mechanism of the Reaction of *S*-nitroso-*N*-acetyl-*D,L*-penicillamine and Aqueous Sulfite." Authors: Sophia Cheery-Ann Marshall, Alvin A. Holder, and D. Lyn H. Williams.
5. The 23<sup>rd</sup> Annual American Cancer Society, Virginia Division Seminar on Basic and Clinical Cancer Research, Jordan Hall Conference Center, University of Virginia, Charlottesville, Virginia, March 22, 2003. Title: "Supramolecular Complexes as a New Structural Motif for the Development of a Novel Class of Photodynamic Therapy Agents." Authors: Alvin A. Holder, Shawn M. Swavey, R. Lee Williams, Maria Teresa Tarrago-Trani, Brian Storrie, and Karen J. Brewer.
6. 225<sup>th</sup> American Chemical Society National Meeting, New Orleans, Louisiana, March 23-27, 2003. Title: "Mixed-metal supramolecular complexes as DNA photocleavage and photodynamic therapy agents." Authors: Karen J. Brewer, Alvin A. Holder, and Shawn M. Swavey.
7. 225<sup>th</sup> American Chemical Society National Meeting, New Orleans, Louisiana, March 23-27, 2003. Title: "Mixed-metal supramolecular complexes as photochemical molecular devices and DNA binding and photocleavage agents." Authors: Karen J. Brewer, Alvin A. Holder, R. Lee Williams, Shawn M. Swavey, and Mark Elvington.
8. 226<sup>th</sup> American Chemical Society National Meeting, New York, New York, September 7-11, 2003. Title: "Syntheses and Characterisation of Some Oxovanadium(V) Complexes Involving Salicylaldimine-Based Ligands—Attempts To Prepare Insulin Mimicking Compounds." Authors: Gabriel R. Harewood, T. P. Dasgupta, Alvin A. Holder, Xiaoping Tang, William McFarlane, Paul T. Maragh, and Donovan A. Dixon.

9. 226<sup>th</sup> American Chemical Society National Meeting, New York, New York, September 7-11, 2003. Title: "Syntheses and Characterisation of Some Novel Tetranuclear Copper(II) Complexes Derived From Salicylaldimine-Based Ligands." Authors: Gabriel R. Harewood, T. P. Dasgupta, Alvin A. Holder, Ishmael Hassan, Xiaoping Tang, Paul T. Maragh, Donovan A. Dixon, and Marvadeen A. Singh-Wilmot.
10. 226<sup>th</sup> American Chemical Society National Meeting, New York, New York, September 7-11, 2003. Title: "Photochemical Properties of Rhodium(III) Centered Triads of Ruthenium(II) and Osmium(II): Uses as Photochemical Molecular Devices and DNA Photocleavage Agents." Authors: Karen J. Brewer, Mark Elvington, Alvin A. Holder, and Shawn M. Swavey.
11. 55<sup>th</sup> Southeast Regional Meeting of the American Chemical Society, Atlanta, Georgia, November 16-19, 2003. Title: "Mixed-metal supramolecular complexes and their light activated interactions with biological targets." Authors: R. Williams, Alvin Holder, and Karen Brewer.
12. 55<sup>th</sup> Southeast Regional Meeting of the American Chemical Society, Atlanta, Georgia, November 16-19, 2003. Title: "Supramolecular mixed-metal complexes of ruthenium(II) and rhodium(III)." Authors: Karen Brewer, Mark Elvington, Shawn Swavey, and Alvin Holder.
13. 227<sup>th</sup> American Chemical Society National Meeting, Anaheim, California, March 28-April 1, 2004. Title: "Photochemical reactivity of the MMCT states of rhodium(III) centered triads of ruthenium(II) and osmium(II): From photoinitiated electron collection to photodynamic therapy agents." Authors: Karen J. Brewer, Alvin A. Holder, Mark Elvington, and Julie Davenport.
14. 227<sup>th</sup> American Chemical Society National Meeting, Anaheim, California, March 28-April 1, 2004. Title: "Comparison of a series of phenanthrolinequinone thiosemicarbazone compounds." Authors: Richard A. Lawson, Richard T. Mayes, Alvin A. Holder, and Edward C. Lisic.
15. 228<sup>th</sup> American Chemical Society National Meeting, Philadelphia, Pennsylvania, August 22-26, 2004. Title: "Light induced DNA cleavage and photodynamic therapy properties of MMCT states of rhodium centered supramolecular complexes." Authors: Karen J. Brewer, Alvin A. Holder, Mark Elvington, R. Lee Williams, Jerita Dubash, and Brenda S.J. Winkel.
16. The Fourth International Symposium on Chemistry and Biological Chemistry of Vanadium, September 3-5, 2004, Szeged, Hungary. Title: "A Reinvestigation of the Ascorbic Acid Reduction of Vanadium(V)." Authors: Patricia C. Wilkins, Michael D. Johnson, Alvin A. Holder, and Debbie C. Crans.
17. 229<sup>th</sup> American Chemical Society National Meeting, San Diego, California, March 13-17, 2005. Title: "Reinvestigation of the reduction of aqueous vanadium(V) by ascorbic



- acid: Evidence for both inner and outer sphere pathways.” Authors: Michael D. Johnson, Patricia C. Wilkins, Debbie C. Crans, and Alvin A. Holder.
18. 229<sup>th</sup> American Chemical Society National Meeting, San Diego, California, March 13-17, 2005. Title: “An investigative study involving the interaction between the vanadyl cation and NADH in aqueous solution.” Authors: Debbie C. Crans, Barbara K. Hughes, and Alvin A. Holder.
  19. 47<sup>th</sup> Rocky Mountain Conference on Analytical Chemistry, Grand Hyatt Denver, Denver, Colorado, July 31-August 4, 2005. Title: “An EPR Study of Reactions of Aqueous Vanadium with NADH.” Authors: Alvin A. Holder, Barbara K. Hughes, and Debbie C. Crans.
  20. 230<sup>th</sup> American Chemical Society National Meeting, Washington, D.C., August 28-September 1, 2005. Title: “AEI: Reactions of Aqueous Vanadium with NADH.” Authors: Alvin A. Holder, Barbara K. Hughes, and Debbie C. Crans.
  21. 230<sup>th</sup> American Chemical Society National Meeting, Washington, D.C., August 28-September 1, 2005. Title: “The dynamic interaction of the tetrasodium salt of cobalt(II)-4,4',4'',4'''-tetrasulfophthalocyanine (CoTSPc) and its nitrosated analogue, with various S-nitrosothiols and thiols, respectively.” Authors: Ross Brown, Tara P. Dasgupta, Paul T. Maragh, and Alvin A. Holder.
  22. 230<sup>th</sup> American Chemical Society National Meeting, Washington, D.C., August 28-September 1, 2005. Title: “Syntheses and characterizations of some transition metal complexes containing 2,6-pyridinedicarboxylic acid and various amines.” Authors: Vince C.R. Payne, Anthony M. Newton, Tara P. Dasgupta, Paul T. Maragh, Marvadeen A. Singh-Wilmot, Robert T. Stibrany, Kristin, Kirschbaum, Mark R.J. Elsegood, and Alvin A. Holder.
  23. 231<sup>st</sup> American Chemical Society National Meeting, Atlanta, Georgia, March 26-30, 2006. Title: “Characterization of a soluble lead(II)-dipicolinate complex and its effect as a pulmonary immunomodulatory agent.” Authors: Shelly Hay, Alvin A. Holder, Debbie C. Crans, Colette Prophete, Maureen Sisco, and Mitchell D. Cohen.
  24. 231<sup>st</sup> American Chemical Society National Meeting, Atlanta, Georgia, March 26-30, 2006. Title: “Interactions of NADH with aqueous vanadium(IV).” Authors: Barbara K. Hughes, Alvin A. Holder, and Debbie C. Crans.
  25. 232<sup>nd</sup> American Chemical Society National Meeting, San Francisco, California, September 10-14, 2006. Title: “Kinetics of NADH binding to aqueous vanadium(IV).” Authors: Jeremy Lenhardt, Alvin A. Holder, Barbara K. Hughes, Michael D. Johnson, and Debbie C. Crans.
  26. 232<sup>nd</sup> American Chemical Society National Meeting, San Francisco, California, September 10-14, 2006. Title: “Lipophilic vanadium compounds drive translocation of

- insulin receptors into rafts.” Authors: Deborah A. Roess, Steven M.L. Smith, Alvin A. Holder, and Debbie C. Crans.
27. 232<sup>nd</sup> American Chemical Society National Meeting, San Francisco, California, September 10-14, 2006. Title: “Role of physicochemical properties in pulmonary immunotoxic potentials of vanadium compounds.” Authors: Alvin A. Holder, Colette Prophete, Maureen Sisco, Lung-Chi Chen, Judith T. Zelikoff, Jason J. Smee, Debbie C. Crans, and Mitchell D. Cohen.
  28. 232<sup>nd</sup> American Chemical Society National Meeting, San Francisco, California, September 10-14, 2006. Title: “Synthesis and characterization of some Schiff Base complexes of vanadium(V)-A search for an effective insulin-enhancing compound.” Authors: Alvin A. Holder, Gabriel R. Harewood, Kerry-Ann Green, Paul T. Maragh, and Tara P. Dasgupta.
  29. Mississippi Academy of Sciences Meeting, Mississippi State University, Starkville, MS 39762, February 21-23, 2007. Title: “Synthesis and characterization of some Schiff base complexes of vanadium(V)–Signs of some exciting effective insulin-like properties.” Authors: Alvin A. Holder, Gabriel R. Harewood, Kerry-Ann Green, Paul T. Maragh, and Tara P. Dasgupta.
  30. Mississippi Academy of Sciences Meeting, Mississippi State University, Starkville, MS 39762, February 21-23, 2007. Title: “An Electrochemical Study of a Schiff Base Complex of Vanadium(V) and its Interactions with Calf Thymus DNA in DMSO-A Search for New Anti-cancer Agent.” Authors: Suman Parajuli, Gabriel R. Harewood, Kerry-Ann Green, Paul T. Maragh, Tara P. Dasgupta, Wujian Maio, and Alvin A. Holder.
  31. 41<sup>st</sup> IUPAC World Chemistry Congress, Turin, Italy, August 05-10, 2007. Title: “Kinetic Studies of Transfer of Nitric Oxide from Nitrosated 4,4’,4’’,4’’’-Tetrasulfophthalocyaninecobaltate(II) (CoTSPC) Complex Anion with Various Thiols of Biological Importance.” Authors: Tara Dasgupta, Ross Brown, Paul Maragh, and Alvin Holder.
  32. Mississippi Academy of Sciences Meeting, Whispering Woods Hotel and Conference Center, Olive Branch, MS 38654, February 20-22, 2008. Title: “Syntheses and characterizations of some transition metal complexes containing analogues of 2,6-pyridinedicarboxylic acid.” Authors: Shawna Balof, Lamaryet Moody, Shanika Smith, Varma H. Rambaran, Don VanDerveer, and Alvin A. Holder.
  33. Mississippi Academy of Sciences Meeting, Whispering Woods Hotel and Conference Center, Olive Branch, MS 38654, February 20-22, 2008. Title: “Synthesis and characterization of some fluorine-containing complexes of ruthenium(II): use of <sup>19</sup>F NMR in studying DNA interactions.” Authors: Lamaryet Moody, Marauo Davis, Varma H. Rambaran, Luke Seymour, Woodrow Ward, Eva Clark, Don VanDerveer, Suman Parajuli, William Jarrett, Wujian Miao, and Alvin A. Holder.

34. PITTCON 2008, 1200-16P, March 2-7, 2008, New Orleans, LA. Title: "Electrochemical and Electrogenerated Chemiluminescent Studies of  $[(\text{phen})_2\text{Ru}(\text{dpp})_2\text{RhCl}_2]^{5+}$  and Its Interactions with DNA." Authors: Wujian Miao, Jennifer Milam, Shijun Wang, Varma H. Rambaran, Eva Clark, Woodward Ward, Luke Seymour, and Alvin A. Holder.
35. The 35<sup>th</sup> Annual Conference of The National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, March 16-21, 2008, Philadelphia, PA.. Title: "Synthesis and Characterization of Some Fluorine-containing Complexes of Ruthenium(II)/platinum(II): Use of  $^{19}\text{F}$  NMR in Studying DNA Interactions." Authors: LaMaryet Moody, Robert Johnson, Luke Seymour, Varma H. Rambaran, Woodrow Ward, Eva Clark, Don VanDerveer, William Jarrett, and Alvin A. Holder
36. 235<sup>th</sup> ACS National Meeting, New Orleans, LA, April 6-10, 2008. Title: "Use of  $^{19}\text{F}$  NMR in studying DNA interactions with ruthenium(II) complexes." Authors: Mauro Davis, Luke Seymour, Varma H. Rambaran, Woodward Ward, Eva Clark, LaMaryet Moody, Suman Parajuli, Don G. VanDerveer, William L. Jarrett, Wujian Miao, and Alvin A. Holder.
37. 235<sup>th</sup> ACS National Meeting, New Orleans, LA, April 6-10, 2008. Title: "Use of  $^{19}\text{F}$  NMR in studying DNA interactions with platinum(II) complexes." Authors: Robert Johnson, Subir Kapuria, Don G. VanDerveer, William L. Jarrett, and Alvin A. Holder.
38. 235<sup>th</sup> ACS National Meeting, New Orleans, LA, April 6-10, 2008. Title: "Synthesis and characterization of some fluorine-containing complexes of ruthenium(II): Use of  $^{19}\text{F}$  NMR in studying DNA interactions." Authors: Mauro Davis, Luke Seymour, Varma H. Rambaran, Woodward Ward, Eva Clark, LaMaryet Moody, Don. G. VanDerveer, Suman Parajuli, William L. Jarrett, Wujian Miao, and Alvin A. Holder.
39. 235<sup>th</sup> ACS National Meeting, New Orleans, LA, April 6-10, 2008. Title: "Synthesis and characterization of some fluorine-containing complexes of platinum(II): Use of  $^{19}\text{F}$  NMR in studying DNA interactions." Authors: Robert Johnson, Subir Kapuria, Don G. VanDerveer, William L. Jarrett, and Alvin A. Holder.
40. 235<sup>th</sup> ACS National Meeting, New Orleans, LA, April 6-10, 2008. Title: "Syntheses and characterizations of some transition metal complexes containing analogs of 2,6-pyridinedicarboxylic acid." Authors: Shawna Balof, LaMaryet Moody, Shanika Smith, Varma H. Rambaran, Donald G. VanDerveer, and Alvin A. Holder.
41. Annual Biomedical Research Conference for Minority Students, Orlando, Florida, November 5-8, 2008. Title: "DNA studies and *in vivo* inhibition of *E. coli* growth by several ruthenium(II)-containing supramolecular complexes." Authors: Jennifer Vital, Alvin A. Holder, Camille Cooper, Barbara Johnson, Kristy Grover, Robert Johnson, Luke Seymour, Marajo Davis, Lamaryet Moody, Floyd A. Beckford, Navindra Seeram, Julian G. Hurdle, and Don VanDerveer.

42. Annual Biomedical Research Conference for Minority Students, Orlando, Florida, November 5-8, 2008. Title: "Synthesis and characterization of some Schiff base complexes of vanadium(IV) and vanadium(V)–Some exciting effective insulin-like compounds. Authors: Whitney L'Agnone, Alvin A. Holder, Toyketa Horne, and John S. Mendy.
43. 237<sup>th</sup> ACS National Meeting, Salt Lake City, UT, March 22-26, 2009. Title: "Complexation of bisphosphonates with ytterbium(III): Application of Yb-pyrocatechol violet complex for solute sensing." Authors: Ernestas Gaidamauskas, Kanokkarn Saejueng, Alvin A. Holder, Subalita Baruah, Helen L. Parker Boris A. Kashemirov, Debbie C. Crans, and Charles E. McKenna.
44. Mississippi Academy of Sciences Meeting, Lake Terrace Convention Center, Hattiesburg, MS 39401, February 10-12, 2010. Title: "Electrochemical and Electrogenenerated Chemiluminescent Studies of A Ruthenium(II) Complex [Ru(pbt)<sub>2</sub>(dpp)](PF<sub>6</sub>)<sub>2</sub>." Authors: Erendra Manandhar, William Seawell, Erick Moffett, Suman Parajuli, Shijun Wang, Alvin A. Holder, and Wujian Miao.
45. Mississippi Academy of Sciences Meeting, Lake Terrace Convention Center, Hattiesburg, MS 39401, February 10-12, 2010. Title: "Synthesis, Characterization, and Electrocatalytic Activity of Novel Ruthenium(II)-containing Hydrogen Producing Photocatalysts." Authors: Nerissa Lewis, Toyketa Horne, Dorothy Horton, Jason Olaivar, Alvin A. Holder, and David Tiede.
46. Mississippi Academy of Sciences Meeting, The University of Southern Mississippi, Hattiesburg, MS 39406, February 17-18, 2011. Title: "Novel chemotherapeutic agents of vanadium(IV) with thiosemicarbazones as ligands: Structural aspects and *in vitro* studies". Authors: Nerissa A. Lewis, Fang Liu, Tony Magnusen, Travis Erves, Faye Arca, Floyd A. Beckford, Ramaiyer Venkatraman, Antonio Gonzalez Sarrias, Liya Li, Suman Parajuli, Navindra Seeram, Aimin Liu, William Jarrett, Wujian Miao, and Alvin A. Holder.
47. Mississippi Academy of Sciences Meeting, The University of Southern Mississippi, Hattiesburg, MS 39406, February 17-18, 2011. Title: "Electrochemical and Spectroscopic Studies of Binuclear and Tetranuclear Ruthenium(II)-containing Complexes". Authors: LaCrissia J. Bridges, Suman Parajuli, Nerissa A. Lewis, Alvin A. Holder, and Wujian Miao.
48. PITTCON 2011, 440-35P, March 13-18, 2011, Atlanta, GA, U.S.A. Title: "Electrochemical and Electrogenenerated Chemiluminescent Studies of Ruthenium(II) Complex [Ru(pbt)<sub>2</sub>(dpp)](PF<sub>6</sub>)<sub>2</sub>." Authors: Erendra Manandhar, Alvin Holder, Erick Moffett, Shijun Wang, Suman Parajuli, William Seawell, and Wujian Miao.
49. 241<sup>st</sup> ACS National Meeting & Exposition, March 27-31, 2011, Anaheim, California. Title: "Novel chemotherapeutic agents of vanadium(IV) with thiosemithiocarbazones and Schiff bases as ligands: Structural and *in vitro* studies." Authors: Nerissa A. Lewis, Fang

- Liu, Tony Magnusen, Travis Erves, Jessa Faye Arca, Floyd A. Beckford, Ramaiyer Venkatraman, Antonio Gonzalez Sarrias, Liya Li, Suman Parajuli, Navindra Seeram, Aimin Liu, William Jarrett, Wujian Miao, and Alvin A. Holder.
50. The Mississippi INBRE Annual Research Symposium, April 30, 2011, Polymer Science Research Building, The University of Southern Mississippi, Hattiesburg, MS 39406. Title: "Chemotherapy and photodynamic therapy with non-transition and transition metal complexes". Author: Alvin A. Holder.
  51. The SE Regional IDeA Meeting, September 23-24, 2011, Hilton Riverside New Orleans, New Orleans, Louisiana. Abstract number: CN35. Title: "Novel Chemotherapeutic Agents of Copper(II) with Thiosemithiocarbazonates as Ligands: Structural and *in vitro* Studies." Authors: Rosella Taylor, Rodney Ballard, Antonio González-Sarrias, Tiffany Edwards, Navindra Seeram, Floyd A. Beckford, and Alvin A. Holder.
  52. Annual Biomedical Research Conference for Minority Students, St. Louis, Missouri, November 9-12, 2011. Title: "A Novel Chemotherapeutic Agent of Copper(II) With a Thiosemicarbazone as Ligand: Structural and *in vitro* Studies." Authors: Justin R. Moreira, Alvin A. Holder, Rosella M. Taylor, Rodney Ballard, Antonio González-Sarrias, Tiffany B. Edwards, Navindra Seeram, and Floyd A. Beckford.
  53. **An Invited Plenary Talk:** Mississippi Academy of Sciences Meeting, Lake Terrace Convention Center, Hattiesburg, MS 39401, February 23-24, 2012. Title: "Inorganic Pharmaceuticals: A concise perspective of my research at Southern Miss". Author: Alvin A. Holder.
  54. Mississippi Academy of Sciences Meeting, Lake Terrace Convention Center, Hattiesburg, MS 39401, February 23-24, 2012. Title: "Novel Chemotherapeutic Agents of Copper(II) with Thiosemicarbazones as Ligands: Structural and *in vitro* studies". Authors: Rosella Taylor, Rodney Ballard, Antonio Sarrias, Tiffany Edwards, Navindra Seeram, Floyd Beckford, and Alvin Holder.
  55. Mississippi Academy of Sciences Meeting, Lake Terrace Convention Center, Hattiesburg, MS 39401, February 23-24, 2012. Title: "The Effects of Tin and Germanium on Cancer Cell Lines". Authors: John Durant, Alvin Holder, Camille Cooper, and Joshua Phillips
  56. 243<sup>rd</sup> ACS National Meeting & Exposition, March 25-29, 2012, San Diego, California. Title: "Synthesis, characterization, and CO<sub>2</sub> sequestering studies of cobalt(III)-containing metallomesogens." Authors: Dorothy C. Horton, Alvin A. Holder, Álvaro Díez, and Duncan W. Bruce.
  57. The Mississippi INBRE Annual Research Symposium, March 31, 2012, The Thad Cochran Center, The University of Southern Mississippi, Hattiesburg, MS 39406. Title: "A concise perspective of my research at Southern Miss with the use of natural- and unnatural-containing products as ligands". Author: Alvin A. Holder.

58. The Mississippi INBRE Annual Research Symposium, March 31, 2012, The Thad Cochran Center, The University of Southern Mississippi, Hattiesburg, MS 39406. Title: Development of mononuclear cobalt(III)-containing complexes as potential chemotherapeutic agents.” Authors: Jessa Faye Arca, Antonio González-Sarrías, Floyd A. Beckford, Navindra P. Seeram, and Alvin A. Holder.
59. NIH, NIGMS Fourth Biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE), The Omni Shoreham Hotel, Washington, DC June 25–27, 2012. Title: “Novel anti-cancer inorganic pharmaceuticals derived from un-natural and natural products.” Author: Alvin A. Holder.
60. NIH, NIGMS Fourth Biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE), The Omni Shoreham Hotel Washington, DC June 25–27, 2012. Title: “Biomedical applications of cobalt(III)-containing complexes: structural and *in vitro* studies.” Authors: Jessa Faye Arca, Antonio González-Sarrias, Floyd A. Beckford, Navindra P. Seeram, and Alvin A. Holder.
61. The 8<sup>th</sup> International Symposium on the Chemistry, Biochemistry and Toxicology of Vanadium, August 15-18, 2012, Washington, DC, U.S.A. Title: “Development of binuclear mixed-metal ruthenium(II)-vanadium(IV) complexes as potential photodynamic therapeutic agents.” Authors: Patrick Taylor, Anthony Magnusen, Fange Liu, Kyle Meyer, Aimin Liu, Yiling Hong, and Alvin A. Holder.
62. Inorganic Photophysics and Photochemistry- Fundamentals and Applications: Dalton Discussion 13, September 10-12, 2012, University of Sheffield, U.K. Title: “A novel ruthenium(II)-cobaloxime supramolecular complex for photocatalytic H<sub>2</sub> evolution: Synthesis, characterisation, and mechanistic studies.” Authors: Donald M. Cropek, Anja Metz, Astrid M. Müller, Harry B. Gray, Toyketa Horne, Dorothy C. Horton, Oleg Poluektov, David M. Tiede, Ralph T. Weber, William L. Jarrett, Joshua D. Phillips, Alvin A. Holder.
63. Annual Biomedical Research Conference for Minority Students, San Jose, California, November 7-10, 2012. Title: “Cobalt(III) as a Chemotherapeutic Agent: Its Inhibitory Effect on the Growth of HCT116 Colon Cancer Cells.” Authors: Laura A. Menocal, Jessa F. Arca, Alvin A. Holder, and Jennie Williams.
64. 13<sup>th</sup> Research Centers in Minority Institutions (RCMI) International Symposium on Health Disparities, San Juan, Puerto Rico, December 10-13, 2012. Title: “Inorganic Chemotherapeutics with Natural and Un-natural Products.” Authors: Alvin A. Holder, Antonio González-Sarrias, Rosella Taylor, Sarah Schniper, Laura Menocal, Floyd A. Beckford, Navindra P. Seeram, and Jennie L. Williams.
65. The Mississippi INBRE Annual Research Symposium, February 23, 2013, Trent Lott National Center, The University of Southern Mississippi, Hattiesburg, MS 39406. Title: “*In Vitro* Studies Involving Binuclear Mixed-Metal Ruthenium(II)-Vanadium(IV)

- Complexes As Potential Photodynamic Therapeutic Agents.” Abstract # P45. Authors: Alvin Holder, Patrick Taylor, Anthony R. Magnusen, Kyle Meyer, Yiling Hong, Stuart E. Ramsdale, Michelle Gordon, Javelyn Stubbs, Luke Seymour, Brandon Dreschler, Laura Menocal, Ralph T. Weber, Paul F. Smith, C. Charles Dismukes, Fengwei Bai, Jennie L. Williams, Anja Metz, and Donald M. Cropek.
66. The Mississippi INBRE Annual Research Symposium, February 23, 2013, Trent Lott National Center, The University of Southern Mississippi, Hattiesburg, MS 39406. Title: “Highly Potent Anti-Proliferative and Anti-malarial Effects of A Gallium(III) Compound with 7-Chloroquinoline Thiosemicarbazone As A Ligand.” Abstract # P50. Authors: Alexis T. Huddleston, Kewal Kumar, Rosella M. Taylor, Sarah Schniper, Stuart E. Ramsdale, Tiffany Edwards, Antonio González-Sarrias, Alvin A. Holder, Natalie Sanders, David Sullivan, William L. Jarrett, Brandon Dreschler, Krystyn Davis, Fengwei Bai, Navindra P. Seeram, and Vipin Kumar.
67. The Mississippi INBRE Annual Research Symposium, February 23, 2013, Trent Lott National Center, The University of Southern Mississippi, Hattiesburg, MS 39406. Title: “Use Of Caribbean Natural Products In Fighting Colorectal Cancer at Southern Miss.” Abstract # P63. Authors: Amlan Mitra and Alvin A. Holder.
68. 245<sup>th</sup> ACS National Meeting & Exposition, April 7-11, 2013, New Orleans, Louisiana. Abstract # 346. Title; “Iodido{4-phenyl-1-[1-(1,3-thiazol-2-yl)-N]ethylidene]thiosemicarbazidato-2*N*,*S*} {4-phenyl-1-[1-(1,3-thiazol-2-yl)ethylidene]-thiosemicarbazide-*S*}cadmium(II).” Authors: Ruddock Cleopatra, Ramaiyer Venkatraman, Wren M. Lisa, Samuel S.R. Dasary, Zikri Arslan, Alvin A. Holder, and Frank R. Fronczek.
69. 245<sup>th</sup> ACS National Meeting & Exposition, April 7-11, 2013, New Orleans, Louisiana. Abstract # 356, Title: “Synthesis, crystal structure of Zn(II) complex of 2-acetylthiazole *N*-phenyl-3-thiosemicarbazone.” Authors: Ruddock Kleopatra, Ramaiyer Venkatraman, Samuel S.R. Dasary, Zikri Arslan, Alvin A. Holder, and Frank R. Fronczek.
70. 245<sup>th</sup> ACS National Meeting & Exposition, April 7-11, 2013, New Orleans, Louisiana. Abstract # 1427. Title: “Photocatalytic hydrogen production with mixed-metal binuclear ruthenium(II)-cobalt(II) complexes: What a difference bridging and terminal ligands can make.” Authors: Alvin Holder, Apparao Draksharapu, Jason Olaivar, Erick Moffett, De’ Andra Newton, Luke Seymour, Stuart Ramsdale, Donald Cropek, Anja Metz, Ralph Weber, Wesley Browne, and William Jarrett.
71. Annual Biomedical Research Conference for Minority Students, Nashville, Tennessee, November 13-16, 2013. Title: “Electrochemical and Spectrophotometric Studies of Conjugated Polymers.” Authors: Altramiese Tippie, Tiera Corey, Alvin A. Holder, Abram Ledbetter, Stephen Feldberg, and John R. Miller.
72. Annual Biomedical Research Conference for Minority Students, Nashville, Tennessee, November 13-16, 2013. Title: “The Effects of phen<sub>2</sub>DTT and VOphen as

- Chemotherapeutic agents.” Authors: Laura Menocal, Alvin A. Holder, and Jennie L. Williams.
73. Gordon Research Conferences: Electrochemistry and Gordon Research Seminar, Ventura, California, January 04-10, 2014. Title: “Electrochemical studies of thiosemicarbazones and vanadium(IV)- and zinc-containing complexes in DMSO.” Authors: Jimmie L. Bullock, Nerissa A. Lewis, and Alvin A. Holder.
74. Gordon Research Conferences: Electrochemistry and Gordon Research Seminar, Ventura, California, January 04-10, 2014. Title: “Electrochemical and radiolytic studies of cobalt(II)- and ruthenium(II)-containing complexes in acetonitrile.” Authors: Michael Celestine, Abram Ledbetter, Tiera Corey, Altramiese Tippie, James F. Wishart, John R. Miller, and Alvin A. Holder.
75. 247<sup>th</sup> ACS National Meeting & Exposition, March 16-20, 2014, Dallas, Texas. Abstract # 824. Interesting pulse radiolytic studies on cobalt(II)- and ruthenium(II)-containing complexes in acetonitrile. Authors: Michael Celestine, Abram Ledbetter, Tiera Corey, Altramiese Tippie, James F. Wishart, John R. Miller, and Alvin A. Holder.
76. Annual Biomedical Research Conference for Minority Students, San Antonio, Texas, November 12-15, 2014. Title: “Spectroscopic Elucidation of the Equilibria Involving Pyridine and Its Analogues with Cobaloximes in Various Solvents.” Authors: Lorne S. Joseph, Michael J. Celestine, Jimmie L. Bullock, and Alvin A. Holder.
77. Annual Biomedical Research Conference for Minority Students, San Antonio, Texas, November 12-15, 2014. Title: “Synthesis of Potential Cobalt(II/III)-Containing Catalysts for the Production of Hydrogen from Water.” Authors: Deisy L. Esquivel, Michael Celestine, Jimmie Bullock, and Alvin A. Holder.
78. 2015 Emerging Researchers National (ERN) Conference in STEM, the Washington Hilton in Washington, D.C., on February 19-21, 2015. Title: “Spectroscopic Elucidation of the Equilibria Involving Pyridine and Its Analogues with Cobaloximes in Various Solvents.” Authors: Lorne S. Joseph, Michael J. Celestine, Jimmie L. Bullock, and Alvin A. Holder.
79. Annual Biomedical Research Conference for Minority Students, Seattle, Washington, November 11-14, 2015. Title: “Mechanism of the oxidation of a cobaloxime by bromine and sodium hypochlorite in aqueous media.” Authors: Lorne S. Joseph, Michael Celestine, and Alvin A. Holder.

#### **AN INVITED TALK AT A WORKSHOP**

Interdisciplinary Consortium for Research and Educational Access in Science and Engineering (INCREASE) Workshop, July 28-30, 2014, Brookhaven National Laboratory, Upton, New York. Title: “CAREER: Ruthenium(II)-cobalt(II)/cobalt(III) mixed-metal complexes for photocatalytic hydrogen production from water.” Author: Alvin A. Holder.



**INVITED CONFERENCE PANEL**

The State of Environmental Justice in America 2011 Conference: Building the Clean Energy Economy with Equity, Washington Marriott at Metro Center, 775 12<sup>th</sup> Street NW, Washington, DC 20005, April 27-29, 2011. Title: “Historically Black Colleges and Universities Alternative and Renewable Energy Interests and Capabilities; Potential Collaborators Panel.”

**INVITED SEMINAR PRESENTATIONS**

02/03: North Carolina Central University, North Carolina Central University, 1801 Fayetteville Street, Durham, NC 27707, U.S.A. Title: “Ligand and Induced Redox Processes-The Molybdenum, Chalcogen, and Nitric Oxide Story.”

03/03: Department of Chemistry, Jackson State University, P.O. Box 17910, Jackson, MS

39217, U.S.A. Title: “A Unique Induced Electron Transfer Process Involving NO<sub>x</sub> Species.” 04/03: Department of Chemistry, Hampton University, Hampton, VA 23668, U.S.A. Title:

“Reactivity of some Sulfur-Containing Species with NO<sub>x</sub> Compounds.”

12/05: Department of Chemistry and Biochemistry, Northern Arizona University, Flagstaff, AZ 86011, U.S.A. Title: “Synthesis, Characterization, and Bioinorganic Chemistry of Transition Metal Complexes. Their Use as Potential Photodynamic Therapeutic Agents.”

02/06: Department of Chemistry and Biochemistry, The University of Southern Mississippi, Hattiesburg, MS 39406, U.S.A. Title: “Bioinorganic Chemistry of Some Transition Metal Complexes.”

03/09/07: Department of Chemistry, Jackson State University, Jackson, MS 39217, U.S.A. Title: “The Photodynamic Therapeutic Impact of  $[\{(bpy)_2Ru(dpp)\}_2RhCl_2]Cl_5$  and  $\{(bpy)_2Os(dpp)\}_2-RhCl_2]Cl_5$  on African Green Monkey Kidney Epithelial (Vero) Cells.”

03/12/07: The University of Trinidad and Tobago, Trinidad and Tobago. Title: “Ruthenium Chemistry: Photodynamic Therapy at its Best.”

03/13/07: Department of Chemistry, The University of the West Indies, St. Augustine Campus, Trinidad and Tobago. Title: “Ruthenium Chemistry: Photodynamic Therapy at its Best.”

03/14/07: Department of Biological and Chemical Sciences, The University of the West Indies, Cave Hill Campus, Barbados. Title: “Ruthenium Chemistry: Photodynamic Therapy at its Best.”

03/16/07: Department of Chemistry, The University of the West Indies, Mona Campus, Jamaica. Title: “Ruthenium Chemistry: Photodynamic Therapy at its Best.”

04/18/07: Department of Chemistry, McNeese State University, Lake Charles, LA 70609, U.S.A. Title: “A Story of The Photodynamic Therapeutic Impact of  $[\{(bpy)_2Ru(dpp)\}_2RhCl_2]Cl_5$  and  $[\{(bpy)_2Os(dpp)\}_2RhCl_2]Cl_5$  on African Green Monkey Kidney Epithelial (Vero) Cells.”

02/26/08: Center for Science and Mathematics Education Seminar Series. Title: “The Photodynamic Therapeutic process:-New Developments with Transition Metal Complexes.”

10/16/08: Department of Chemistry, The University of Arkansas @ Pine Bluff, Pine Bluff, AK. Title: “The Photodynamic Therapeutic process:-New Developments with Transition Metal Complexes.”

10/17/08: Department of Chemistry, The University of Memphis, Memphis, Tennessee. Title: “The Photodynamic Therapeutic process:-New Developments with Transition Metal Complexes.”

04/06/09: The University of Trinidad and Tobago, Trinidad and Tobago. Distinguished Lecture Series. Venue: The National Library AV Room, Abercromby Street, Port-of-Spain, Trinidad and Tobago. Title: “New Developments in the Fight Against Cancer.”

04/07/09: The University of Trinidad and Tobago, Trinidad and Tobago. Title: “Advances in International Pharmaceutical Research.”

10/09/09: Department of Chemistry, Georgia State University, Atlanta, Georgia. Title: “New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes.”

10/26/09: Johnson C. Smith University, Charlotte, North Carolina. Title: “New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes.”

11/12/09: Chicago State University, Chicago, Illinois. Title: “New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes.”

04/27/10: Department of Biological and Chemical Sciences, The University of the West Indies, Cave Hill Campus, Barbados. Title: “New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes.”

09/08/10: The University of the Virgin Islands, St. Thomas, Virgin Islands. Title: “New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes.”

10/28/10: Center for Science and Mathematics Education Seminar Series. Title: “New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes.”

11/02/10: Department of Chemistry, Texas Southern University, Houston, Texas. Title: “New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes.”

11/10/10: Johnson C. Smith University, Charlotte, North Carolina. Title: “New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes.”

04/01/11: Department of Chemistry, City University of New York, Hunter College, New York. Title: "New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes."

07/12/11: Department of Chemistry, The University of York, U.K. Title: "New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes."

07/21/11: Department of Chemistry, California Institute of Technology, Pasadena, CA. Title: "Synthesis, characterization, and electrocatalytic activity of novel ruthenium(II)-containing hydrogen-producing photocatalysts."

10/06/11: Department of Chemistry, Clemson University, Clemson, South Carolina. Title: "New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes."

10/14/11: The University of Mississippi Medical Center, Jackson, Mississippi. Title: "New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes."

11/24/11: Caribbean Institute for Meteorology and Hydrology (CIMH), Husbands, St. James, Barbados. Title: "New initiatives in the use of cobalt-containing compounds and dipicolinic acid and its analogues in environmental remediation."

11/24/11: Department of Biological and Chemical Sciences, The University of the West Indies, Cave Hill Campus, Barbados. Title: "Synthesis, characterization, and electrocatalytic activity of novel ruthenium(II)-containing hydrogen-producing photocatalysts."

02/14/12: Department of Chemistry and Biochemistry, The University Maryland, Baltimore County (UMBC), Baltimore, Maryland. Title: "New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes."

03/13/12: Department of Chemistry, Clarke Atlanta University, Atlanta, Georgia. Title: "New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes."

10/11/12: Department of Chemistry & the Physical Sciences, William Carey University, Hattiesburg, Mississippi. Title: "New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes."

12/03/12: Department of Chemistry, Brooklyn College, Brooklyn, New York. Title: "New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes."

01/14/13: Department of Chemistry, The University of New Hampshire, Durham, New Hampshire. Title: "New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes."

01/28/13: Baylor College of Medicine (BCM), Sabin Vaccine Institute and Texas Children's Hospital Center for Vaccine Development, Houston, Texas. Title: "New Initiatives in Photodynamic Therapy with Non-transition and Transition Metal Complexes."

02/15/13: Department of Chemistry and Biochemistry, Southern Illinois University, Carbondale, Illinois. Title: "Chemotherapeutic and photodynamic therapeutic studies with non-transition and transition metal complexes with unnatural and natural products."

04/19/13: Department of Chemistry and Biochemistry, Old Dominion University, Norfolk, Virginia. Title: "Essentials of photodynamic therapeutic studies with non-transition and transition metal complexes."

05/02/13: Department of Chemistry and Biochemistry, University of Texas, Arlington. Title: "Interesting developments involving the use of d- and p-block elements as anti-cancer agents and in artificial photosynthesis (for the production of hydrogen)."

05/09/13: Department of Chemistry and Biochemistry, Old Dominion University, Norfolk, Virginia. Title: "Applications involving the use of d- and p-block elements as anti-cancer agents and in artificial photosynthesis (for the production of hydrogen)."

09/19/13: The Department of Chemistry and Biochemistry, Auburn University, Auburn, Alabama. Title: "The role of light in fighting cancer and in artificial photosynthesis (for the production of hydrogen)."

09/12/14: The Department of Chemistry and Biochemistry, Florida International University, Miami, Florida. Title: "Solving some of the World's problems with inorganic elements. Part 1."

09/18/15: Department of Chemistry, The University of Memphis, Memphis, Tennessee. Title: "Solving some of the World's problems with inorganic elements. Continuation of a battle."

### **CONFERENCE ORGANIZER**

1. Co-organized the 5<sup>th</sup> International Symposium on the Chemistry and Biological Chemistry of Vanadium, 232<sup>nd</sup> Meeting of the American Chemical Society, September 10-14, 2006, San Francisco, California, U.S.A.
2. National Organizing Committee member for the 8<sup>th</sup> International Symposium on the Chemistry, Biochemistry and Toxicology of Vanadium, August 15-18, 2012, Washington, DC, U.S.A.

### **MANUSCRIPT REVIEWER FOR PEER-REVIEWED JOURNALS**

Arabian Journal of Chemistry  
The Journal of Chemical Education  
Photochemical & Photobiological Sciences  
Chemical Communications  
Dalton Transactions  
International Journal of Chemical Kinetics

Spectroscopy Letters  
Journal of Nanomaterials  
Bioinorganic Chemistry and Applications  
Applied and Environmental Microbiology  
Recent Patents on Nanotechnology  
European Journal of Medicinal Chemistry  
Journal of Agricultural and Food Chemistry  
Current Cancer Drug Targets  
Applied Organometallic Chemistry  
Metallomics  
Journal of Cellular Biochemistry  
Bulletin of the Chemical Society of Japan  
Current Organic Chemistry  
Bioorganic & Medicinal Chemistry Letters  
Journal of Molecular Structure  
Letters in Drug Design & Discovery  
Medicinal Chemistry  
Inorganic Chemistry  
CrystEngComm  
Crystals  
Journal of Tissue Science & Engineering  
Letters in Organic Chemistry  
New Journal of Chemistry  
Applied Microbiology and Biotechnology  
Journal of Industrial and Engineering Chemistry  
RSC Advances  
Medicinal Chemistry Research  
Inorganic Chemistry Communications  
Inorganica Chimica Acta  
Mini-Reviews in Organic Chemistry  
International Journal of Nanomedicine  
Dove Medical Press  
Molecules  
Journal of Environmental Science and Health  
Journal of Inorganic Biochemistry  
Science Journal of Chemistry, SciencePG  
Scientific Reports-Nature  
The Journal of Physical Chemistry

**MEMBER OF EDITORIAL ADVISORY BOARD FOR JOURNALS:**

05/11-present: Recent Patents on Nanotechnology

**EDITORIAL BOARD:**

03/12-present: E-Journal of Chemistry at Hindawi Publishing Corporation

10/13-present: Science Journal of Chemistry

03/15-present: Editorial board member/peer reviewer of Science Journal of Chemistry, SciencePG

03/15-present: Editorial board member of the Journal of Drug Design and Medicinal Chemistry

### **Guest Editor and Co-editor for Journals and Textbooks**

12/14: Co-editor of a Wiley-VCH Verlag GmbH & Co. KGaA textbook entitled "*Ruthenium Complexes–Photochemical and Biomedical Applications.*"

03/15: Guest editor for the journal, Oxidative Medicine and Cellular Longevity. Special Issue entitled "*Two Facets of Vanadium: Its Toxicological Potential versus Pharmacological Activity and Prospective Therapeutic Use–New Developments and Research.*"

05/15: Guest editor for the journal, *Inorganica Chimica Acta*. Special issue entitled "Ruthenium Coordination Chemistry: Understanding the role of molecular and supramolecular design on the photophysical, biological, and electron transfer properties of ruthenium complexes and their potential applications".

### **NSF REVIEWER**

02/08-present: NSF ICC, NSF CHE - MACROMOLEC/SUPRAMOLEC/NANO, NSF CRIF MU EPR, MRI, and NSF DRL - DRL - Research & Evaluation on Education in Science Engineering

### **OTHER PROPOSAL REVIEWER:**

05/11: American Chemical Society (ACS), ACS Global Research Experiences, Exchanges, and Training (GREET) Panel.

03/10: American Chemical Society Petroleum Research Fund (ACS PRF).

03/10: ERA-Chemistry's Open Initiative, and Ohio Cancer Research Associate.

11/13: The German Israeli Foundation for Scientific Research and Development.

12/13: NIH reviewer

12/14: The Swiss National Science Foundation

04/14 Caribbean Science Foundation (CSF) Student Program for Innovation in Science and Engineering (SPISE) reviewer

04/15: Caribbean Science Foundation (CSF) Student Program for Innovation in Science and Engineering (SPISE) reviewer

06/15: Nuclear Education Grants U.S. Nuclear Regulatory Commission MS 03A36 Washington, DC 20555

08/03/2015: An ASM Leaders Inspiring Networks and Knowledge (LINK) Undergraduate Faculty Research Initiative (UFRI) Fellowship reviewer

08/15: The King's Health Partners R&D Challenge Fund

### **COORDINATED WORKSHOP(S)**

03/23/12: ACS Global Research Experiences, Exchanges, and Training (GREET) Pilot Program Workshop with Professor Duncan W. Bruce, Department of Chemistry, The University of York, U.K., as the keynote speaker. Venue: Thad Cochran Center, The University of Southern Mississippi, Hattiesburg, MS 39406, U.S.A. Title of the talk: "Using *N*-Heterocycles and their Complexes in Liquid Crystals: Non covalency, Phosphorescence and Heterogeneous Catalysis".

03/22/13: The Juice from Juice Outreach Workshop with High School Students from Hattiesburg, Trent Lott National Center, The University of Southern Mississippi, Hattiesburg, MS 39406, U.S.A.

### **CONFERENCE CHAIR AND JUDGE**

11/07-present: Judge of the Chemical Sciences Division of the Annual Biomedical Research Conference for Minority Students (ABRCMS)

09/09-10/11: Presentation Chair and judge of the Chemical Sciences Division of the Annual Biomedical Research Conference for Minority Students (ABRCMS)

08/17/12: Session Chair of the 8<sup>th</sup> International Symposium on the Chemistry, Biochemistry and Toxicology of Vanadium, August 15-18, 2012, Washington, DC, U.S.A.

11/12: Presentation Chair and judge of the Chemical Sciences Division of the Annual Biomedical Research Conference for Minority Students (ABRCMS)

11/15: Co-Chair and judge of the Chemical Sciences Division of the Annual Biomedical Research Conference for Minority Students (ABRCMS)

### **TRAVEL AWARD REVIEWER FOR CONFERENCES**

09/12: The Annual Biomedical Research Conference for Minority Students (ABRCMS) Student Travel Award reviewer.

09/13: The Annual Biomedical Research Conference for Minority Students (ABRCMS) Student Travel Award reviewer.

09/14: The Annual Biomedical Research Conference for Minority Students (ABRCMS) Student Travel Award reviewer.

09/15: The Annual Biomedical Research Conference for Minority Students (ABRCMS) Student Travel Award reviewer.

### **ABSTRACT REVIEWER**

08/25/14: 2014 National Institute on Minority Health and Health Disparities Grantees' Conference

09/08-present: The Annual Biomedical Research Conference for Minority Students (ABRCMS) Student

### **MODERATIONS**

11/12/15: Moderator for the American Society for Microbiology Leaders Inspiring Networks and Knowledge (ASM-LINK), at The Annual Biomedical Research Conference for Minority Students (ARCMS), November 11-14, 2015, Seattle, Washington. The session entitled "*High-Caliber Research at Non-research Institutions: Models of Effective Undergraduate Research Programs*". The speakers were as follows:

- James Hewlett, Ph.D., Finger Lakes Community College, Canandaigua, NY
- Karla-Sue Marriott, Ph.D., Savannah State University, Savannah, GA
- Douglas Stevens, Ph.D., Salish Kootenai College, Pablo, MT

### **COLLABORATIONS**

#### **Present Collaborators**

- (1) Professor Tara Dasgupta, Department of Chemistry, University of the West Indies, Mona Campus, Kingston 7, Jamaica.
- (2) Dr. Colin McMillen, Director, Molecular Structure Center, Chemistry Department, Clemson University, Clemson, SC 29634, U.S.A.
- (3) Professor Duncan W. Bruce, University of York, Department of Chemistry, Heslington, York, YO10 5DD, U.K.
- (4) Dr. David Tiede, Chemical Sciences and Engineering Division, Argonne National Laboratory, 9700 S. Cass Avenue, Argonne, IL 60439, U.S.A.
- (5) Professor Chee-Hun Kwak, Department of Chemistry Education, Sunchon National University, Sunchon, 540-742, South Korea.
- (6) Dr. Jennie Williams, Division of Cancer Prevention, State University of New York at Stony Brook, U.S.A.
- (7) Dr. Navindra P. Seeram, Bioactive Botanical Research Laboratory, Department of Biomedical and Pharmaceutical Sciences, College of Pharmacy, University of Rhode Island, Kingston, RI 02881, U.S.A.



- (8) Dr. Don Cropek, Department of the Army, Engineer Research and Development Center, Corps of Engineers, Construction Engineering Research Laboratory, Champaign, Illinois, U.S.A.
- (9) Professor Floyd Beckford, Van W. Daniel III Professor of Chemistry, The University of Virginia's College at Wise, 1 College Ave, Wise, VA 24293, U.S.A.
- (10) Dr. Patrick Martin, Department of Biology, NC A&T State University, 1601 E. Market Street, Greensboro, NC 27411, U.S.A.
- (11) Professor Harry B. Gray, Division of Chemistry and Chemical Engineering, M/C127-72, 408 Beckman, California Institute of Technology, Pasadena, CA 91125, U.S.A.
- (12) Francois Dufrasne, Académie Universitaire Wallonie-Bruxelles, Laboratoire de Chimie Pharmaceutique Organique (Dir. Prof. J. Nève), Faculté de Pharmacie, Université Libre de Bruxelles, Campus plaine - CP 205/5 – 1050, Brussels, Belgium.
- (13) Dr. Jurek Krzystek, National High Magnetic Field Laboratory, Florida State University, 1800 East Paul Dirac Drive, Tallahassee, Florida 32310, U.S.A.
- (14) Dr. Aimin Liu, Department of Chemistry, The University of Texas at San Antonio, One UTSA Circle, San Antonio, TX 78249 , U.S.A.
- (15) Dr. Yong Zhang, Department of Chemistry, Chemical Biology, and Biomedical Engineering, Steven Institute of Technology, Castle Point on Hudson, Hoboken, NJ 07030, U.S.A.
- (16) Dr. Varma Rambaran, University of Trinidad and Tobago, Trinidad and Tobago.
- (17) Dr. John R. Miller, Chemistry Department, Building 555, Brookhaven National Laboratory, P.O. Box 5000, Upton, NY 11973-5000, U.S.A.

## REFERENCES

- (1) Dr. Samuel H. Wilson, National Institute of Environmental Health Sciences, National Institutes of Health, P.O. Box 12233, Research Triangle Park, NC 27709-2233, US.A. Telephone: 919-541-3201, fax: 919-541-3592, and e-mail: wilson5@niehs.nih.gov.
- (2) Professor Tara P. Dasgupta, Chemistry Department, University of the West Indies, Mona Campus, Kingston 7, Jamaica. Telephone: 876-927-1910, fax: 876-977-1835, and e-mail: tara.dasgupta@uwimona.edu.jm.
- (3) Professor Harry B. Gray, Division of Chemistry and Chemical Engineering, M/C127-72, 408 Beckman, California Institute of Technology, Pasadena, CA 91125, U.S.A. Telephone: 626-395-6500, and e-mail: hbgray@caltech.edu or hgcm@its.caltech.edu.
- (4) Dr. Donald Cropek, Department of the Army, Engineer Research and Development Center, Corps of Engineers, Construction Engineering Research Laboratory, Champaign,

Illinois 61820, U.S.A. Telephone: 217-621-3023 and e-mail:  
Donald.M.Cropek@usace.army.mil.

- (5) Professor Duncan W. Bruce, University of York, Department of Chemistry, Heslington, York, YO10 5DD, U.K. Telephone: +4401904324085 and e-mail: duncan.bruce@york.ac.uk.
- (6) Dr. Rex F. Gandy, Provost & Vice President for Academic Affairs, Austin Peay State University, Clarksville, TN 37044, U.S.A. Telephone: 931-221-7676 and e-mail: gandyr@apsu.edu.

Sunday, February 07, 2016