Cover

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CERMACS

Central Regional Meeting of the American Chemical Society

American Chemical Society

Cleveland, Ohio **May 20-23, 2009**

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CERMACS

Central Regional Meeting of the American Chemical Society

American Chemical Society

Cleveland, Ohio **May 20-23, 2009**

Dear Participants:

On behalf of the Organizing Committee and the Cleveland Section of the American Chemical Society, we are pleased to welcome you to the 2009 Central Regional Meeting of the American Chemical Society (CERMACS).

We have a very strong technical program, with a theme of "Meeting Energy and Environmental Challenges Through Functional Materials." Student, researchers, and other chemical professionals from around the region, country, and world have gathered for these several days to meet, talk, present, and interact under the auspices of the largest professional society in the world. Co-sponsoring this Meeting are the Electrochemical Society, the American Vacuum Society, the Society for Applied Spectroscopy, and the Yeager Center for Electrochemical Sciences at Case Western Reserve University.

We are meeting at the historic Renaissance Cleveland Hotel in downtown Public Square in the very center of Cleveland, Ohio. While you are here, be sure to look at the remarkable city around you. Now in its 206th year, the City of Cleveland is a vibrant place to be. Old and new buildings, lakefront museums and sports arenas, excellent restaurants, colleges and universities of all sorts, and varied ethnicities make Greater Cleveland a fine place to live and work. We hope that while you are here, you will be able to sample at least some of what Cleveland has to offer.

We would like to thank the management and staff of the Renaissance Cleveland Hotel for helping to make this Meeting successful. We have come to rely on their professionalism and expertise for many aspects of the Meeting. In particular, many thanks to Amy Olsen and Lou Zsula, who were our primary contacts at the Hotel.

We would also like to thank Peggy Smith and Amanda Frederick at the ACS Division of Meetings and Expositions Services in Washington, DC, for their assistance. Although they were many miles away, their help was integral in getting the Meeting in Cleveland going successfully. Thanks also go to the staff of the Chemistry Department at CWRU for their technical services and support, especially Brian Branchler and Pat Eland.

We thank the many sponsors for financial support of the Meeting. A list of contributors can be found later in this program book. Thanks also to the Exhibitors for spending time with us!

Finally, we need to thank all of the people, volunteers all, who dedicated their efforts to organize this Meeting. The names on the inside front cover are only a few of those whose work made this Meeting what it is. Limited space precludes listing all who contributed to the organization, but we hope you know that everyone here is enjoying the benefits of your efforts.

Enjoy the Meeting!

Daniel Scherson
General Chair, 2009 CERMACS

David W. Ball
Chair, Cleveland Section ACS

CERMACS

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2009 Central Regional Award for Excellence in High School Teaching Recipient:

William E. Snyder

I was born in Clearfield, PA (October 25, 1948) and was raised in Columbiana near Youngstown, OH. and attended Crestview High School, graduating in 1966. Upon graduation, I enrolled in Olivet University, Kankakee, IL. My major was Chemistry with minors in mathematics and zoology. In addition to the coursework I took at Olivet University, I was an undergraduate research assistant to Dr. John White in his research associated with *Drosophila melanogaster*. I graduated with a B.A. in Chemistry, 1970. I obtained a M.S. in Education, Secondary Administration at Youngstown State University in 1979 after serving time in the military and starting a teaching career.

After undergraduate graduation, I was a Chemist Supervisor for Uniroyal at the Joliet Army Ammunition Plant in Joliet, IL which manufactured and tested TNT for the military. While there, I worked in the quality control department, overseeing the laboratory work and reports of several laboratory technicians in four separate laboratory sites. In September, 1970, I was drafted into the U.S. Army eventually going to Vietnam. While in Vietnam, I was assigned to the Provost Marshal's Office in Chu Lai where I served as the Resource Control Chemist. In this assignment I analyzed confiscated material suspected of being drugs (e.g. marijuana, barbiturates, and heroin) and was responsible for inventory and control of alleged drugs, confiscated weapons, and confiscated U.S. currency. I arrived back at the United States in May, 1972.

In 1974, after obtaining secondary education certification, I began my science teaching at Liberty High School, Liberty, OH. While there, I taught chemistry and math, coached Boy's Tennis, and was the Adult Education Director.

Since 1978, I have been associated with Poland High School as Science Department Chairman and science teacher. My teaching responsibilities have been General Chemistry One, Advanced Chemistry, and math. In addition to teaching, I have coached Boy's Tennis, Girls' Tennis, and worked as

Adult Education Director. Throughout my career, I have served on numerous advisory committees for science curricula, textbook adoption, and standards development for the Mahoning County Educational Services Center. I have written and presented papers on teaching of energy, space, chemistry demonstrations, and critical thinking.

I hold teaching credentials in Chemistry, Biological Sciences, and Mathematics at the secondary (high school) level and as such am actively engaged in the application of effective science teaching. I maintain a dynamic classroom that incorporates a variety of educational methods while requiring high standards of performance from the students. I strongly believe in the application of the THREE E'S of EDUCATION: energy, enthusiasm, and excellence as practiced by student and instructor.

I have been recognized throughout my career as an exemplary teacher as indicated by my selection as ACS-Penn Ohio Border High School Teacher of the Year (2004), Educator of the Year (1999) by the Poland Schools Foundation, receiving several institutional/corporate awards (Tandy, Ashland Oil, East Ohio Gas) for excellence in teaching, performed as guest demonstrator at COSI (Center of Science and Industry), Columbus, OH, selected to Biotechnology Summer Program at University of Rochester Medical and Dental School, chosen to be in the NEWMAST Program of NASA (National Aeronautics and Space Administration), selected to the USAF Academy's conference on Science and Mathematics Education, appointed as a Martha Holden Jennings Scholar, received a Spectroscopy Society of Pittsburgh High School Equipment Grant, State of Ohio Energy Education Grant and acknowledged by YSU Sigma Xi Scientific Research Society for promoting independent student research. I have been a presenter at several workshops/conferences sponsored by the Ohio Academy of Science, Science Council of Ohio, and the Mahoning County Educational Services Center on topics regarding the teaching of energy, space, chemistry demonstrations, critical thinking, and integration of algebra and chemistry skills into the high school curricula. I have also assisted on Youngstown State University committees: Chemical Professional Day as well as being a member of the Arts and Sciences Task Force of Science and Math Teacher Preparation. Recently I have been involved at YSU with application of crystallography entitled, "X-Ray Diffraction Analysis for High School and College Freshman Students," with Dr. A.D. Hunter. I am engaged in on-going study exploring ways to integrate technology into the secondary science classroom.

My research interests are primarily in chemistry education and professional development. At this point in time, I am a participant in a $1.3 million grant from the US Army Research Office: *National Defense Center of Excellence for Industrial Metrology and 3-D Imaging*. PI, Dr. Allen Hunter. I have been a graduate student in chemistry at Youngstown State University working on a thesis: "Motivational Factors and Professional Development of High School Chemistry Teachers" with Dr. Stacey Lowery Bretz as advisor. He is also in collaboration with Dr. Allen Hunter and Mr. Steve DiMuzzio, working on development of remote access instrumentation such as X-ray Fluorescence and X-ray Crystallography education for advanced high school chemistry students.

One of the most rewarding aspects of my teaching opportunities has been the recognition that a student "gets it." It might come through a smile, a look of success in the student's eyes, a quiet improvement from one assessment to another, or spontaneous exclamation: "I get in now!" Regardless of the level of student, from beginning to the advanced, building on success is important; maybe not so much for the mastery of content as it is for building of confidence as the student steps into his/her future.

Wednesday, May 20, 2009

Wednesday, May 20, 2009, 8:30 AM - 9:00 AM
Welcoming Ceremony
Whitehall (Renaissance Cleveland Hotel)

Organizer: Kenneth W. Street, The NASA-Glenn Research Center
Presider: Daniel Scherson, Case Western Reserve University

Wednesday, May 20, 2009, 8:50 AM - 1:30 PM
Physical Electrochemistry
Blossom (Renaissance Cleveland Hotel)

Organizers: Daniel Scherson, Case Western Reserve University, Kenneth W. Street, The NASA-Glenn Research Center
Presider: Daniel Scherson, Case Western Reserve University

Session Overview: This session is devoted to all aspects of physical electrochemistry including electrocatalytic phenomena, corrosion, semiconductor electrochemistry and other topics.

8:50 **1** Multiwalled Carbon Nanotube (MWCNT) as Support for PtRu Anode Catalysts of a Direct Ethanol Fuel Cell (DEFC). **Susmita Singh** and Jayati Datta, Bengal Engg Sci University, Shibpur

9:15 **2** Thermal Energy Storage with High Energy Density and Power Density Using Macro-Encapsulated Phase Change Material. **Andrey Soukhojak**, David Bank, Myron Maurer and Kalyan Sehanobish, The Dow Chemical Company

9:40 **3** Theoretical Aspects of Light-Activated Microelectrodes IN Redox Electrolytes. **Huanfeng Zhu**, Barry Miller and Daniel Scherson, Case Western Reserve University

9:55 **4** Functional Neural Stimulation: Oxygen Reduction On Supported Iridium Oxide in Neutral Media. Youjiang Chen, **Michelle A. Rasmussen** and Daniel Scherson, Case Western Reserve University

10:10 **5** On the Physical Meaning of Constant Phase Element. **Bernard Tribollet**[1], Mark E. Orazem[2], Isabelle Frateru[3] and Vincent Vivier[1], (1)Université Pierre et Marie Curie, (2)University of Florida, (3)ENSCP

10:35 **6** Optical Interfacial Microcalorimetry. **Bin Hai** and Daniel Scherson, Case Western Reserve University

10:50 **7** Impedance of a Microelectrode in SECM Experiments. **Vincent Vivier**, Michel Keddam, Nicolas Portail and Dao Trinh, Université Pierre et Marie Curie

11:15 **8** Ohmic Microscopy. **Youjiang Chen**, Huanfeng Zhu and Daniel Scherson, Case Western Reserve University

Women in Electrochemistry (WE)

Wednesday, May 20, 2009, 8:55 AM - 11:30 AM
Women in Electrochemistry (1)
Severance (Renaissance Cleveland Hotel)

Organizers: Heidi B. Martin, Case Western Reserve University, Irina Serebrennikova, Energizer, Carol Korzeniewski, Texas Tech University
Presider: Heidi B. Martin, Case Western Reserve University

Session Overview: The Women in Electrochemistry Symposium will highlight research from women in the field of electrochemistry from all across the globe, demonstrating the broad impact women are making in the field. Additional programming beyond the technical symposium will provide opportunities for networking among faculty and students and include formal discussion of issues in recruiting and retaining women in all fields of science and engineering.

8:55 Introductory Remarks.

9:00 **9** Making the Most of An Electrochemically Critical Material: Self-Wiring Metallic Nanoskins of Ruthenium Dioxide Onto (dirt-cheap) Glass Filter Paper. **Debra R. Rolison**, Christopher N. Chervin, Jeffrey W. Long, Alia M. Lubers and Katherine A. Pettigrew, U.S. Naval Research Laboratory

9:50 **10** Electrodeposited Silica Films: How to Grow Your Own Chia Pet. **Maryanne M. Collinson** and Dong Dong, Virginia Commonwealth University

10:15 Break.

10:40 **11** Alloys and Oxides in the Electrochemical Oxidation of Alcohols On Pt-Based Bimetallic Catalysts. Denis R. M. Godoi, Joelma Perez and **H. Mercedes Villullas**, Instituto de Química - Universidade Estadual Paulista (UNESP)

11:05 **12** Poly(Vinyl Ferrocene) Redox Behavior in Ionic Liquids and Their Applications. Yijun Tang[1], **Xiangqun Zeng**[1] and Gary A. Baker[2], (1)Oakland University, (2)Oak Ridge National Laboratory

Computational Chemistry (CC)

Wednesday, May 20, 2009, 9:00 AM - 11:30 AM
Computational Chemistry (1)
Halle (Renaissance Cleveland Hotel)

Organizers: Peter Politzer, University of New Orleans, Jane S. Murray, University of New Orleans
Presiders: Peter Politzer, University of New Orleans, Jane S. Murray, University of New Orleans

Session Overview: During the past 20 years, remarkable advances in both methodology and processor technology have allowed computational chemistry to evolve into an important tool for addressing problems of practical interest and significance. The presentations in this symposium are intended to illustrate a wide range of applications, including fuel cells, nanomaterials, molecular electronics, sensors, nonlinear optical activity, signal transduction, enzyme activities, actinide chemistry and anti-cancer agents. There will also be discussion of different aspects of intermolecular complexes (including the very active area of halogen bonding), metal/DNA interactions, and new concepts in analyzing chemical reactions and in modeling complex systems.
Acknowledgements: We greatly appreciate the support provided by the U. S. Office of Naval Research and the Computers in Chemistry Division of the American Chemical Society.

9:00 **13** Current-Voltage Characteristics through Molecular Junctions by Ab Initio Techniques. **Jorge M. Seminario**, Texas A&M University

9:50 **14** Modeling CO2 Capture by Molecular Organic Frameworks. **Janice A. Steckel**, U.S. Department of Energy, National Energy Technology Laboratory

10:15 Break.

10:40 **15** Challenges In the Design of Active and Durable Fuel Cell Catalysts. **Perla B. Balbuena**, Texas A&M University

Energy Storage and Energy Conversion: Electrocatalysis (ESE)

Wednesday, May 20, 2009, 9:00 AM - 11:30 AM
Energy Storage and Energy Conversion: Electrocatalysis (1)
Sponsor: CH Instruments; Cincinnati Student Chapter, ECS
Humphrey (Renaissance Cleveland Hotel)

Organizers: Shouzhong Zou, Miami University, Yuriy Tolmachev, Dr., Kent State University
Presider: Yuriy Tolmachev, Dr., Kent State University

Session Overview: Fuel cells are efficient energy conversion devices. In order to make fuel cell technology viable in daily life, several technical challenges need to be overcome. In this sub-symposium, a subset of these challenges will be discussed. Topics to be covered include, but are not limited to: durability of fuel cells, Pt loading reduction of fuel cell catalysts, new catalysts, and applications of spectroscopic methods to fuel cell problems.

9:00 **16** Broad-Band Sum Frequency Generation to Study Electrochemical Interfaces. **Rachel L. Behrens**, Alexei Lagutchev, Dana D. Dlott and Andrzej Wieckowski, University of Illinois

9:25 **17** In Situ Structural Characterisation of PEM Fuel Cell Nanoparticle Catalysts. **Andrea E. Russell, Prof.**[1], Peter P. Wells[1], Beatrice Tessier, Miss.[2], Sarah L. Hudson[2], Sarah Ball[2] and David Thompsett[2], (1)University of Southampton, (2)Johnson Matthey Technology Centre

9:50 **18** Pt Single Crystal Electrodes as Standards in the Study of Reactions Over Nanoparticle Catalyst. **Carol Korzeniewski** and Prachak Inkaew, Texas Tech University

10:15 Break.

10:40 **19** Fine Tuning of Electrochemical Activity. Dennis van der Vliet[1], Chao Wang[1], Dusan Strmcnik[1], Christopher Lucas[2], Nenad Markovic[1] and **Vojislav Stamenkovic**[1], (1)Argonne National Laboratory, (2)University of Liverpool

11:05 **20** Size and Shape Controlled Pt-M Alloy Nanoparticles for Fuel Cells. **Shouzhong Zou**, Hongzhou Yang and Lin Dai, Miami University

Forensic Science (FS)

Wednesday, May 20, 2009, 9:00 AM - 11:30 AM
Forensic Science (1)
Sponsor: Thermo Scientific
Whitehall (Renaissance Cleveland Hotel)

Organizers: Douglas Rohde, Lake County Crime Laboratory, John Goodpaster, Indiana University Purdue University Indianapolis (IUPUI), Frank Miller, Cuyahoga County Coroner's Office
Presider: John Goodpaster, Indiana University Purdue University Indianapolis (IUPUI)

Session Overview: The Forensic Science Symposium will offer participants an overview of prevalent chemical principles, methods, instrumentation and research involved in the analysis of physical evidence and their application to the legal system.

9:00 **21** Applications of Multi-Variate Statistics to Forensic Science. **John Goodpaster**, IUPUI

9:25 **22** The Lethal Potential of the American IED: Velocity, Momentum and Kinetic Energy Measurements of Pipe Bomb Container Fragments. **Joshua Cummins**, Neoshia Roemer and John Goodpaster, IUPUI

9:50 **23** Evaluation of the Odor Compounds Sensed by Explosive-Detecting Canines. **Erica Lotspeich**, Joshua Cummins and John Goodpaster, IUPUI

10:15 Break.

10:40 **24** Association of Evaporated Ignitable Liquids Using Gas Chromatography-Mass Spectrometry and Chemometric Procedures. **John W. McIlroy, BS**[1], Jamie M. Baerncopf, BS[2], Ruth Waddell Smith[1], A. Daniel Jones.[3] and Victoria L. McGuffin[2], (1)Forensic Science Program, School of Criminal Justice, Michigan State University, (2)Michigan State University, (3)Department of Biochemistry, Michigan State University

11:05 **25** Evaluation of Aqueous Salt Solutions as Refractive Index Immersion Liquids in the Analysis of Forensic Evidence. **Katiana Whitaker** and Gina Ammerman, IUPUI

Functional Materials: Biofunctional Materials (FMBM)

Wednesday, May 20, 2009, 9:00 AM - 11:30 AM
Functional Materials: Biofunctional Materials (1)
Van Aken (Renaissance Cleveland Hotel)

Organizers: Horst Von Recum, Case Western Reserve University, Joerg Lahan, University of Michigan

Session Overview: This session will cover all manner of materials either based on biological design, modified with biomolecules and/or used in biomedical applications. Applications include self-assembling materials, tissue engineering, and drug delivery.

9:00 **26** Scaffolds Based On Degradable Alginate Hydrogels and Poly(lactide-co-glycolide) (PLGA) Microspheres for Stem Cell Culture. Randolph Ashton[1], **Akhilesh Banerjee**[2], Supriya Punyani[3], David Schaffer[1] and Ravi S. Kane[2], (1)University of California Berkeley, (2)Rensselaer Polytechnic Institute, (3)Procter and Gamble

9:25 **27** Novel Nitric Oxide Releasing Poly(diol citrate) Elastomers for Soft Tissue Engineering. **M. Concepcion Serrano**[1], Haichao Zhang[2], Michele Jen[1], Melina Kibbe[3] and Guillermo A. Ameer[1], (1)Northwestern University, (2)University of Washington, (3)Northwestern University Feinberg School of Medicine, Division of Vascular Surgery

9:50 **28** Electrospun Poly (2-hydroxyethyl methacrylate) as Low-Fouling Scaffolds. **Bo Zhang**, Reza Lalani and Lingyun Liu, University of Akron

10:15 Break.

10:40 **29** Elastic Surfaces for Cell Detachment Using a pNIPAAm Copolymer. **Elaine L. Lee** and Horst A. von Recum, Case Western Reserve University

11:05 **30** Synthesis of Cyclic-Linear Diblock Copolymers of PEO and Polyesters. **Gladys Rocio Montenegro-Galindo** and Coleen Pugh, The University of Akron

Functional Materials: Membranes And Layered Systems (MLS)

Wednesday, May 20, 2009, 9:00 AM - 11:30 AM
Functional Materials: Membranes and Layered Systems (1)
Case (Renaissance Cleveland Hotel)

Organizers: Peter Pintauro, Vanderbilt University, Jeffrey A. Gray, Ohio Northern University
Presiders: Jeffrey A. Gray, Ohio Northern University, Peter Pintauro, Vanderbilt University

Session Overview: This session will cover new membranes and structured (layered) materials for energy-related applications.

9:00 **31** Proton Conducting Membranes From Electrospun Nafion Nanofibers. **Kyung Min Lee**[1], Jonghyun Choi[1], Ryszard Wycisk[1], Peter Pintauro[2] and Patrick Mather[3], (1)Case Western Reserve University, (2)Vanderbilt University, (3)Syracuse University

9:25 **32** Novel Carbon-Silicon Composite for Advance Lithium Battery. Maryam Nazri and **Gholam-Abbas Nazri**, GM Research and Development Center

9:50 **33** Synthesis and Properties of Layered Oxides. **Gholam-Abbas Nazri**, GM Research and Development Center

General Catalysis (GC)

Wednesday, May 20, 2009, 9:00 AM - 11:30 AM
General Catalysis (1)
Sponsor: Saint-Gobain NorPro
Hopkins (Renaissance Cleveland Hotel)

Organizers: Dave VanderWiel, Saint-Gobain NorPro, Stephen Dahar, Saint-Gobain NorPro
Presiders: Dave VanderWiel, Saint-Gobain NorPro, Stephen Dahar, Saint-Gobain NorPro

Session Overview: The General Catalysis Symposium will focus on novel catalytic materials for energy and environmental applications, including functional catalytic structures, adsorption & surface phenomena, catalysis in novel reaction systems, developments in gas-to-liquids catalyst materials, catalyst support materials, high selectivity catalysts, future trends in catalysis and related topics. Speakers will include academic and industry researchers, including invited talks from throughout the region.

9:00 **34** Ordered Mesoporous Silica, Alumina and Carbon as Potential Catalysts and Catalyst Supports. **Mietek Jaroniec**, Kent State University

9:50 **35** Direct CH4 Solid Oxide Fuel Cell on Cu-Ni Anode Catalyst. **Steven Chuang, Dr**, Felipe Guzman and Rahul Singh, The University of Akron

10:15 Break.

10:40 **36** Novel Catalytic Metal Oxide Nanofibers. **Sneha Swaminathan**, Carl Loskofsky and George G Chase, The University of Akron

11:05 **37** The Catalyst Is Not Consumed Because the Catalyst Is An Electric Field with a Fractional Charge. **Ralph A. Gardner-Chavis**, Cleveland State University - Emeritus

Inorganic Chemistry (IC)

Wednesday, May 20, 2009, 9:00 AM - 11:30 AM
Inorganic Chemistry: General
Sponsor: ACS Division of Inorganic Chemistry
Bush (Renaissance Cleveland Hotel)

Organizer: John Protasiewicz, Case Western Reserve University
Presider: Scott D. Bunge, Kent State University

Session Overview: This session is for contributed talks in the broad area of Inorganic Chemistry

9:00 **38** Low Power Photon Upconversion. **Tanya N. Singh-Rachford** and Felix N. Castellano, Bowling Green State University

9:25 **39** Chlorophosphazenes, Their Lewis and Bronsted Acid-Base Chemistry and Potential Involvement of Superacids in the Problems Relating Their Syntheses and Storage. **Zin-Min Tun**, Matthew J. Panzner, Doug Medvetz, Wiley J. Youngs and Claire A. Tessier, University of Akron

9:50 **40** New Titanium Imido Complexes Utilizing Chelating Orthometallated Imine Ligands. **John F. Beck** and Joseph A. R. Schmidt, The University of Toledo

10:15 Break.

10:40 **41** Ancillary Ligand and Ketone Substituent Effects On the Rate of Ketone Insertion Into Zr-C Bonds of Zirconocene-1-Aza-1,3-Diene Complexes. **Jie Zhang**[1], Jeanette A. Krause[1], Kuo-Wei Huang[2] and Hairong Guan[1], (1)University of Cincinnati, (2)National University of Singapore

11:05 **42** Reactivity of (3-Iminophosphine)Palladium(II) Complexes: Evidence of Hemilability. **Andrew Shaffer** and Joseph A. R. Schmidt, The University of Toledo

Wednesday, May 20, 2009, 11:30 AM - 12:30 PM
Plenary Lecture: Professor Charles M. Lieber of Harvard University
Whitehall (Renaissance Cleveland Hotel)

Organizer: Daniel Scherson, Case Western Reserve University
Presider: Daniel Scherson, Case Western Reserve University

11:30 **43** Nanowires: A Platform for Nanoscience and Nanotechnology. **Charles M. Lieber**, Harvard University

Poster Session (PS)

Wednesday, May 20, 2009, 12:30 PM - 1:30 PM
Poster Session (1)
Gold (Renaissance Cleveland Hotel)

Organizers: Mike Nichols, John Carroll University, Mark J. Waner, John Carroll University

Session Overview: Poster topics are in the general areas of: Biochemistry, Bioorganic, Physical and Analytical Chemistry, Chemical Education and Electrochemistry

44 Structural and Electronic Characteristics of Human Islet Amyloid Polypeptide (hIAPP) Leading to Aggregate Formation. **Gholamreza Eizadkhah** and M. C. Milletti, Eastern Michigan University

45 An All Purine Sequence within the 5'-UTR of the MT3 Matrix Metalloproteinase mRNA Forms An Extremely Stable G-Quadruplex and Represses Translation in Mammalian Cells. **Mark Morris** and Soumitra Basu, Kent State University

46 Loop Complimentarity Affects Quadruplex Conformation and Insulin Binding Ability in G-Quadruplexes Formed by ILPR Repeats. **Joseph Schonhoft**, Arijit Das, Firehiwot Achamyeleh, Sheema Samdani, Hanbin Mao and Soumitra Basu, Kent State University

47 Novel Synthetic Inhibitors of 3-Hydroxy-3-Methylglutaryl-Coenzyme A (HMG-CoA) Reductase Activity That Are Structurally Unrelated to Existing Statins. **Jean-Pierre H. Perchellet**[1], Elisabeth M. Perchellet[2], Kyle R. Crow[1], Keith R. Buszek[2], Neil Brown[2], Sampathkumar Ellappan[2], Ge Gao[2], Machiko Minatoya[2] and Gerald H. Lushington[3], (1)Kansas State University, (2)University of Missouri, (3)University of Kansas

48 The Bioaccumulation and Toxicity of Silver Nanoparticles in Animal and Plant Tissues. Ioana E. Pavel, **Jennifer Monahan**[1], Kent Weaver[1], Marjorie Markopoulos[1], Zofia E. Gagnon[2] and Britney NeJame[2], (1)Wright State University, (2)Marist College

49 Quadruplex Conformation Dictate the Binding of the Malachite Green Analogs to ILPR DNA. **Katherine I. Poinski**, Mark Morris, Lionel Sanguinet, Jarrod Williams, Robert Twieg and Soumitra Basu, Kent State University

50 SAR Study of the Effect of PTB Analogues On the Maillard Reaction Radical Pathway. **Wei Shen** and Roger Lloyd, The University of Memphis

51 Routes to Platinum(IV) Antitumor Compounds. **Adina Dumitrascu**, Pratik Chhetri and Bob A. Howell, Central Michigan University, Mount Pleasant, MI 48859-0001

52 SIRT1 Processing of N(epsilon)-Acetyllysine Analogs. Nuttara Jamonnak, **Brett M. Hirsch**, Yi Pang and Weiping Zheng, University of Akron

53 Investigation of Cofactor Dependent Nucleic Acid Enzymes. **Eduardo Paredes** and Subha R. Das, Carnegie Mellon University

54 Aspirin and Breast Cancer: Studies IN Mice. **Vinay Likhite** and William D. Bush, Baroda Cancer Research Center

55 Hormones and Breast Cancer: Studies in Mice. **Vinay Likhite**, Baroda Cancer Research Center

56 Synthesis of Glucosamine-6-Phosphate (GlcN6P) Analogues to Examine Molecular Recognition and Mechanism of the Glms Ribozyme. **Joy K. Maity**, Tao Han and Subha R Das, Carnegie Mellon University

57 Photolabile Protecting Groups for Caging the 2'-Hydroxyl in Modified RNA. **Tao Han**, Joy K. Maity and Subha R Das, Carnegie Mellon University

58 Fluorescence Enhancement of Adenine and Other Purines: Applications in Enzyme Kinetics. **Dan N. Bigman**[1], Edwin Quiñones[2] and Cristina Padilla[1], (1)University of Puerto Rico, (2)University of Puerto Rico, Rio Piedras Campus

59 Withdrawn

60 Chemical Selective Liposome Surface Functionalization through Staudinger Ligation. **Hailong Zhang**, Yong Ma and Xue-long Sun, Cleveland State University

61 Chemical Selective Liposome Surface Functionalization and Immobilization. **Yong Ma**, Hailong Zhang and Xue-long Sun, Cleveland State University

62 Synthesis of Open-Chain Epothilones. **Sara Fedorka**, Brice Baars, Hanan Haymour, Nick Maurer and Liyanaaratchige Tillekeratne, University of Toledo

63 Synthesis of the Potent Anticancer Agent Largazole and Its Analogs. **P.R. Bhansali** and Liyanaaratchige Tillekeratne, University of Toledo

64 Study of the Thermal Behavior of Sugar Solutions Using Differential Scanning Calorimetry. **Ermias Gebremichael**[1], Kenneth Alexander[1] and Alan Riga[2], (1)University of Toledo, (2)Cleveland State University

65 Pharmaceutical Solid Dispersions: A Study of Their Physicochemical and Dissolution Characteristics. **Ranajoy Majumdar**, Kenneth S Alexander and Alan Riga, The University of Toledo

66 Formulation and Characterization of Psycho-Active Drugs Using Various Analytical Techniques. **Satya G. Avula**, Kenneth S. Alexander and Alan T Riga, The University of Toledo

67 Synthesis and Characterization of Electrorheological Fluids for Medical Devices. **Naullage I. Perera,** Manik Pavan Mahewaram, John F. Turner, and Alan Riga, Cleveland State University

68 Improved Thermal Mechanical Method for Evaluating Drug Delivery of Tablets and Capsules. **Visweswararao Badipatla, BSPS**[1], Naullage I. Perera[1], Manik Pavan Kumar Maheswaram[1], Alan Riga[2] and Kenneth Alexander[3], (1)Cleveland State University, (2)Cleveland State UNivesity, (3)University of Toledo

69 Determination of the Heat of Solution for Eutectic, Solid Dispersion and Cocrystals of Poorly Soluble Drugs. **Bivash Mandal**, Kenneth S. Alexander and Alan Riga, The University of Toledo

70 Pumice Suspension Stability Utilizing Surfactants. **Shikha Rathi, graduate Student** and Kenneth Alexander, University of Toledo

71 Evaluation of the Volumetric Variation Method to Determine the Powder Porosity and Void Space in Pharmaceutical Dispersions. **Zhouyuan Liu**[1], Kenneth S. Alexander[1] and Alan T. Riga[2], (1)The University of Toledo, (2)Cleveland State University

72 Structure and Dynamics of Self-Assembling Nanostructures in Isopropyl Myristate (IPM)/Di-Octyl Sodium Sulfosuccinate (DOSS)/Water Ternary Systems. **Jerry Nesamony**, The University of Toledo, Rahul V. Manek, Exelixis Inc. and William M. Kolling, The Southern Illinois University Edwardsville

73 Metal Enhanced Fluorescent Studies of Silver and Gold Nanoparticles. **Timothy R. Brewer, Associate Professor** and Vamsi Kandimalla, Graduate Student, Eastern Michigan University

74 Photoinduced Electron Transfer Studies in Fullerene Dyads-Tetrads. **Jojo Joseph**, Tuan Nguyen, Chien-Lung Wang, Stephen Z. D. Cheng and David A. Modarelli, The University of Akron

75 Photochemistry of Hexabromoplatinate and Hexabromoiridate Complexes in Aqueous Media. **Igor L. Zheldakov**, Mikhail N. Ryasantsev and Alexander N. Tarnovsky, Bowling Green State University

76 Experimental and Theoretical Studies of Light-to Heat Conversion in Metal Nanoparticle Solutions. **Hugh H. Richardson**[1], Michael T. Carlson[1], Peter J. Tandler[2], Pedro Hernandez[1] and Alexander O. Govorov[1], (1)Ohio University, (2)Walsh University

77 Ultraviolet-and-532 Nm Laser-Induced Colorless Photoproducts of β-Carotene in Chlorinated Solvents. **Aaron E. Beach**[1], Wenyue Wang[1], Begum Fouzia[2], Pattraranee Limphong[3], Christie M. Shover[1], Ross E. Jones[3], Jonathan B. McGregor[3], Matthew E. Kelleher[3], Ryan J. Provost[3], Merritt C. Helvenston[4] and Mark B. Masthay[1], (1)University of Dayton, (2)Western Kentucky University, (3)Murray State University, (4)New Mexico Highlands University

78 Photochemistry of Nitro-Polycyclic Aromatic Compounds in Solution. **R. Aaron Vogt**, Christian Reichardt and Carlos E. Crespo-Hernández, Case Western Reserve University

79 Elucidating the Mechanism of Photoisomerization: Ultrafast Studies of the Excited State Properies of Diphenylbutadiene Derivatives. **Nicole M. Dickson**, Jessica E. Donehue and Terry L. Gustafson, The Ohio State University

80 Kinetics and Mechanism of Two Color Reversible Photochromism. **Beth Anne McClure** and Jeffrey J. Rack, Ohio University

81 Ultrafast Transient Absorption Study of a Photoaffinity Labeling Compound - 4-Amino-3-Nitrophenyl Azide. **Maxim S. Panov, Mr.**[1], Alexander N. Tarnovsky[1], Valentyna Voskresenska[1], R. Marshall Wilson[1], Shubham Vyas[2], Arthur Winter[2] and Christopher M. Hadad[2], (1)Bowling Green State University, (2)The Ohio State University

82 Intramolecular Energy and Electron Transfers in Molecular Dyads Comprising of Porphyrin and Ruthenium(II) Bis(2,2':6',2''-terpyridine) Terminal. **Shenshen Li** and James McCusker, Michigan State University

83 Redox Properties of Mercaptoacetic Acid On Gold in Basic Medium. **Ewa M. Pater**[1], Amanda Aldous[1], Mai Than[1] and Stanley Bruckenstein[2], (1)Plattsburgh State University of New York, (2)State University of New York at Buffalo

84 Residual Gas Analysis During Thermal Control Surface Testing In the Lunar Dust Adhesion Bell Jar. **James R. Gaier**, NASA-GRC

85 Permeation Sampling of Gasoline In Water. **Cody Allen Anderson** and James Hardy, The University of Akron

86 Development of a Packing Material for the Clean-up of Samples From Environmental Sources by GPC. **Thomas Dent**, Graham Cleaver, Greg Saunders, Ben MacCreath and Graham Margetts, Varian, Inc.

87 His-HDX Method to Probe the Microenvironment of Histidine Residues in Escherichia Coli Dihydrofolate Reductase. **Masaru Miyagi** and Chris Dealwis, Case Western Reserve University

88 Development of An HPLC-MS/MS Test Procedure to Quantify 4-Ketocyclophosphamide,Cyclophosphamide and Ifosfamide In Human Urine. **Clayton B'Hymer**, National Institute for Occupational Safety and Health (NIOSH)

89 In-Situ Desalting and Derivatization in Reactive Desorption Electrospary Ionization (DESI) for the Detection of Monosaccharides. **Yun Zhang**[1], Caroline Krieger[1], Dina R. Justes[2], Feng Feng[1] and Hao Chen[1], (1)Ohio University, (2)Purdue University

90 What Is σ-Hole Bonding?. **Monica C. Concha**[1], Pat Lane[1], Jane S. Murray[2] and Peter Politzer[2], (1)University of New Orleans, (2)Cleveland State University

91 A Fluorescence Laboratory Utilzing Spectral Subtraction to Study Ligand Binding. **Stephanie Bilinovich**, Akron University and Peter J. Tandler, Walsh University

92 Designing Metal-Organic Framework Structures Utilizing A Combination of N- and O- Donor Ligands. Scott D. Bunge and **Kristin A. Gore**, Kent State University

93 Kinetic and Mechanistic Studies of the Deuterium Exchange in Classical Keto-Enol Tautomeric Equilibrium Reactions. **Michael A. Nichols** and Mark J. Waner, John Carroll University

94 Cosmetic, Forensic and Environmental Science Workshops for K-12 Students. **Larry Kolopajlo**, Eastern Michigan University

95 Summer Enrichment Programs to Increase Diversity in STEM Fields. **Sarah S. Preston** and Jeanette Nappier, Ursuline College

96 Review of Recent Total Syntheses of Nonracemic Natural Products That Include Key Photocycloaddition Steps. **Wendell L. Dilling**, Central Michigan University

97 ACS Presidents From the Midland Section. **Wendell L. Dilling**, Central Michigan University

98 Neutron Scattering in Chemistry. **Cora Lind**, University of Toledo

99 Structure and Electrochemical Behaviour in Lithium-Ion Batteries of LiFePO4OH and Its Proton Ion-Exchanged Derivative FePO4.H2O. **Laurence Croguennec**[1], Nicolas Marx[1], Dany Carlier[1], Alain Wattiaux[1], Lydie Bourgeois[1], Pierre Kubiak[1], Frédéric Le Cras[2] and Claude Delmas[1], (1) University of Bordeaux, (2) CEA

100 MnO2/C Composites as Positive Electrode Materials for Rechargeable Electrochemical Cells. **Thoa T.P. Nguyen** and Trung Q. Pham, Vietnam National University - Hochiminh City (VNU-HCM)

101 Characteristics of Spinel Lithium Manganese Oxide Synthesized From Chemical Manganese Dioxide as Positive Electrode Materials for Lithium Ion Cells. **Binh T. X. Lam**, Thoa T.P. Nguyen and Phung M.L. Le, University of Science, VNU-HCM

102 Characterization and Application of Electrochemical Environmental Biosensors. **Marcela Ovalle** and Margarita Stoytcheva, Universidad Autonoma de Baja California

103 Effect of Electrolyte Additives and Cell Treatment On the Open-Circuit Voltage of the Dye-Sensitized Solar Cell. **Thoa T.P. Nguyen**, Hoang T. Nguyen and Hai M. Tran, University of Science, VNU-HCM

Solid State Chemistry (SSC)

Wednesday, May 20, 2009, 1:20 PM - 5:10 PM
Solid State Chemistry (1)
Bush (Renaissance Cleveland Hotel)

Organizers: Cora Lind, University of Toledo, Catherine M. Oertel, Oberlin College
Presider: Catherine M. Oertel, Oberlin College

Session Overview: Solid-state chemistry is aimed at the synthesis and characterization of advanced materials. Understanding materials' properties based on the structure of materials, and fine-tuning properties through the study of structure-property relationships, ties together diverse areas like nanomaterials, semiconductors, crystal growth and engineering. In this symposium, new materials, synthetic routes and characterization methods will be presented.

1:20 Welcoming Remarks.
1:30 **104** Site Occupation and Electrical Properties of Manganese-Doped $CuInSe_2$. **Jennifer A. Aitken**[1], Jin-Lei Yao[1], Pierre Ferdinand Poudeu Poudeu[2] and Nathan J. Takas[2], (1)Duquesne University, (2)University of New Orleans
1:55 **105** Synthetic Pyrite (FeS_2) and Its Characterization. **George L. Schimek**, Energizer Battery Manufacturing, Inc.
2:20 **106** Polychalcogenide Flux Synthesis, Structure and Characterization of Quaternary, Lithium-Containing Diamond-Like Semiconductors. **Meghann A. Moreau**, Jonathan W. Lekse, Jin-Lei Yao and Jennifer A. Aitken, Duquesne University
2:45 **107** Synthesis of Colloidal Ag Nanocrystals and Their 2D Superlattices. Ravi Shankar and **Terry P. Bigioni**, University of Toledo
3:10 Break.
3:30 **108** Synthesis, Characterization and Reactivity of Alumina Nanofibers. **Anna M. Pischera**, John O'Brien and Matthew P. Espe, The University of Akron
3:55 **109** Controlling Materials Structure with Surface Chemistry. **Simon Garcia**, Kenyon College
4:20 **110** Crystal Engineering of Metal-Organic Frameworks. **Sibrina Collins**[1], Roland Falcon[1], James Aryeetey[1], William B. Connick[2], J. A. Krause[2] and Stephen Taylor[2], (1)College of Wooster, (2)University of Cincinnati
4:45 Concluding Remarks.

Analytical Chemistry (AC)

Wednesday, May 20, 2009, 1:30 PM - 5:10 PM
Analytical Chemistry (1)
Sponsor: Analytical Division of ACS
Blossom (Renaissance Cleveland Hotel)

Organizers: Rebecca Whelan, Oberlin College, John F. Turner, Cleveland State University
Presider: Rebecca Whelan, Oberlin College

Session Overview: These sessions feature advances in measurement science broadly understood, including instrumentation development and application to problems of environmental, biomedical, and industrial relevance.

1:30 **111** Polymerized Crystalline Colloidal Array Photonic Crystals for Chemical Sensing and Optoelectronics. **Sanford A. Asher**, University of Pittsburgh
2:20 **112** Combining Visible Spectroscopy with Atomic Force Microscopy to Correlate the Optical Properties of Au Nanoplatelets with Antibody\Antigen Binding. **Srinivas reddy Beeram** and Zamborini Francis P, University of Louisville

2:45 **113** Gradient Elution in Microchannel Electrochromatography. **Jared M. Mudrik**, Michael W.L. Watson and Aaron R. Wheeler, University of Toronto

3:10 Break.

3:30 **114** Folding-Based Electrochemical DNA Sensor: Alternative Sensor Substrate and Probe Immobilization Strategy. **Rebecca Y. Lai**, University of Nebraska-Lincoln

3:55 **115** Novel Approach to the Characterization of Pharmaceutical Excipients Reveals New Dielectric Visco-Elastic Properties by Thermal Analytical Methods. **Alan Riga**[1], K.S. Alexander[2] and Hareesha Reddy Venumuddala[1], (1)Cleveland State University, (2)The University of Toledo

4:20 **116** Fundamental Studies of Reaction and Collision Cell Processes in ICP-MS. **Patrick J. Gray**, John W. Olesik and Susan V. Olesik, The Ohio State University

4:45 **117** Semi-Quantitative Elemental Analysis Using Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) in the Presence and Absence of High Ca Concentrations. **Josh R. Dettman**, John W. Olesik and Susan V. Olesik, The Ohio State University

Computational Chemistry (CC)

Wednesday, May 20, 2009, 1:30 PM - 5:10 PM
Computational Chemistry (2)
Halle (Renaissance Cleveland Hotel)

Organizers: Jane S. Murray, Cleveland State University, Peter Politzer, Cleveland State University
Presiders: Peter Politzer, Cleveland State University, Jane S. Murray, Cleveland State University

Session Overview: Acknowledgements: We greatly appreciate the support provided by the U. S. Office of Naval Research and the Computers in Chemistry Division of the American Chemical Society.

1:30 **118** Computational Design of New Enzyme Activities. **Tore Brinck, Professor**, Royal Institute of Technology (KTH)

2:20 **119** Computational Approach to Interactions of Anti-Cancer Metallodrugs. **Jaroslav V. Burda**, Charles University

3:10 Break.

3:30 **120** Molecular Dynamics Simulations and Signal Transduction. **Timothy Clark**, Universitaet Erlangen-Nuernberg

4:20 **121** Interactions of Metal Clusters with DNA Bases. **Jerzy R. Leszczynski**, Jackson State University

Energy Storage and Energy Conversion: Electrocatalysis (ESE)

Wednesday, May 20, 2009, 1:30 PM - 5:10 PM
Energy Storage and Energy Conversion: Electrocatalysis (2)
Sponsor: CH Instruments; Cincinnati Student Chapter, ECS
Humphrey (Renaissance Cleveland Hotel)

Organizers: Shouzhong Zou, Miami University, Yuriy Tolmachev, Dr., Kent State University
Presiders: Yuriy Tolmachev, Dr., Kent State University, Shouzhong Zou, Miami University

1:30 **122** Pt COVERAGE DEPENDENT ELECTROCATALYTIC ACTIVITIES in Ru@Pt and Au@Pt CORE-SHELL NANOPARTICLES. **YuYe Tong, Associate Professor**, Georgetown University

1:55 **123** Self-Assembled Core-Shell Nanoporous Metals for Oxygen Reduction. **Jonah Erlebacher**, Johns Hopkins University

2:20 **124** Recent Advantages in Pt Monolayer Fuel Cell Electrocatalysts. **Kotaro Sasaki**, Jia Wang, Miomir Vukmirovic, WeiPing Zhou and Radoslav Adzic, Brookhaven National Laboratory

2:45 **125** Ionic Liquids Adsorption and Desorption Dynamics During Gold Electrode Oxidation and Reduction Processes. **Yu Du** and Xiangqun Zeng, Oakland University

3:10 Break.

3:30 **126** The Durability of Pt and Pt Alloys as Fuel Cell Cathode Catalysts. **Ting He**, Honda Research Institute USA

3:55 **127** Third Generation of PEFC Catalytic Layers. **Yuriy Tolmachev, Dr.** and R. Hoover, Kent State University

4:20 **128** Catalytic Reduction of Weak Acids by [$CoCp(\eta^4\text{-}C_8H_{12})$] Isomers. William E. Geiger[1], **Michael J. Shaw**[2] and James E. Eilers[2], (1)University of Vermont, (2)Southern Illinois University - Edwardsville

4:45 **129** High Performance of Nano-Structured PtRuRh Ternary Catalysts towards Ethanol Electrooxidation. **Jayati Datta** and Susmita Singh, Bengal Engg Sci University, Shibpur

Forensic Science (FS)

Wednesday, May 20, 2009, 1:30 PM - 5:10 PM
Forensic Science (2)
Sponsor: Thermo Scientific
Whitehall (Renaissance Cleveland Hotel)

Organizers: Douglas Rohde, Lake County Crime Laboratory, John Goodpaster, Indiana University Purdue University Indianapolis (IUPUI), Frank Miller, Cuyahoga County Coroner's Office
Presider: Douglas Rohde, Lake County Crime Laboratory

Session Overview: The Forensic Science Symposium will offer participants an overview of prevalent chemical principles, methods, instrumentation and research involved in the analysis of physical evidence and their application to the legal system.

1:30 **130** Phencyclidine in Driving Impairment in Lake County, Ohio. **Douglas E. Rohde** and Amanda J. Jenkins, Lake County Crime Laboratory

1:55 **131** Optimization of a Microwave-Assisted Extraction (MAE) Procedure for the Extraction of Organic Impurities From Seized MDMA Tablets. **Patricia J. Joiner** and Ruth Waddell Smith, Forensic Science Program, School of Criminal Justice, Michigan State University

2:20 **132** The ABC's of BZP and TFMPP in Northeast Ohio. **Szabolcs Sofalvi**[1], Eric S. Lavins[1], Paul D. Boggs[2] and Douglas E. Rohde[2], (1)The Office of the Cuyahoga County Coroner, (2)Lake County Crime Laboratory

2:45 **133** Automated Raman Correlation within a Mineral Database. **Nikolas J. Neric** and John F. Turner II, Cleveland State University

3:10 Break.

3:30 **134** The Future of Forensic Science Education in Light of the National Academy of Sciences (NAS) Report 2009. **Dennis J. De Luca**, Ohio Northern University

3:55 **135** Cleveland's Most Remembered Murder Mystery - the Sheppard Case. **Elizabeth K. Balraj,** Cuyahoga County Coroner's Office

Functional Materials: Multi-Functional Polymeric Materials (MFPM)

Wednesday, May 20, 2009, 1:30 PM - 5:10 PM
Functional Materials: Multi-Functional Polymeric Materials (1)
Van Aken (Renaissance Cleveland Hotel)

Organizer: Gary E. Wnek, Case Western Reserve University

1:30 **136** Organosilica Supersorbents That Instantly and Reversibly Swell: Opening New Frontiers In Environmental Remediation, Actuator-Based Chemical Sensing, and Water Purification. **Paul L. Edmiston, Associate Professor of Chemistry**, College of Wooster

1:55 **137** Stimuli-Responsive Optoelectronic Liquid Crystal/Polymer Composite Fibers and Films. **Ebru A. Buyuktanir**[1], Margaret W. Frey[2] and John L. West[1], (1)Kent State University, (2)Cornell University

2:20 **138** A New Type of Switchable Metallo-Supramolecular Gel. **Shihu Wang** and Elena E. Dormidontova, Case Western Reserve University

2:45 **139** Poly(styrene) Degradation. **Bob A. Howell**, Central Michigan University

3:10 Break.

3:30 **140** Ice Templated Materials - Clay Aerogels and Beyond. **Matthew D. Gawryla** and David A. Schiraldi, Case Western Reserve University

3:55 **141** Towards the Synthesis of Amphiphilic Nanoparticles Using Crosslinked Polystyrenes. **James S. Baker Jr.** and Coleen Pugh, The University of Akron

Functional Materials: Biofunctional Materials (FMBM)

Wednesday, May 20, 2009, 1:30 PM - 5:10 PM
Functional Materials: Biofunctional Materials (2)
Garfield (Renaissance Cleveland Hotel)

Organizer: Horst A. von Recum, Case Western Reserve University
Presider: Horst A. von Recum, Case Western Reserve University

Session Overview: This sesssion will cover all manner of materials either based on biological design, modified with biomolecules and/or used in biomedical applications. Applications include self-assembling materials, tissue engineering, and drug delivery.

1:30 **142** Dissipative Particle Dynamics Simulations of Micelle Targeting Dynamics. **Hadrian Djohari** and Elena Dormidontova, Case Western Reserve University

1:55 **143** Quantum Dot Surface Modification for Biomolecular Conjugation. **Mikala Shremshock** and R. Lloyd Carroll, West Virginia University

2:20 **144** Prussian Blue Nanoparticles: Novel Dual Agents for Magnetic Resonance Imaging and Drug Delivery. **Eric Soehnlen**, Mohammadreza Shokouhimehr, Songping Huang and Soumitra Basu, Kent State University

2:45 **145** Biodegradable Functional Polymers for Drug Delivery. **Abhishek Banerjee**, William Storms and Coleen Pugh, University of Akron

3:10 Break.

3:30 **146** Controllable Hydrolytic Degradation of Electrospun Biopolymer Scaffolds. **Michael S. Spagnuolo** and Lingyun Liu, University of Akron

3:55 **147** Degradable Microparticles for Protein Delivery. **Nick X. Wang**, Doug Bazdar, Scott Sieg and Horst A. von Recum, Case Western Reserve University

4:20 **148** Janus Fibers and Beyond…. **Srijanani Bhaskar**, Suparna Mandal and Joerg Lahann, University of Michigan

4:45 **149** Reversible Temperature Induced Nanoparticle Formation by Elastin-Like Polypeptide Trimers. **Ali Ghoorchian**, James T. Cole and Nolan B. Holland, Cleveland State University

Functional Materials: Membranes And Layered Systems (MLS)

Wednesday, May 20, 2009, 1:30 PM - 5:10 PM

Functional Materials: Membranes and Layered Systems (2)
Case (Renaissance Cleveland Hotel)

Organizers: Peter Pintauro, Vanderbilt University, Jeffrey A. Gray, Ohio Northern University
Presiders: Jeffrey A. Gray, Ohio Northern University, Peter Pintauro, Vanderbilt University

1:30 **150** Multilayer Polymer Films for Photonic Applications. **Kenneth D. Singer**, Case Western Reserve University

1:55 **151** Confined Crystallization In Forced Assembly Polymer Nanolayers. **Michael Ponting**[1], H.P. Wang[1], J. Keum[1], A. Hiltner[1], Benny Freeman[2] and E. Baer[1], (1)Case Western Reserve University, (2)University of Texas at Austin

2:20 **152** Dielectric Properties of Micro and Nanolayered PC/PVDF Films. **Matt Mackey**[1], Anne Hiltner[1], Eric Baer[1], Lionel Flandin[2], Mason Wolak[3] and Jim Shirk[3], (1)CWRU, (2)LMOPS-UMR 5041 CNRS Université de Savoie, (3)US Naval Research Labatory

2:45 **153** Layered Systems Based On Composites of Poly(propylene-graft-maleic anhydride)/Phosphate Glass with Excellent Gas Barrier Properties. **Mohit Gupta**, Yijian Lin, Taneisha Deans, Eric Baer, Anne Hiltner and David Schiraldi, Case Western Reserve University

3:10 Break.

3:35 **154** Mechanical Properties of Polymer/Clay Aerogels as Function of Polymer and Electrolyte Loadings. **Saeed Alhassan**, Syed Qutubuddin and David A. Schiraldi, Case Western Reserve University

4:00 **155** Computational Studies of CO2 Interaction with Functionalized Gamma-Al2O3 Surfaces. **Janice A. Steckel**, U.S. Departement of Energy, National Energy Technology Laboratory

General Catalysis (GC)

Wednesday, May 20, 2009, 1:30 PM - 5:10 PM
General Catalysis (2)
Sponsor: Saint-Gobain NorPro
Hopkins (Renaissance Cleveland Hotel)

Organizers: Dave VanderWiel, Saint-Gobain NorPro, Stephen Dahar, Saint-Gobain NorPro
Presiders: Dave VanderWiel, Saint-Gobain NorPro, Stephen Dahar, Saint-Gobain NorPro

Session Overview: The General Catalysis Symposium will focus on novel catalytic materials for energy and environmental applications, including functional catalytic structures, adsorption & surface phenomena, catalysis in novel reaction systems, developments in gas-to-liquids catalyst materials, catalyst support materials, high selectivity catalysts, future trends in catalysis and related topics. Speakers will include academic and industry researchers, including invited talks from throughout the region.

1:30 **156** The Next Generation of Industrial Catalysts: Challenges and Opportunities. **Saeed Alerasool, Research Director**, BASF Corporation

2:20 **157** Fischer-Tropsch Synthesis: Reaction Mechanism for Iron and Cobalt Catalysts. **Burtron H. Davis**, University of Kentucky

2:45 **158** Olefins by High Intensity Oxidation in Microchannel Reactors. **Terry Mazanec**, Velocys, Inc.

3:10 Break.

3:30 **159** Preparation, Properties and Selected Applications of Catalyst Supports. **Thomas Szymanski**, Saint-Gobain NorPro

3:55 **160** Hydrothermal Synthesis of Advanced Materials for Catalytic Applications. **Wojciech Suchanek,** Sawyer Technical Materials, LLC and Juan M. Garces

4:20 **161** Hydroxylation of Phenol with Hydrogen Peroxide Over ZnFe2O4. **Jianfeng Yu**[1], Hui Shao[1], Chengyang Tie[1], Siyu Tu[1], Wenxiang Zhang[2] and Tonghao Wu[2], (1)The Ohio-State University, (2)Jilin University

Women in Electrochemistry (WE)

Wednesday, May 20, 2009, 1:30 PM - 5:10 PM
Women in Electrochemistry (2)
Severance (Renaissance Cleveland Hotel)

Organizers: Heidi B. Martin, Case Western Reserve University, Carol Korzeniewski, Texas Tech University, Irina Serebrennikova, Energizer
Presiders: Irina Serebrennikova, Energizer, Carol Korzeniewski, Texas Tech University, Heidi B. Martin, Case Western Reserve University

1:30 **162** Very Strong Redox-Dependent Hydrogen Bonding Between a Bis-Dimethylaminophenylurea and a Cyclic Diamide. **Diane K. Smith**, Karina Kangas and Jessica E. Woods, San Diego State University

1:55 **163** Conductive Diamond: One Material for Both Neurosensing and Neural Stimulating Electrodes?. **Heidi B. Martin**, Case Western Reserve University

2:20 **164** Optimization of Conducting Polymers for Neurological Applications. Anthony D. Kammerich, **J. Faye Rubinson**, Forcelli Patrick, Karen N. Gale and Cameron Sweeney, Georgetown University

2:45 **165** Electrochemical Peptide-Based Sensor for the Detection of Anti-HIV Antibodies. **Rebecca Y. Lai**, University of Nebraska-Lincoln

3:10 Break.

3:30 **166** Sphere Segment Void Structures: a Reproducible SERS Substrate for Electrochemical Studies. **Andrea E. Russell, Prof.**[1], Suzanne H. Pelfrey[1], Jon Speed[1], Sumeet Mahajan[1], Philip N. Bartlett[1] and Jeremy J. Baumberg[2], (1)University of Southampton, (2)University of Cambridge

4:20 **167** Electrochemical Seed-Mediated Growth of Gold Nanorods. **Lina , G. Abdelmoti**, University of louisville

4:45 **168** Electrochemical Approach for Fabricating Devices for Sensing or Molecular Electronics Applications. **Radhika Dasari** and Zamborini Francis P, University of Louisville

ECS/YCES Graduate Student Research Posters (GSRP)

Wednesday, May 20, 2009, 5:00 PM - 6:30 PM
ECS/YCES Graduate Student Research Posters
Sponsor: Cleveland Section of the Electrochemical Society (ECS) and Yeager Center for Electrochemical Sciences (YCES)
Gold (Renaissance Cleveland Hotel)

Organizers: Jeffrey Halpern, Case Western Reserve University, Mike Nichols, John Carroll University, Mark J. Waner, John Carroll University

Session Overview: This poster session is open to graduate student posters in any area of electrochemistry. Presenters are automatically entered into the poster competition hosted by the Cleveland Section of the Electrochemical Society and Yeager Center for Electrochemical Sciences. Two winners stand to receive grants of $500 (1st place) and $300 (2nd place) towards travel expenses to participate in the Fall 2009 or Spring 2010 Meetings of the Electrochemical Society.

169 Detecting Liver Disease by Determining Total Bile Acid Levels Using a Disposable Screen-Printed Iridium-Carbon Sensor. **Brandon Bartling**, Case Western Reserve University

170 Selenium: a Non-Precious Metal Cathode Catalyst for Oxygen Reduction. **Kiera Kurak** and Alfred B. Anderson, Case Western Reserve University

171 Peptide-Conducting Materials: Synthesis and Characterization. **Christopher D. McTiernan** and M'hamed Chahma, Laurentian University

172 Novel Polyether Suppressors Enabling Copper Metallization of High Aspect Ratio Interconnects. **Julie Mendez** and Uziel Landau, Case Western Reserve University

173 Spatially Averaging Electrodes. **Disha Sheth**, Richard Diefes and Miklos Gratzl, Case Western Reserve University

174 Oxidation of Glycerol: Electrochemical Studies and Use in Fuel Cells. **Philip A. Stuckey** and Thomas A. Zawodzinski, Case Western Reserve University

Poster Session (PS)

Wednesday, May 20, 2009, 5:00 PM - 6:30 PM
Poster Session (2)
Gold (Renaissance Cleveland Hotel)

Organizers: Michael A. Nichols, John Carroll University, Mark J. Waner, John Carroll University

Session Overview: Poster Topics are in the general areas of: Organic, Materials, Polymer, Inorganic, and Computational Chemistry

175 Asymmetric Allylation Driven by Amide Dendrimer. **Jianfeng Yu**, Christopher G. McDaniel, Siyu Tu, Hui Shao, Chengyang Tie and Jon R. Parquette, The Ohio-State University

176 New Approaches to α,α-Difluorinated Alkenes and Alkynes From a Common Difluoro Ester Building Block. **Matthew L. Barchok**, Alexander J. Seed and Paul Sampson, Kent State University

177 One-Pot Approach to 1,2,3-Triazoles Using in Situ Generated Azide Anion. **Kristin Johnson**, Daniel Temelkoff, Justin Campbell, Paula Politis, Krista Cunningham and Peter Norris, Youngstown State University

178 An Efficient Synthesis of Nitrogen-Containing Heterocycles Via a Tandem Carbenoid Insertion/Ring-Closing Metathesis Sequence. **Oksana Pavlyuk**, Henrik Teller, Ross Humes and Mark McMills, Ohio University

179 Bioactive Furoic Acids: Total Synthesis of (E)-5-(2,6-Dimethyl-5,7-octadienyl)-3-Furancarboxylic Acid. **Nicholas S. Duca**, Jaimie M. Mong and S. Shaun Murphree, Allegheny College

180 Chemical and Biological Syntheses of Bioactive Prenylated Oxindole Alkaloids. **Rajesh Viswanathan**, Case Western Reserve University

181 Enaminones as Building Blocks in Heterocyclic Synthesis:. **Haider J. Behbehani** and Mohammad Elnagdi, Prof. in organic chemistry

182 Characterization of Anthocyanins In Elderberry (Sambucus Peruviana) Extracts. **Liladhar Paudel**[1], Faith J. Wyzgoski[2], Sara E. Whitson[3], Peter Rinaldi[4], M. Monica Giusti[2], Nuryati Pangestu[2] and Chrys Wesdemiotis[3], (1)University of akron, (2)The Ohio State University, (3)The University of Akron, (4)University of Akron

183 NMR Characterization of Poly(lactide-co-glycolide)-b-Polyethylene Glycol)-Folate (PLGA-PEG-FOL). **Linlin Li**, Peter L. Rinaldi, Nikki Robishaw and Wiley Youngs, University of Akron

184 Metallodendron Catalyzed Allylic Alkylation. **Siyu Tu**, Jianfeng Yu, Hui Shao, Chenyang Tie, T.V. RajanBabu and Jon R. Parquette, The Ohio-State University

185 Synthesis and Physical Evaluation of 2- and 5-Alkoxy-1,3-Thiazole-Based Liquid Crystals. **Alan M. Grubb**, Sana Hasan, Andre A. Kiryanov, Paul Sampson and Alexander J. Seed, Kent State University

186 Synthesis of Free Base Porphyrin Dendrimers Containing Poly(Glutamic Acid). **Rashid M. Altamimi** and David A. Modarelli, The University of Akron

187 Syntheses and Characterizations of a Self-Assembled Oligo(phenyleneethynylene). **Wongwit Wongwitwichote** and David A. Modarelli, University of Akron

188 Application of 3-Fluorothiophene Building Blocks in Liquid Crystal Synthesis. **Pritha Subramanian**, Ruth M. Leslie, Andre A. Kiryanov, Paul Sampson and Alexander J. Seed, Kent State University

189 The Synthesis and Mesomorphic Properties of Novel Thieno[3,2-b]Thiophene-2-Carboxylate Ester Liquid Crystals. **Raymond M. Gipson**, Alexander J. Seed and Paul Sampson, Kent State University

190 Encapsulation of Hydrophobic Molecules by A Self-Assembled Peptide-Dendron Hybrid: Potential Applications in Drug Delivery. **Hui Shao**, Chenyang Tie, Jianfeng Yu, Siyu Tu and Jon R Parquette, The Ohio State University

191 Confinement of Elastomeric Block Copolymers Via Forced Assembly. **Tiffani B. Abernathy**, LaShanda Korley, Anne Hiltner and Eric Baer, Case Western Reserve University

192 Diethyl 2,3-Di(diphenylphophinato)Butanedioate: A Green Precursor to Flame Retardant Oligomers. **Katelyn E. Carter**, Central Michigan University and Bob A. Howell, Central Michigan University, Mount Pleasant, MI 48859-0001

193 Melt Processing of All-Polymer Lasers. **Hyunmin Song**[1], Ken Singer[1], Tomasz Kazmierzcak[1], Juefei Zhou[1], Yeheng Wu[1], Joe Lott[1], Jim Andrews[2], Chris Weder[1], Anne Hiltner[1] and Eric Baer[1], (1)Case Western Reserve University, (2)Youngstown State University

194 Nanolayering Technology for Probing Homogeneous and Heterogeneous Nucleation. **Deepak S. Langhe**, Anne Hiltner and Eric Baer, Case Western Reserve University

195 Miscibility of Ethylene-Octene Random Copolymer and Ethylene-Octene Olefinic Block Copolymer Blends. **D. U. Khariwala**[1], H. P. Wang[1], A. Taha[2], G. Marchand[2], A. Hiltner[1] and E. Baer[1], (1)Case Western Reserve University, (2)The Dow Chemical Company

196 Stability of Poly(propylene oxide). **Mahmoud R. Al-Omari** and Bob A. Howell, Central Michigan University

197 Transoral Patch Development and Kinetic Study of Drug Release in Artificial Saliva. **Arpana Acharya**, Alexander Kenneth and Riga Alan, The University of Toledo

198 Enhanced Gas Barrier From Confined Crystallization of PEO In Nanolayered Films. **Haopeng Wang**[1], Jong K. Keum[1], Chuanyar Lai[1], Benny Freeman[2], Anne Hiltner[1] and Eric Baer[1], (1)Case Western Reserve University, (2)University of Texas at Austin

199 Hierarchically Designed Segmented Polyurethanes for High Performance Applications. **J. Casey Johnson** and LaShanda Korley, Case Western Reserve University

200 Characterization of Conjugated Polymer-Semiconductor Nanoparticles Composites. **Bimala Lama** and Matthew, P. Espe, University of akron

201 Syntheses and Characterization of a Series of Bis-Bidentate Ligands Utilizing 4,4'-Methylenedianiline. **Jennifer Kubert**, Meghann Mouyianis, Natalie Datien, Charlotte Hsu and Mark A. Benvenuto, University of Detroit Mercy

202 Enhancing Toughness in a Crosslinked and Telechelic Supramolecular Polymer System. **Nicholas R. Wheeler**, Case Western Reserve University

203 ESR Study of Electron Beam Irradiated PE Blends. **Ann C. Abraham**[1], Michael A. Czayka[1], Michael R. Fisch,[2] and Dylan Miklacic[1], (1)Kent State University-Ashtabula Campus, (2)Kent State University

204 Self-Assembly Studies of Metallo-Supramolecular Polymers in Solution. **Zheng Li**, Justin Kumpfer, Adriane Miller, Alexander M. Jamieson and Stuart J. Rowan, Case western reserve university

205 Sustainable Synthesis of Monodispersed Spinel Nano-Ferrites. **Babita Baruwati** and Rajender S. Varma, National Risk Management Research Laboratory, U.S. Environmental Protection Agency

206 Rhombic Nanoporous Monolayers Arising From Low Symmetry Amphiphiles. **Seokhoon Ahn**, Christine N. Morrison and Adam J. Matzger, University of Michigan

207 Effect of Acid Concentration On Adsorption Properties of Mesoporous Alumina. **Stacy M. Morris** and Mietek Jaroniec, Kent State University

208 Soft-Templating Synthesis and Properties of Mesoporous Carbons and Silicas with Incorporated Nickel Nanoparticles. Laura Sterk, **Joanna Gorka** and Mietek Jaroniec, Kent State University

209 Epoxy/Clay Aerogel Composite Systems. **Mohammed Albiloushi**, Case Western Reserve University

210 Electrochemical Deposition and Post-Processing Treatment of CdTe/CdS Nanowires in Porous Anodic Alumina Templates. **Bo He**, Stefan Kraus, Matthias Hanauer and Terry P. Bigioni, University of Toledo

211 Improved Synthesis of Pincer Ligand Precursor, and Synthesis and Structural Characterization of Terphenyl Scaffolded S-C-S Palladium Pincer Complexes. **Paul R. Challen**[1], Man Lung Kwan[1], John D. Protasiewicz[2], Thomas Spilker[1], Wilson Luu[1], Andrew Schafer[1], Adam Jenkins[1], Laura Gruber[1] and David Essi IV[1], (1)John Carroll University, (2)Case Western Reserve University

212 Using Collision-Induced-Dissociation Mass Spectrometry to Predict Solution-Phase Relative Affinities of Unidentate Ligands for a Pd(II) Pincer Cation. **Norris W. Hoffman**[1], Alexandra C. Stenson[1], Richard E. Sykora[1], Rachel K. Traylor[1], Benjamin F. Wicker[1], Samantha Riley[1], David A. Dixon, Dr. [2], Alan G. Marshall[3], Man L. Kwan[4] and Paul Schroder[4], (1)University of South Alabama, (2)The University of Alabama, (3)Ion Cyclotron Resonance Program, (4)John Carroll University

213 Synthesis and Structural Characterization of Three-Coordinate Manganese, Iron, and Zinc Amido Complexes. **Kristin A. Gore** and Scott D. Bunge, Kent State University

214 Development of Successful Organoplatinum Antitumor Agents. **Kelsey N. Stanton** and Bob A Howell, Central Michigan University

215 Use of Group 6 Carbonyl Reagents to Stabilize Siliconium Cations. **Joanna M. Beres**, Alyison Leigh, Chrys Wesdimiotis and Claire A. Tessier, University of Akron

216 Redox-Active Ni(II) Complexes in N3S2 Ligand Fields Inspired by the Nickel-Dependent Superoxide Dismutase. **Huaibo Ma**[1], Jeffrey L. Petersen[2] and Michael Jensen[1], (1)Ohio University, (2)West Virginia University

217 Oxidative Additions to Ni(0) Supported by a Pseudotetrahedral Enforcer Ligand. **Shengwen Liang**[1], Swarup Chattopadhyay[1], Jeffrey L. Petersen[2], Victor G. Young[3] and Michael Jensen[1], (1)Ohio University, (2)West Virginia University, (3)University of Minnesota

218 Solvation of Lithium Ion in Polar Aprotic Solvents: Interaction of Lithium Ion with 1,4-Dioxane. **David W. Johnson** and Amanda Joseph, Universiy of Dayton

219 Synthesis, Spectroscopic Characterization, and X-Ray Structure of a New Five-Coordinated Chlorocopper(II) Complex with a Fluorigenic Ligand. **Catherine Miller**, Kimberly E. Kern and Michael A. Nichols, John Carroll University

220 Synthesis and Characterization of a Novel Multi-Dentate Ligand Incorporating Tris-(2-aminoethylene)-Amine, and Its Metal Complexes. **Malinda Killu**, Natalie Datien and Mark A. Benvenuto, University of Detroit Mercy

221 Synthesis, Characterization, and Redox Behavior of Low-Coordinate Phosphorus Compounds. **Marlena P. Washington**, Vittal Babu Gudimetla, Feng Li Laughlin and John D. Protasiewicz, Case Western Reserve University

222 Group V Metal Complexes of Mono-Anionic Bidentate Acetophenone Imine Ligands. **Abdollah Neshat** and Joseph A. R Schmidt, The University of Toledo

223 Lithium Adsorption On Graphene Nanoribbons. **Chananate Uthaisar**, Veronica Barone and Juan E. Peralta, Central Michigan University

224 Preparation of Metal Sulfides and Nanoparticles for Aerospace Applications. **J.E. Cowen**[1], A.F. Hepp[2], N.V. Duffy[3], M.J. Baird[4], James R. Gaier[2], M.J. Kulis[5], S.A. Duraj[6] and J.N. Williams[6], (1)Case Western Reserve University, (2)NASA Glenn Research Center, (3)Wheeling Jesuit University, (4)University of Pittsburgh, (5)The NCSER at NASA Glenn Research Center, (6)Cleveland State University

225 Cu, in, and Ga Dithiocarbamate Precursors for Thin-Film Solar Cell Materials. **S.A. Duraj**[1], N.V. Duffy[2], A.F. Hepp[3], J.E. Cowen[4], M.D. Hoops[2], M.F. Baird[2], Jerry D. Harris[5] and M.H.-C.

Jin[6], (1)Cleveland State University, (2)Wheeling Jesuit University, (3)NASA Glenn Research Center, (4)Case Western Reserve University, (5)Northwest Nazarene University, (6)University of Texas at Arlington

226 Metallo-Thiophenes with Novel Electronic and Optical Properties: Photoharvestors in Solar Cells. **Yagnaseni Ghosh**[1], M. H. Chisholm[1], Yao Liu[2], Brian Alberding[2], Claudia Turro[2] and Dr. Terry L. Gustafson[2], (1)Ohio State University, (2)The Ohio State University

227 Extended Porphyrins for Dye-Sensitized-Solar-Cells. Rohit Deshphade, Bo Wang, **Hong Wang**, Lin Jiang, ShouZhong Zou and Lei Kerr, Miami University

228 Dielectric Properties of Biaxially Oriented Micro and Nanolayered Films. **Joel M. Carr**, M. Mackey, A. Hiltner and E. Baer, Case Western Reserve University

229 Fuel From Salt Tolerant Plants and Algae. **Michael J. Kulis**[1], A.F. Hepp[2] and Bilal Bomani[2], (1)National Center for Space Exploration Research, (2)NASA Glenn Research Center

230 First-Principles Density Functional Calculations of Hydrogen Molecule Storage On Lithium-Doped Carbon Compounds. **Prabath Wanaguru**, Veronica Barone and Peralta Juan, Central Michigan University

231 Electrostatic Potentials On the Surfaces of Model Carbon Nanotubes. **Zenaida Peralta-Inga**[1], Jane S. Murray[2], Sylke Boyd, [3], Monica C. Concha,[1], Pat Lane,[1] and Peter Politzer[2], (1)University of New Orleans, (2)Cleveland State University, (3)University of Minnesota at Morris

232 Local Ionization Energies as a Means of Identifying Reactive Sites On the Surfaces of Model Carbon Nanotubes with and without Stone-Wales Defects. **Jane S. Murray**[1], Monica Concha[2], T. C. Dinadayalane, Ph.D[3], Jerzy Leszczynski[3] and Peter Politzer[1], (1)Cleveland State University, (2)University of New Orleans, (3)Jackson State University

233 Reaction Force Analysis of Polyatomic Bond Dissociation. **Jane S. Murray**[1], Alejandro Toro-Labbé[2], Soledad Gutiérrez-Oliva[2] and Peter Politzer[1], (1)Cleveland State University, (2)Pontificia Universidad Católica de Chile

234 Vibrational Analysis of Molecular Solids: Analyzing Intra- and Intermolecular Contributions to Eigenmodes. **Sylke Boyd,** University of Minnesota-Morris and Kevin J. Boyd, Central College Iowa

235 Exploration of Solution Structure and Thermodynamic Parameters Upon Monte Carlo Simulations. **Peter I. Nagy**[1], Mugunthu R. Dhananjeyan[1], Paul W. Erhardt[1], Edit Baka[2], Gergely Volgyi[2] and Krisztina Takacs-Novak[2], (1)University of Toledo, (2)Semmelweis University

236 Photodissociation of Co-C Bond in Methyl- and Ethylcobalamin: An Insight From TD-DFT Calculations. **Manoj Kumar**, University of Louisville

Thursday, May 21, 2009

Health Impact of Nanomaterials (HIN)

Thursday, May 21, 2009, 8:00 AM - 12:00 PM
Health Impact of Nanomaterials
Sponsor: Bureau Veritas Northeast Ohio American Industrial Hygiene Association
Superior (Renaissance Cleveland Hotel)

Organizers: Betty L. Hodgson, Science Applications International Corp., Luz Jeziorowski, NASA-GRC
Presiders: Luz Jeziorowski, NASA-GRC, Betty L. Hodgson, Science Applications International Corp.

Session Overview: Applications for the use of nanoscale materials are on the increase. Many applications that are envisioned for these materials will take advantage of the fact that nanomaterials have different chemical and physical properties than materials at larger scales. While these properties can be used for making lighter, stronger composites, to deliver drugs where they are needed, or to clean contaminated soil and groundwater, the ability to evaluate and control the health risks is not as clear. This symposium focuses on understanding and evaluating the potential risks associated with the manufacture and use of engineered nanomaterials and guidance on managing these risks to better protect the workers and the public.

8:00 Welcoming Remarks.
8:10 **237** Nanoparticles: Potential Health Consequences to the Pulmonary System. **Vincent Castranova**, NIOSH
9:00 **238** Nanomaterials and Health: Synthesis, Uses, and Exposures In Context. **Randy L. Vander Wal**, Penn State University
9:25 **239** Characterization of Engineered Nanoparticles by Analytical Electron Microscopy. **Alan. M. Segrave,** Bureau Veritas North America, Inc.
9:50 Break.
10:15 **240** Pulmonary Toxicity of Manufactured Nanoparticles. **Brian C. Peebles**, Amber Nagy, Prabir K. Dutta and W. James Waldman, The Ohio State University
10:40 **241** Nanomaterials: Worker Protection Programs. **Dan Markiewicz,** Markiewicz & Associates Ltd.
11:05 **242** Medical Surveillance for Nanotech-Exposed Workers. **Kathleen M. Fagan,** Occupational Safety and Health Administration
11:30 Concluding Remarks.

100 Years of Chemistry In Cleveland (YoCC)

Thursday, May 21, 2009, 8:10 AM - 11:30 AM
100 Years of Chemistry in Cleveland
Humphrey (Renaissance Cleveland Hotel)

Organizer: Helen Mayer, GrafTech
Presider: Helen Mayer, GrafTech

Session Overview: In 2009, the Cleveland Section is celebrating 100 years of association with the national American Chemical Society. The Cleveland Section is noted for the number of historical events in chemistry that happened here. The section has been honored by six Chemical Historical Landmarks which will be featured in this session.

8:10 **243** Susan Reeve Lyon and Practices of Seventeenth Century English Apothecaries. **A. L. Wilson**, Oolong Informatics
8:35 **244** 100 Years of Chemistry in Cleveland. **Helen Mayer**, GrafTech
9:00 **245** A Revolution in the Everyday Use of Metal; Charles M. Hall's Discovery of the Method for Refining Aluminum by Electrolysis. **Norman C. Craig**, Oberlin College
9:25 **246** Edward Williams Morley: "It's 15.879 ± 0.001". **William Fickinger**, Case Western Reserve University
9:50 Break.
10:15 **247** From the Columbia Battery to the Twenty-First Century. **Virginia M. Brandt**, Energizer
10:40 **248** The Sohio Acrylonitrile Process - A National Historic Chemical Landmark. **Mark C. Cesa**, INEOS Nitriles
11:05 **249** The Discovery and Development of High Performance Carbon Fibers. **John C. F. Chang**, GrafTech International Holdings, Inc.

Functional Materials: Emulsion Polymers - Materials & Characterization (EPMC)

Thursday, May 21, 2009, 8:10 AM - 11:30 AM
Functional Materials: Emulsion Polymers - Materials & Characterization
Sponsor: None
Hopkins (Renaissance Cleveland Hotel)

Organizer: Duke Rao, Sherwin Williams
Presider: Madhukar (Duke) Rao, Director, The Sherwin Williams Company

Session Overview: The Emulsion Polymers/ Characterization session will cover Various Waterborne Polymer technologies(including various dispersions and hybrids), Surfactant Technologies in Emulsion Polymerizations, and characterizations of these polymers by physical characterization techniques.

8:10 **250** Surfactants for Emulsion Polymerization. **Yi-Zhong Li,** Rhodia Inc.
8:35 **251** New High Performance Alkyl Phenol Free Surfactants with Improved Physical Properties. **Ana Fernandez,** Cognis Corporation
9:00 **252** Structural Evolution of Monomer Drops and Polymer Particles in Heterogeneous RAFT Polymerizations. **Jennifer O'Donnell**[1], Binh T.T. Pham[2], Gregory G. Warr[2] and Brian Hawkett[2], (1)Iowa State University, (2)The University of Sydney
9:25 **253** Recent Advances In Polyurethane Dispersions. **Alex Lubnin,** Lubrizol
9:50 Break.
10:15 **254** Amphoteric Binder System for Waterborne Stain Blocking Primers Suitable for Use at Very Low VOC Levels. **Richard Flecksteiner**, Alan Fream, Maurille Secher, Sebastien Freal-Saisson, Regina Matranga and Brian Doran, Eliokem Materials and Concepts
10:40 **255** Morphological Investigations of Multi-Phase Polymeric Materials. **David F. Klimovich** and Nemi C. Jain, Sherwin-Williams Co.
11:05 **256** Characterization of Functional Polymeric Materials for Coating Industry: Classical and Newer Approaches. **Nemi C. Jain, Sr.,** Sherwin-Williams Co.

Organic Chemistry: New Synthetic Methodologies (NSM)

Thursday, May 21, 2009, 8:10 AM - 11:30 AM
Organic Chemistry: New Synthetic Methodologies (1)
Sponsor: ACS Division of Organic Chemistry, Quanta BioDesign, Ltd., Toledo Section of the ACS
Blossom (Renaissance Cleveland Hotel)

Organizers: Suri S. Iyer, University of Cincinnati, Steven J. Sucheck, University of Toledo
Presider: Suri S. Iyer, University of Cincinnati

Session Overview: The symposium will broadly feature new synthetic methods and the application of new methods for the preparation of organic compounds. The scope of the symposium will cover topics such as new functional group transformations, green chemistry, asymmetric syntheses, catalytic, metal-mediated, enzyme-mediated reactions and total synthesis of natural and unnatural products.

8:10 **257** Towards Green Azidation Chemistry. **Peter Norris**, Youngstown State University
8:35 **258** High Speed Ball Milling as An Environmentally Friendly Approach to Organic Synthesis. **Daniel C. Waddell**, Indre Thiel, S. Tyler Marcum, Brandon Smith and James Mack, University of Cincinnati
9:00 **259** Novel Strategies for Complex Molecule Synthesis. **Craig J. Forsyth**, The Ohio State University
9:50 Break.
10:15 **260** A Fragmentation Route to Allenes. **David G.J. Young** and Mark-Henry Kamga, East Tennessee State University
10:40 **261** Nano-Catalysts: Bridging the Gap Between Homogeneous and Heterogeneous Catalysis. **Vivek Polshettiwar**[1], Babita Baruwati[2] and Rajender S. Varma[2], (1)National Risk Management Research Laboratory, U. S. Environmental Protection Agency, (2)National Risk Management Research Laboratory, U.S. Environmental Protection Agency
11:05 **262** Novel Green Catalytic Oxidation Reactions. **Mo Hunsen**, Zachary S. Grant and Phan T. Truong, Kenyon College

Analytical Chemistry: Bioanalysis Focus (ACBF)

Thursday, May 21, 2009, 8:35 AM - 11:30 AM

Analytical Chemistry: Bioanalysis Focus
Case (Renaissance Cleveland Hotel)

Organizer: Rebecca Whelan, Oberlin College
Presider: Rebecca Whelan, Oberlin College

Session Overview: This session highlights the application of analytical methods to systems of biological origin. Areas of emphasis may include analytical neurochemistry, bio/nanomaterials, sensors, proteomics/metabolomics, bioelectrochemistry, miniaturized bioanalysis platforms, separations, and mass spectrometry. Reports in instrument development and analytical application are both encouraged.

8:35 **263** Quantitative Analysis of 6-Benzylthioinosine, A Promising Therapeutic Agent for Acute Myeloid Leukemia. **Lan Li**[1], David N. Wald[2], William Tse[3] and Yan Xu[1], (1)Cleveland State University, (2)Case Western Reserve University School of Medicine, (3)Case Western Reserve School of Medicine

9:00 **264** Molecular Targets for Diabetes Mellitus Associated Erectile Dysfunction. **Elizabeth H. Yohannes**[1], Jinsook Chang[2], Kelvin P. Davies,[2] and Mark R. Chance[1], (1)Case Western Reserve University School of Medicine, (2)Albert Einstein College of Medicine

9:25 **265** Quantitative Determination Antineoplastic Agent Hexamethylene Bisacetamide in Mouse Plasma and Tissue by LC-MS/MS. **Kerri Smith**[1], Xiang Zhou[1], Monica M. Montano[2] and Yan Xu[3], (1)Cleveland State University, (2)Case Western Reserve University, (3)Cleveland State Universtity

9:50 Break.

10:15 **266** In Vitro Evaluation of Dopamine D2 and D3 Receptors in the Striatum Using Fast Scan Cyclic Voltammetry. Francis K. Maina and **Tiffany A. Mathews**, Wayne State University

10:40 **267** Quantitative Determination of Cannabinoid Receptor Antagonist Surinabant by Chromatographic Methods. **Melissa McCulloch** and Yan Xu, Cleveland State Universtity

11:05 **268** Sustained Intracellular Dosing of Molecules to Elucidate Cellular Function. **Prasad Oruganti** and Miklos Gratzl, Case Western Reserve University

Art and Science (AS)

Thursday, May 21, 2009, 8:35 AM - 11:30 AM
Art and Science
Wiley (Renaissance Cleveland Hotel)

Organizer: Sharon Miller, Senior Research Engineer, NASA Glenn Research Center
Presider: Sharon Miller, NASA-GRC

Session Overview: Advances in science and technology have far reaching benefit to society. One of the areas benefiting from the use of science and technology is the conservation, preservation and authentication of works of art and symbols of our cultural heritage. In this session presenters share their expertise and experience using modern science and technology as a tool to aid in the conservation or authentication of art.

8:35 **269** Science in the Service of Art: Materials Research at the Art Materials Information and Education Network. Mark D. Gottsegen and **Albert P. Albano,** Intermuseum Conservation Association

9:25 **270** Energy Dispersive X-Ray Analysis of a Series of Early Nineteenth Century Korean Coins,. **Danielle Garshott**, Elizabeth MacDonald, Stephanie Spohn and Mark A. Benvenuto, University of Detroit Mercy

9:50 Break.

10:15 **271** Corrosion Chemistry of Historic Lead-Tin Alloy Organ Pipes. **Catherine M. Mauck** and Catherine M. Oertel, Oberlin College

10:40 **272** Using the Space Environment to Conserve Art. **Sharon Miller,** NASA Glenn Research Center and Bruce A. Banks, Alphaport.

11:05 **273** Characterization of the Rock Art of Cueva La Conga, Nicaragua: Preliminary Results. **Ruth Ann Armitage** and Ran Li, Eastern Michigan University

Computational Chemistry (CC)

Thursday, May 21, 2009, 8:35 AM - 11:30 AM
Computational Chemistry (3)
Whitehall (Renaissance Cleveland Hotel)

Organizers: Jane S. Murray, Cleveland State University, Peter Politzer, Cleveland State University
Presider: David W. Ball, Cleveland State University

Session Overview: Acknowledgements: We greatly appreciate the support provided by the U. S. Office of Naval Research and the Computers in Chemistry Division of the American Chemical Society.

8:35 **274** Carbon Nanotubes for Sensor Design and Nonlinear Optical Applications: Density Functional Theory Studies. **Felipe Bulat**, Global Strategies Group (North America) Inc

9:25 **275** Computational Study of the Stone-Wales Defect in Armchair Single-Walled Carbon Nanotubes. **T. C. Dinadayalane** and Jerzy Leszczynski, Jackson State University

9:50 Break.

10:15 **276** Computational Investigation of Hydrogen and Methyl Chemisorption to Carbon Nanotube Models. **Ronald C. Brown**, Mercyhurst College

10:40 **277** E-Z Photoisomerization of Diphosphenes: The Involvement of a Dark Phantom State. **John L. Payton,** Case Western Reserve University and M. Cather Simpson, The University of Auckland

Energy Storage and Energy Conversion: Fuel Cells (ESFC)

Thursday, May 21, 2009, 8:35 AM - 11:30 AM
Energy Storage and Energy Conversion: Fuel Cells
Severance (Renaissance Cleveland Hotel)

Organizers: Aloysius Hepp, NASA Glenn Research Center, Prashant Kumta, University of Pittsburgh
Presider: M.J. Kulis, The NCSER

Session Overview: This session consists of two invited and two contributed talks. The focus of the session is primarily on carbon-based materials. The applications of these materials are diverse including hydrogen storage, de-sulfurization, and catalyst supports. The materials systems described in this session have potential for use in a variety of fuel cell technologies.

8:35 **278** Chemical Durability Study of Non-Perflorinated Materials for Fuel Cell Membranes. **Deepa Savant**, David A. Schiraldi and Thomas A. Zawodzinski, Case Western Reserve University

9:25 **279** Liquid Phase Adsorption by Microporous Coordination Polymers for the Desulfurization of Fuels. **Katie A. Cychosz**, Antek G. Wong-Foy and Adam J. Matzger, University of Michigan

9:50 Break.

10:15 **280** Novel Carbon Supports for Electrocatalysts in PEM Fuel Cells. **Abhishek Guha**[1], David A. Schiraldi[2] and Thomas A. Zawodzinski[2], (1)Contained Energy LLC, (2)Case Western Reserve University

11:05 **281** Hydrogen Storage in Microporous Coordination Polymers: A Technology Update. **Antek G. Wong-Foy**, Kyoungmoo Koh and Adam J. Matzger, University of Michigan

Functional Materials: Biofunctional Materials (FMBM)

Thursday, May 21, 2009, 8:35 AM - 11:30 AM
Functional Materials: Biofunctional Materials (3)
Halle (Renaissance Cleveland Hotel)

Organizers: Joerg Lahann, University of Michigan, Horst A. von Recum, Case Western Reserve University
Presiders: Horst A. von Recum, Case Western Reserve University, Joerg Lahann, University of Michigan

8:35 **282** Molecular Programming with DNA. **Erik Winfree**, California Institute of Technology
9:25 **283** Designed Peptide Conjugates for Directing the Simultaneous Synthesis and Assembly of Complex Nanoparticle Superstructures. **Nathaniel L. Rosi** and Chunlong Chen, University of Pittsburgh
9:50 Break.
10:15 **284** Preparation and Characterization of Superlowfouling Electrospun Scaffolds of Zwitterionic Polysulfobetaine Methacrylate for Tissue Engineering Applications. **Reza Lalani**, Lingyun Liu and Bo Zhang, University of Akron
10:40 **285** Cyclodextrin Based Hydrogel Coatings for Antibiotic Drug Delivery. **Thimmareddy Thatiparti** and Horst A. von Recum, Case Western Reserve University
11:05 **286** Effect of the Attachment of An Oligomerization Domain On the Thermal Behavior of Elastin-Like Polypetpides. **James T. Cole**, Ali Ghoorchian and Nolan B. Holland, Cleveland State University

Organic Chemistry (OC)

Thursday, May 21, 2009, 8:35 AM - 11:30 AM
Organic Chemistry (1)
Sponsor: Quanta BioDesign, Ltd., Toledo Section of the ACS
Garfield (Renaissance Cleveland Hotel)

Organizer: Steven J. Sucheck, University of Toledo
Presider: Steven J. Sucheck, University of Toledo

Session Overview: The General Organic Symposium is open to all papers concerning subject matter relevant to the field of organic chemistry.

8:35 **287** Synthesis of Anthracene Derivatives as Donor-Acceptor Liquid Crystal Components. **Joseph J. Reczek**, Mitchell Legg and Alex Murray, Denison University
9:00 **288** Decarboxylative Condensation Between O18-Labeled Phenylpyruvic Acid and N-Hydroxyphenethylamine Affords O16-Amide Products. **Rommel S. Talan**, Aditya K. Sanki and Steven J. Sucheck, University of Toledo
9:25 **289** Synthesis of Transition State Inhibitors of Antigen 85. Aditya K. Sanki, **Fransis E. Umesiri**, Julie Boucau, Donald R. Ronning and Steven J. Sucheck, The University of Toledo
9:50 Break.
10:15 **290** Calixarenes for Attachment to Surfaces Via the Methylene-Bridge Position. **Jordan L. Fantini**, Michael J. Hardman and Ashley M. Thomas, Denison University
10:40 **291** Ultrafast UV-Vis and Infrared Spectroscopic Studies On Singlet Styrylcarbomethoxy Carbene. **Yunlong Zhang**, Jacek Kubicki and Matthew S. Platz, The Ohio State University
11:05 **292** Design and Synthesis of New Epothilone Analogues. **Liyanaaratchige Tillekeratne** and Mamoun M. Alhamadsheh, University of Toledo

Physical Chemistry (PC)

Thursday, May 21, 2009, 8:35 AM - 11:30 AM
Physical Chemistry (1)
Sponsor: American Chemical Society - Physical Chemistry Division, Newport / Spectra-Physics, Ultrafast Systems, Coherent, Optronix
Bush (Renaissance Cleveland Hotel)

Organizers: Sarah J. Schmidtke, College of Wooster, Carlos E. Crespo-Hernández, Case Western Reserve University
Presiders: Sarah J. Schmidtke, College of Wooster, Carlos E. Crespo-Hernández, Case Western Reserve University

Session Overview: Talks in the general Physical Chemistry sessions include a focus on Photo-Organic Chemistry, Biophysics, and Ultrafast Excited-State Dynamics. There will also be presentations on current studies, outside of these areas, that fall within the larger field of Physical Chemistry.

8:35 **293** Ultrafast Dynamics of Flavins and Flavoproteins. **Dongping Zhong**, The Ohio State University
9:25 **294** The Role of Adenine in the Excited State Behavior of Flavin Cofactors. **Ksenija D. Glusac**, Bowling Green State University
9:50 Break.
10:15 **295** Cis - Trans Isomerization as a Mean to Release Alcohols. **Anna Gudmundsdottir**, Sridhar Rajams and Tara Inman, University of Cincinnati
10:40 **296** Photoinduced Rearrangement and Energy Flow in Small Polyatomic Molecules in Solution. Igor L. Zheldakov, Patrick Z. El-Khoury, Maxim S. Panov and **Alexander N. Tarnovsky**, Bowling Green State University
11:05 **297** Microwave Spectra of π-, μ-, and o-Cyanophenol and Internal Rotation of π-Cyanophenol. **Andrew R. Conrad**, Nathan Z. Barefoot and Michael J. Tubergen, Kent State University

SAS/AVS Applied Spectroscopy Symposium (SAS)

Thursday, May 21, 2009, 8:35 AM - 11:30 AM
SAS/AVS Applied Spectroscopy Symposium (1)
Sponsor: De Nora Tech ThermoFisher Scientific Bruker BioSpin Corporation Shimadzu Scientific Instruments, Inc.
Van Aken (Renaissance Cleveland Hotel)

Organizers: Brian Perry, LORD Corporation, Wayne Jennings, Case Western Reserve University
Presider: Wayne Jennings, Case Western Reserve University

Session Overview: The SAS/AVS symposium will feature papers on the utilization of spectroscopy for academic and industrial applications. The SAS/ACS Yeager Award talk for outstanding undergraduate research involving spectroscopy will also be featured in the symposium.

8:35 **298** A Novel Narrow Band Electronically Tunable Image Filter. **Nick Pallas** and John F. Turner II, Cleveland State University
9:00 **299** XPS and TOF-SIMS Depth Profiling of Organic Materials Using C60 Sputtering. **Scott R. Bryan**, Gregory L. Fisher, John F. Moulder, Sankar Raman and Saad Alnalbulsi, Physical Electronics
9:25 **300** In-Situ Ion-Beam Studies of Electrochemical Systems. **Jesse S. Wainright**, Case Western Reserve University
9:50 Break.
10:15 **301** Laser Anemometry for Wind Measurement. **David H. Matthiesen,** Case Western Reserve University

10:40 **302** Semi-Experimental Structures From High-Resolution Infrared Spectroscopy and Quantum Chemical Calculations. **Deacon J. Nemchick**, Oberlin College

Solid State Chemistry (SSC)

Thursday, May 21, 2009, 8:55 AM - 11:30 AM
Solid State Chemistry (2)
Holden (Renaissance Cleveland Hotel)

Organizers: Catherine M. Oertel, Oberlin College, Cora Lind, University of Toledo
Presider: Cora Lind, University of Toledo

Session Overview: Solid-state chemistry is aimed at the synthesis and characterization of advanced materials. Understanding materials' properties based on the structure of materials, and fine-tuning properties through the study of structure-property relationships, ties together diverse areas like nanomaterials, semiconductors, crystal growth and engineering. In this symposium, new materials, synthetic routes and characterization methods will be presented.

8:55 Introductory Remarks.
9:00 **303** Building Extended Solids through Sol-Gel Assembly of Phosphide Nanoparticles: A New Class of Aerogels. Keerthi Senevirathne[1], Ronald Tackett[1], Parashu Ram Kharel[1], Gavin Lawes[1], Autumn Burns[2], Mark E. Bussell[2] and **Stephanie L. Brock**[1], (1)Wayne State University, (2)Western Washington University
9:25 **304** Synthesis of $A^{II}B^{IV}M_3O_{12}$ Materials Using the Non-Hydrolytic Sol-Gel Method. **Tamam Issa Baiz** and Cora Lind, The University of Toledo
9:50 Break.
10:15 **305** Structural and Magnetic Properties of Perovskites with Ordering of Both the A-Site and B-Site Cations. **Graham King**[1], Lora M. Wayman[1], Andrew S. Wills[2] and Patrick M. Woodward[1], (1)The Ohio State University, (2)University College London
10:40 **306** The Interplay Between Spin, Orbital and Chemical Order in $Ca_{2-X}La_xMnRuO_6$ Perovskites. **Jennifer Rose Soliz** and Patrick M. Woodward, The Ohio State University
11:05 **307** Metal Oxide Photoelectrodes Prepared Via Atomic Layer Deposition. **Thomas Hamann**, Michigan State University

Thursday, May 21, 2009, 11:30 AM - 12:30 PM
Plenary Lecture: Professor Daniel G. Nocera of the Massachusetts Institute of Technology
Whitehall (Renaissance Cleveland Hotel)

Organizer: Daniel Scherson, Case Western Reserve University
Presider: Kenneth W. Street, The NASA-Glenn Research Center
11:30 **308** Personalized Energy for 1 (x6 Billion). **Daniel G. Nocera**, Massachusetts Institute of Technology

Organic Chemistry: New Synthetic Methodologies (NSM)

Thursday, May 21, 2009, 1:05 PM - 5:10 PM
Organic Chemistry: New Synthetic Methodologies (2)
Sponsor: ACS Division of Organic Chemistry, Quanta BioDesign, Ltd., Toledo Section of the ACS
Blossom (Renaissance Cleveland Hotel)

Organizers: Suri Iyer, University of Cincinnati, Steven J. Sucheck, The University of Toledo
Presider: Suri S. Iyer, University of Cincinnati

1:05 **309** Reversal of Enantioselectivity Using Chiral Amino Alcohol Ligands with Multiple Binding Modes. **Kyungsoo Oh**, Indiana University Purdue University Indianapolis

1:30 **310** Total Synthesis of Largazole and 2-Epi-Largazole, Potent Anticancer Agents. **Bo Wang** and Craig Forsyth, The Ohio State University

1:55 **311** Designing Greener Organic Syntheses Using High Speed Ball Milling (HSBM). **William C. Shearouse** and James Mack, University of Cincinnati

2:20 **312** Twisted and Nonplanar Pincer Complexes: Structures and Catalysis. **John D. Protasiewicz**, Case Western Reserve University

3:10 Break.

3:30 **313** The Total Synthesis of Azaspiracid-3. **Yue Ding**, Jianyan Xu, Feng Zhou, Zhigao Zhang and Craig Forsyth, The Ohio State University

3:55 **314** Palladium Catalyzed Homocoupling of Indole and Aryl Boronic Acids. **Jason M. Belitsky**, Oberlin College

4:20 **315** Tethered Lewis Acid-Lewis Base Asymmetric Bifunctional Catalysis: Reaction Rate Acceleration and a New Catalytic Aldehyde Olefination Reaction. **Yun-Ming Lin**, University of Toledo

Morley Award Symposium (MAS)

Thursday, May 21, 2009, 1:25 PM - 5:10 PM
Morley Award Symposium
Sponsor: The Cleveland Section of the American Chemical Society
Superior (Renaissance Cleveland Hotel)

Organizers: Malcolm H. Chisholm, The Ohio State University, Kenneth W. Street, The NASA-Glenn Research Center
Presiders: Malcolm H. Chisholm, The Ohio State University, Kenneth W. Street, The NASA-Glenn Research Center

Session Overview: This annual award, sponsored by the Cleveland Section of the ACS, recognizing significant contributions to chemistry through achievements in research, teaching, engineering, research administration and public service, outstanding service to humanity, or to industrial progress in the region.

1:25 Introductory Remarks.

1:30 **316** Using Electronic Spectroscopy to Probe Reactive Chemical Intermediates. **Terry A. Miller**, The Ohio State University

2:20 **317** Theoretical Studies of the Spectroscopy of Radicals From Kr-OH to CH3O2. **Anne B. McCoy**, The Ohio State University

3:10 Break.

3:30 **318** Molecular Secrets From High Resolution Spectroscopy In the Gas Phase. **David Pratt, Professor of Chemistry**, University of Pittsburgh

4:20 **319** The Adiabatic Approximation as a Diagnostic Tool for Torsion-Vibration Dynamics. **David Perry, Professor of Chemistry**, University of Akron

Analytical Chemistry (AC)

Thursday, May 21, 2009, 1:30 PM - 5:10 PM
Analytical Chemistry (2)
Case (Renaissance Cleveland Hotel)

Organizers: John F. Turner, Cleveland State University, Rebecca Whelan, Oberlin College
Presider: Rebecca Whelan, Oberlin College

1:30 **320** A Novel Analytical Method to Determine Crystalline and Amorphous Content in Drugs by Dielectric Thermal Analysis. **Manik Pavan Kumar Maheswaram**[1], Alan Riga,[1] and K.S. Alexander[2], (1)Cleveland State University, (2)The University of Toledo

1:55 **321** Ionic Liquids and Their Applications as Gas Sensing Materials. **Xiangqun Zeng**[1], Kuangyu Hou[1], Lei Yu[1], Xiaoxia Jin[1], Yue Huang[2] and Andrew Mason[2], (1)Oakland University, (2)Michigan State University

2:20 **322** Polyvinyl Ferrocene and Its Applications as Gas Sensing Materials. **Kuang-Yu Hou** and Xiangqun Zeng, Oakland University

2:45 **323** Profiling Complexity and Diversity of Secondary Metabolites in Solanum Trichomes Based On Multiplexed Collision Induced Dissociation Combined with LC/TOF MS. **Feng Shi** and A. Daniel Jones, Michigan State University

3:10 Break.

3:30 **324** A Reverse Micellular Lipid in the Plasma of the Endangered White-Winged Wood Duck Infected with Avium Tuberculosis. **Jody M. Modarelli**, Jennifer Razek, Heather Lucas, Karly Tarase, Bryan Kinches, Claire McCarthy, John Marshall, Ryan Williams and Eddie Gisemba, Hiram College

3:55 **325** Preliminary Evaluation of Zosteric Acid for Preventing the Attachment of Quagga Mussels. Sonal Purohit[1], Jeffrey Ram[1], Bi-min Zhang Newby[2] and **Teresa Cutright**[3], (1)Wayne State University, (2)The University of Akron, (3)University of Akron

4:20 **326** Determination of Triclocarban in Aqueous Matrices by Stir Bar Sorptive Extraction-Liquid Desorption/Liquid Chromatography Tandem Mass Spectrometry. **Dustin R. Klein** and Melissa M. Schultz, The College of Wooster

4:45 **327** Aldehydes Photolysis with OH Radical Under High NOx. **Heber J. Chacon-Madrid** and Neil M. Donahue, Carnegie Mellon University

Computational Chemistry (CC)

Thursday, May 21, 2009, 1:30 PM - 5:10 PM
Computational Chemistry (4)
Whitehall (Renaissance Cleveland Hotel)

Organizers: Jane S. Murray, Cleveland State University, Peter Politzer, Cleveland State University
Presiders: Peter Politzer, Cleveland State University, Jane S. Murray, Cleveland State University

Session Overview: Acknowledgements: We greatly appreciate the support provided by the U. S. Office of Naval Research and the Computers in Chemistry Division of the American Chemical Society.

1:30 **328** Electronic Polarization and Transfer During Chemical Reactions. **Alejandro Toro-Labbé** and Soledad Gutierrez-Oliva, Pontificia Universidad Católica de Chile

2:20 **329** Characterizing Complexes with F-Li^+-F Lithium Bonds: Structures, Binding Energies, and Spin-Spin Coupling Constants. **Janet E. Del Bene,** Youngstown State University

3:10 Break.

3:30 **330** Investigations On the Origins and Nature of Halogen Bonding by Ab Initio Methods. **Kevin E. Riley,** University of Puerto Rico

4:20 **331** Developing of Isothiazole Analogs as Potent MEK1 Inhibitors by Molecular Modelling Studies. **Parthasarathy Tigulla,** Osmania University

4:45 **332** A New QSAR Method for the Prediction of the Absorption Isotherms of Amines. **Aurelie Goulon**, Abdelaziz Faraj, Marc Jacquin and Fabien Porcheron, IFP

Energy Storage and Energy Conversion: Aqueous Battery Systems (ABS)

Thursday, May 21, 2009, 1:30 PM - 3:10 PM
Energy Storage and Energy Conversion: Aqueous Battery Systems
Halle (Renaissance Cleveland Hotel)

Organizers: Cristian Fierro, Ovonic Battery, Irina Serebrennikova, Energizer
Presider: Cristian Fierro, Energy Conversion Devices

Session Overview: This symposium will provide an opportunity to discuss recent progress towards the development and advances of aqueous battery systems. The symposium will focus on both basic and applied research findings that have led to improved materials and energy storage devices.

1:30 **333** Chemistries and Technical Issues of Flow Redox Batteries for Large Scale Energy Storage. **Robert F. Savinell**, Robert Armstrong and Jeffrey Justus, Case Western Reserve University

1:55 **334** Phase Stability and Crystal Structure of NiOOH From First Principles. **Anton Van der Ven**, The University of Michigan

2:20 **335** Nickel Hydroxide In Nickel Metal Hydride Batteries. Cristian Fierro, **John Koch**, Avi Zallen and Michael Fetcenko, Energy Conversion Devices

2:45 **336** Development of Characterization Methods to Correlate Surfactant Physical Properties with Alkaline Performance. **Alex Fensore**[1], Andre Sommer[2], John Matias[1] and Dawn Freeman[1], (1)Energizer, (2)Miami University of Ohio

Energy Storage and Energy Conversion: Lithium Ion Batteries and Supercapacitors (LIB)

Thursday, May 21, 2009, 1:30 PM - 5:10 PM
Energy Storage and Energy Conversion: Lithium Ion Batteries and Supercapacitors
Humphrey (Renaissance Cleveland Hotel)

Organizer: Gholam-Abbas Nazri, N/a

Session Overview: This session covers material aspects of advance lithium ion batteries, including recent progress in developing high capacity cathode and anode materials, new developments in electrolytes and additives to improve the safety of lithium cells. The fundamental science of lithium intercalation in layered oxides and graphitic materials, as well as the energetics of olivine phosphate materials will be discussed. The role of electrode engineering to mitigate slow kinetics and provide fast rate electrodes for transportation applications will be reported. Application of various characterization techniques for real-time study of electrodes under electric field control will be addressed.

1:30 **337** Discussion of the Lithium Deintercalation Mechanism in Carbon-Coated LiFePO4 Nanoparticles. **Laurence Croguennec**[1], François Weill[1], Magali Maccario[1], Rémi Dedryvère[2], Alain Wattiaux[1], Frédéric Le Cras[3], Danielle Gonbeau[2] and Claude Delmas[1], (1)University of Bordeaux, (2)Université de Pau et des Pays de l'Adour, (3)CEA

2:20 **338** Time-Resolved X-Ray Diffraction Study On Structural Evolution in Olivine Materials for Lithium Rechargeable Battery. **Ying Meng** and J.L. Jones, University of Florida

2:45 **339** Design of Aqueous Processed Thick LiFePO4 Composite Electrodes for High Energy Lithium Batteries. **Bernard Lestriez**[1], Willy Porcher[2], Jouanneau Séverinne[2] and Guyomard Dominique[1], (1)Université de Nantes, CNRS, (2)CEA, LITEN

3:10 Break.

3:30 **340** Layered Composite of Graphite Nanoplatelet and Polypyrrole for Supercapacitor Application. **Sanjib Biswas** and Lawrence T. Drzal, Michigan State University

3:55 **341** Customizing Macroporous Fiber-Supported Carbon Nanoarchitectures for Electrical Energy Storage. **Debra R. Rolison**[1], Jeffrey W. Long[1], Justin Lytle[2], Megan B. Sassin[1], Jean Marie Wallace[3], Anne E. Fischer[3], Amanda J. Barrow[1], Jennifer L. Dysart[1], Christopher N. Chervin[1], Katherine A. Pettigrew[3] and Christopher H. Renninger[1], (1)U.S. Naval Research Laboratory, (2)Pacific Lutheran University, (3)Nova Research, Inc.

4:20 **342** Synthesis and Optimization of LiNi1/3Co1/3Mn1/3O2. **Eric Ligneel**, Ohio University

4:45 **343** Effect of Combinations of Additives On the Performance of Lithium Ion Batteries. **Li Yang**[1], Ang Xiao[1], Stuart Santee[1], Brett L. Lucht[1] and Joe Gnanaraj[2], (1)University of Rhode Island, (2)Lithion Inc.

Functional Materials: Carbon & Allotropes (FMCA)

Thursday, May 21, 2009, 1:30 PM - 5:10 PM
Functional Materials: Carbon & Allotropes
Hopkins (Renaissance Cleveland Hotel)

Organizer: Greg M. Swain, Michigan State University
Presider: Greg Swain, Michigan State University

Session Overview: sp2-bonded carbon electrode materials (e.g., graphite, glassy carbon and carbon fiber) have been utilized in electrochemistry for over five decades now. Even so, there remains much that is incompletely understood about the structure-function relationship of these materials. More recently, new types of carbon electrode materials have begun to be investigated and utilized. These include sp3-bonded materials (e.g., micro and nanocrystalline diamond), mixed sp2/sp3 materials (e.g., diamond-like carbon and tetrahedral amorphous carbons), and advanced sp2-bonded materials (e.g., fullerenes and graphene). Oral and poster presentations are invited that cover both fundamental and applied aspects of these carbons. Relevant topics include: material synthesis; physical, chemical, electronic and electrochemical properties of the materials; chemical modification; and electrochemical applications.

1:30 **344** Some Properties of Diamond Based Composites to Work in Lunar Dust. **Kenneth W. Street**, The NASA-Glenn Research Center and Oleg A. Voronov, Diamond Materials, Inc

1:55 **345** Exfoliated Graphite (Graphene) Nanoplatelets: A Path to Multifunctionality for Polymers and Composites. **Lawrence T. Drzal**, Michigan State University

2:20 **346** Visualizing and Measuring Electrochemical Reactivity of Individual Single-Walled Carbon Nanotubes. **Shigeru Amemiya,** University of Pittsburgh

2:45 **347** Layered Composite of Graphite Nanoplatelet and Polypyrrole for Supercapacitor Applications. **Sanjib Biwas**, Michigan State University

3:10 Break.

3:30 **348** Structure and Properties of Nanocrystalline Diamond Deposited From Ar-Rich and H2-Rich Gas Mixtures. **Greg Swain**, Michigan State University

3:55 **349** Boron-Doped Polycrystalline Diamond On Flexible Non-Planar Substrates. **Jeffrey Halpern** and Heidi B. Martin, Case Western Reserve University

4:20 **350** Advanced Carbon Electrocatalyst Support Materials. **Greg Swain**, Doo Young Kim, Ayten Ay, Vermon M. Swope and Liang Guo, Michigan State University

Inorganic Chemistry (IC)

Thursday, May 21, 2009, 1:30 PM - 5:10 PM
Inorganic Chemistry: Younger Inorganic Chemists
Sponsor: Division of Inorganic Chemistry
Holden (Renaissance Cleveland Hotel)

Organizer: John Protasiewicz, Case Western Reserve University
Presiders: John Protasiewicz, Case Western Reserve University, Scott D. Bunge, Kent State University

Session Overview: This session showcases a number of invited younger and newer faculty speakers across the Ohio region.

1:30 **351** Hydrosilylation of Aldehydes and Ketones Catalyzed by Nickel PCP-Pincer Hydride Complexes. Sumit Chakraborty, Graduate Student, J. A. Krause and **Hairong Guan, Professor**, University of Cincinnati

1:55 **352** Recent Highlights in Tetralkylguanidinate Coordination Chemistry. **Scott D. Bunge**, Kent State University

2:20 **353** Arylthiolate Coordination Chemistry at Pseudotetrahedral Ni(II) Centers. **Michael Jensen**[1], Swarup Chattopadhyay[1], Tapash Deb[1], Huaibo Ma[1], Jeffrey L. Petersen[2] and Victor G. Young[3], (1)Ohio University, (2)West Virginia University, (3)University of Minnesota

2:45 **354** Polymorphism In M(ethylenediamine)$_3$MoS$_4$ (M = Mn, Co, Ni). **Catherine M. Oertel**, Hadley A. Iliff, Lee J. Moore and Hengfeng Tian, Oberlin College

3:10 Break.

3:30 **355** Gilded Organometallics. **Thomas Gray,** David V. Partyka, James B. Updegraff, Miya A. Peay, Thomas J. Robilotto and Gao Lei, Case Western Reserve University

3:55 **356** Catalytic Coupling Reactions Employing 3-Iminophosphine Palladium Catalysts. **Joseph A. R. Schmidt**, The University of Toledo

4:20 **357** Exploring COMPLEX Oxides and Graphene for Dye-Sensitized Solar CELLS: Synthesis, Assembly and Photoelectrochemistry. **Yiying Wu**, Ohio State University

4:45 **358** Small Molecule Activation Via Stable Diaminocyclopropenylidenes: Formation of Electron Rich Heterocycles and Fragmentation of White Phosphorus. **Glenn R. Kuchenbeiser**, Bruno Donnadieu and Guy Bertrand, UCR-CNRS Joint Research Laboratory (UMI 2957)

Organic Chemistry: Nucleic Acids, Peptides, And Glycans (NAPG)

Thursday, May 21, 2009, 1:30 PM - 5:10 PM
Organic Chemistry: Nucleic Acids, Peptides, and Glycans (1)
Sponsor: ACS Division of Organic Chemistry, Quanta BioDesign, Ltd., Toledo Section of the ACS
Garfield (Renaissance Cleveland Hotel)

Organizers: Xue-long Sun, Cleveland State University, Steven J. Sucheck, University of Toledo
Presiders: Jun J. Hu, University of Akron, Xue-long Sun, Cleveland State University

Session Overview: During the past decades, we have witnessed remarkable advances in bimolecular science in terms of new synthetic and discovery methodologies. This symposium aims to bring together chemists, biologists, and material scientists who use a variety of synthetic chemistry, chemical biology, bioanalytical chemistry as well as biomimetic research tools on nucleic acids, peptides, and glycan research. This symposium provides a platform to discuss and present the latest developments in the exciting area of chemistry of biomolecules and related compounds.

1:30 **359** Non-Redox Metabolism of Pyridine Dinucleotides. **James T. Slama,** University of Toledo College of Pharmacy

1:55 **360** A Slippery Quadruplex Structure in the 5'-UTR of Human VEGF mRNA Is Essential for IRES Mediated Translation Initiation. **Soumitra Basu**, Mark Morris and Catherine Pazsint, Kent State University

2:20 **361** Chemical Mechanisms of Nucleic Acid Damage. **Amanda Bryant-Friedrich**, University of Toledo

2:45 **362** 2,4,9-Trithiaadamantane Anchored DNA and RAN On Au Film and Nanoparticle Surfaces. **Jun J. Hu**, University of Akron

3:10 Break.

3:30 **363** Engineering Improved Biosynthetic Antifreeze Protein Constructs through Bioconjugation and Oligomerization. **Nolan B. Holland**, Cleveland State University

3:55 **364** The Wonder of NO- Structure and Function Study of Nitric Oxide Synthase. **Zhiqiang Wang**, Kent State University, Chin-chuan Wei, Southern Illinois University and Dennis J. Stuehr, Cleveland Clinic

4:20 **365** Dissecting Large Cell Adhesion Complexes Using NMR Spectroscopy. **Jun Qin**, Cleveland Clinic

Thursday, May 21, 2009, 1:30 PM - 5:10 PM

Physical Chemistry (PC)

Physical Chemistry (2)
Bush (Renaissance Cleveland Hotel)

Organizers: Sarah J. Schmidtke, College of Wooster, Carlos E. Crespo-Hernández, Case Western Reserve University
Presiders: Carlos E. Crespo-Hernández, Case Western Reserve University, Sarah J. Schmidtke, College of Wooster

1:30 **366** Photochemistry and Photophysics of DNA Structures From A-Tracts to Z-DNA. **Bern Kohler**, The Ohio State University

2:20 **367** Attacking the Excited States of DNA with Some New Quantum Chemistry Tools. **John Herbert**, The Ohio State University

2:45 **368** Solvent and Structural Effects On Charge Transfer in Para-Aminobenzoic Acid Derivatives. **Sarah J. Schmidtke**, Daniela Canache, Elana Stennett, Marnie Novak and Mary Kate Lockhart, College of Wooster

3:10 Break.

3:30 **369** Photophysical Properties of N-Confused Porphyrins. **David A. Modarelli**, The University of Akron

3:55 **370** Exploring the Photophysics of Conjugated Pt^{II} Acetylides. **Aaron A. Rachford**, Sébastien Goeb and Felix N. Castellano, Bowling Green State University

4:20 **371** Effects of Aggregation On the Electronic Properties of Polythiophene and Its Oligomers. **Kelly L. Zewe**, Linda Peteanu and Wynee Lee, Carnegie Mellon University

4:45 **372** Electronic-to-Vibrational Energy Transfer From $Cl^*(^2P_{1/2})$ to $CH_4(v_4)$ and $CD_4(v_4)$. **David A. Dolson** and Brian R. Munson, Wright State University

SAS/AVS Applied Spectroscopy Symposium (SAS)

Thursday, May 21, 2009, 1:30 PM - 5:10 PM
SAS/AVS Applied Spectroscopy Symposium (2)
Sponsor: De Nora Tech ThermoFisher Scientific Bruker BioSpin Corporation Shimadzu Scientific Instruments, Inc.
Van Aken (Renaissance Cleveland Hotel)

Organizers: Wayne Jennings, Case Western Reserve University, Brian Perry, LORD Corporation
Presider: Mike Setter., John Carroll University

Session Overview: The SAS/AVS symposium will feature papers on the utilization of spectroscopy for academic and industrial applications. The SAS/ACS Yeager Award talk for outstanding undergraduate research involving spectroscopy will also be featured in the symposium.

1:30 **373** Boundary Film Composition and Formation From Synergistic Combinations of Surface Active Compounds. **Douglas T. Jayne**, The Lubrizol Corporation

1:55 **374** Direct Probe CI-MS and APCI-MS for Direct Materials Analysis. **Robert P. Lattimer** and Michael J. Polce, Lubrizol Advanced Materials

2:20 **375** From Wavenumbers to Batch Numbers: Using Vibrational Spectroscopy to Support Pharmaceutical Manufacturing. **John P. Bobiak**, Gary McGeorge, Dimuthu Jayawickarama, Boyong Wan and Dongsheng Bu, Bristol Myers Squibb Co.

2:45 **376** Multidimensional NMR Studies of Models for Krytox® Fluoropolymers. **Xiaohong Li**[1], Peter L. Rinaldi[1], Elizabeth F. McCord[2], Silapong Baiagern[1], Peter A. Fox[3], Sangrama Sahoo[4] and Silapong Baiagern[1], (1)University of Akron, (2)E. I. duPont de Nemours and Company, (3)Dupont Performance Elastomers, (4)Ashland Incorporated, Ashland Hercules Research Center

3:10 Break.

3:30 **377** High Throughput Environmental Analysis by ICP-OES and ICP-MS. **Fergus Keenan**, Thermo Fisher Scientific and Dan Wiederin, Elemental Scientific Inc

3:55 **378** Certification and Validation of Simple or Complex Samples Via NMR. **Joshua M. Hicks**, Christian Fisher and Kimberely Colson, Bruker-BioSpin

4:20 **379** Methods for Enhancing Chemical Contrast for Hyperspectral Data. **Nikolas J. Neric** Anita Wiederholt and John F. Turner II, Cleveland State University

4:45 **380** ATR Imaging for Analysis of Complex Materials. **Louis G. Tisinger**, PerkinElmer

Small Chemical Business: Entrepreneurship and Innovation Workshop (EIW)

Thursday, May 21, 2009, 1:30 PM - 3:30 PM
Small Chemical Business: Entrepreneurship and Innovation Workshop
Sponsor: The Kauffman Foundation and the ACS Division of Small Chemical Business.
Carnegie Board Room (Renaissance Cleveland Hotel)

Organizer: Joseph E. Sabol, CHEMICAL CONSULTANTS
Presider: Joseph E. Sabol, CHEMICAL CONSULTANTS

Session Overview: Thinking about starting a business? Is entrepreneurship right for you? Already have a business? Is your strategy in place to grow? Representatives of the Kauffman Foundation, the largest foundation dedicated to advancing entrepreneurship in America, will facilitate a workshop with relevant, practical "just-in-time" information, tools, and resources - all designed to assist aspiring and existing entrepreneurs who are building companies that innovate and create jobs and wealth. This session will include interactive exercises and facilitated discussions around starting and running high-impact companies. If you have a business idea or already lead a business, bring your thirty-second elevator pitch to share.

1:30 **381** Tools for Entrepreneurs. **Todd Smith**, Ewing Marion Kauffman Foundation

Women in Electrochemistry (WE)

Thursday, May 21, 2009, 1:30 PM - 5:10 PM
Women in Electrochemistry (3)
Severance (Renaissance Cleveland Hotel)

Organizers: Carol Korzeniewski, Texas Tech University, Heidi B. Martin, Case Western Reserve University, Irina Serebrennikova, Energizer
Presiders: Irina Serebrennikova, Energizer, Heidi B. Martin, Case Western Reserve University, Carol Korzeniewski, Texas Tech University

1:30 **382** Recent Materials Advances in PEM Electrolysis. **Katherine E. Ayers, Director of Research**, Proton Energy Systems

2:20 **383** Electrochemical and Spectroscopic Studies of Small Organic Molecule Oxidation On Low Index Platinum Electrodes. **Rachel L. Behrens** and Andrzej Wieckowski, University of Illinois

2:45 **384** Reaction Kinetics of Size and Shape Controlled Platinum Catalysts for a Homogeneous Catalytic Reaction with Methyl Viologen. **Corinne A. Atkinson**, Keith J. Stevenson and Allen J. Bard, The University of Texas at Austin

3:10 Break.

3:30 **385** Mitochondrial Bioelectrocatalysis. **Shelley Minteer**, Kevin Boehm, Marguerite Germain and Robert Arechederra, Saint Louis University

3:55 **386** Determination of the Electronic Density of States at the Fermi Level of Nitrogen Doped Carbon Nanotubes Using Electrochemical Impedance Spectroscopy. **Jaclyn D. Wiggins-Camacho** and Keith J. Stevenson, The University of Texas at Austin

4:20 **387** H2 Reactivity of Pd Nanoparticles Coated with Mixed Monolayers of Alkyl Thiols and Alkyl Amines for Sensing and Catalysis Applications. **Monica Moreno** and Francis P. Zamborini, University of Louisville

4:45 **388** Transmission Infrared Spectroscopy as a Probe of Structure and Hydration Effects in Fuel Cell Membrane Materials. **Carol Korzeniewski** and Chang Kyu Byun, Texas Tech University

Undergraduate Student Research Poster Session (USRP)

Thursday, May 21, 2009, 5:00 PM - 6:30 PM
Undergraduate Student Research Poster Session
Gold (Renaissance Cleveland Hotel)

Organizers: Mark J. Waner, John Carroll University, Michael A. Nichols, John Carroll University

Session Overview: Poster presentations highlighting undergraduate research contributions across the various subdisciplines of chemistry. Funding for the undergraduate program comes from the Undergraduate Programs Office of the ACS.

389 A Chemical Profile of Olentangy River. **Ashley Bartman**, Alex Cherry, Laura Sanman, Andrew Merriman and Ted M. Clark, The Ohio State University

390 Synthesis and Characterization of the Novel Perovskite Series $NaCo_xNi_{1-X}F_3$. **Chad J. Miller** and Tim R. Wagner, Youngstown State University

391 Bioremediation of Selenium Containing Wastewater. **Mike Booth**, West Virginia University Institute of Technology

392 Synthesis and Characterization of the Novel Perovskite Series $NaCo_xFe_{1-X}F_3$. **Ashley M. Wolf** and Tim R. Wagner, Youngstown State University

393 Controlling Particle Size and Morphology of Nanosized Cubic Zirconium Tungstate. **Hassan Issa Baiz**, Akena Latigo, Nathan Banek and Cora Lind, The University of Toledo

394 Analysis of SH-Containing Compounds Using DNBA. **Katie Baxter**, Cleveland State University

395 The Characterization of Natural Water Samples Collected From Diverse Sites In Central Ohio. **Annie Nebergall**, Derrick Kaseman, Alex Dotson and Ted M. Clark, The Ohio State University

396 The Affect of Precipitation On the Concentration of Nitrogenous Species near Combined Sewage Overflows On the Olentangy River. **Melanie Butler**, Kelsey Kerton, Kimberly Shookman, Jennifer Yui and Ted M. Clark, The Ohio State University

397 A Short-Term Investigation of Combined Sewage Overflows (CSOs) along the Olentangy River. **Andrew Goodrich**, Daniel Hannah and Ted M. Clark, The Ohio State University

398 Isolation of Alpha-Mangostin In Garcinia Mangostana L. **P. Lona Sharma**, Rachel Kopec, Steven Schwartz, Clay Harris and Ted M. Clark, The Ohio State University

399 Contamination of Urban Soils In the Greater Columbus, OH Area. **Jason Stybel**, Jason Eng, Steven Kiracofe and Ted M. Clark, the Ohio State University

400 Inorganic Pigments (Project REEL). **Brian M. Urig**, Ryan Hershey, Bryan Bernreuther, Paul Mason, Kurt Russell, Austin Smith, Mark Groseclose, Michael Shaffer, Becca Rugggear and Melissa Hubley, Oxford High School, Oxford, PA

401 Ionic Liquid Crystalline Compounds of Transition Metals with Tetraalkylammonium Ligands. **Elizabeth Jensen** and Molly Soper, Aquinas College

402 The Synthesis of Re(CO)3+ Amino Acid Conjugates Using 2-Pyridine Carboxyaldehyde. **Hira Qayyum** and Christopher J. Ziegler, University of Akron

403 Analysis of Snow Samples Collected in the Columbus Metropolitan Area. **Michael Newman**, Brandon C Balogh, Samuel Obuobisa and Myung Han, Columbus State Community College

404 A Possible Air Pollution Reducer and Source of Biodiesel: The Macroalgae Cladophora Gomerata. **Johanna Dolch** and Anthony Sky, Lawrence Technological University

405 Covalent Crosslinking of Thermoresponsive Polymer Nanoparticles. **Kimberly C. Clarke** and Clinton D. Jones, Mercyhurst College

406 Preparation and Study of the Optical Properties and Hydrophobicity of N-Isopropylacrylamide-Co-Styrene Microgel Colloidal Crystals. **Richard J. Pompei** and Clinton D. Jones, Mercyhurst College

407 Development of Calcium, Fluoride, and Phosphorous Assays to Determine Tooth Enamal Demineralization. **Kristin Donaldson** and Peter J. Tandler, Walsh University

408 Pegylated Ethyl Malonate as a Solubilizing Ligand for Platinum(II) Antitumor Compounds. **Pratik Chhetri**, Bob A. Howell and Adina Dumitrascu, Central Michigan University, Mount Pleasant, MI 48859-0001

409 Qualitative and Quantitative Analyses of Proteinaceous Binders in Rock Paintings. **William Malcolm**, Geneve Maxwell and Ruth Ann Armitage, Eastern Michigan University

410 Detection of DDT in the Environment: Water Analyses Using Solid-Phase Extraction and Gas Chromatography-Mass Spectrometry. **Caitlin Van De Car** and Ruth Ann Armitage, Eastern Michigan University

411 Methanolysis Reactions of N-Acylhydrazides Using Polymer Supported Acids. **Caitlin McCurdy-Robinson**[1], Matthew Tricomi[1], Eric Fichtenbaum[2], Samuel Boayke[1], Nataliya Isakov[1], Dustin Baker[1], David Johnson[1], David J. Hart[1] and Christopher Callam[1], (1)The Ohio State University, (2)Ohio State University

412 Subcloning the Danio Rerio Peptidylarginine Deiminase II (PAD2) Gene Into the Pet/D-TOPO® Expression Vector. **Zachary Brodnik** and Diana N. Barko, Baldwin-Wallace College

413 N(epsilon)-Thioacetyllysine-Containing Human SIRT2 Enzyme Inhibitors: a Structure-Activity Study. **Shayna Robinson, Undergraduate**, Brett M. Hirsch, Nuttara Jamonnak and Weiping Zheng, University of Akron

414 N(epsilon)-Thioacetyllysine-Containing Human SIRT1 Enzyme Inhibitors: a Structure-Activity Study. **Caroline A. Gallo, Undergraduate**, Brett M. Hirsch and Weiping Zheng, University of Akron

415 Probing the Role of Gag in Regulation of HIV Reverse Transcription. **Andrew Goodrich**, Christopher P. Jones and Karin Musier-Forsyth, The Ohio State University

416 Synthesis of Cholesteryl Esters for Use as Standard in Renal Cell Carcinoma Research. **Jennifer K. Razek**, Leeanne R. Taylor, M. James Ross and Jody M. Modarelli, Hiram College

417 S-Glutathionylation in HEK 293 Cell. **Yuh-Cherng Chai**, Jasen Lee Gilge and Michael Fisher, John Carroll University

418 Chemical Control of Seed-Layer Grown ZnO Nanorod Arrays. **Andrew J. Pohlman** and Simon P. Garcia, Kenyon College

419 Selective Synthesis of An α-Ellagitannin. Klaus B. Himmeldirk and **Amanda L. Radune**, Ohio University

420 Analysis of Lake Erie and Maumee River Water for Nitrate. **Matthew J. Zielinski, student**, Robert A Taylor and Kurt T Schroeder, Bowling Green State University

421 Solution Luminescence From Chloro(2,2':6',2" terpyridine) Platinum (II) in Anionic Micelles. **Abigail Van Wassen**, Natalie A. Larew and Scott D. Cummings, Kenyon College

422 Analysis of Natural Water Samples for Nitrate. **T.A. Sojka, Student** and Desirea D. Scott, Student, Bowling Green State University

423 Analysis of Tuscarawas River Water for Nitrate Ion Concentration: A REEL Undergraduate Research Project. **Jenna N. Hilty**, Kristine A. Lahman, Hannah R. Mason, Marissa K. Snyder and Jens M. Hemmingsen, Capital University

424 Analysis of Maumee River Water for Nitrate. **Ashley N. Thompson, student**, Bowling Green State University

425 Molecules as Models: Light Harvesting Devices. **Brian J. Yeager**, Emmy Lou Dickinson, Kristin Hom, M. James Ross, Maria Sember, Robyn Phillips, Divya Balasubramanian, Cara Citraro and Carol D. Shreiner, Hiram College

426 The Buzz On Chocolate. **Jennifer Ashley White** and Susan Sonchik Marine, Miami University Middletown

427 Investigation of Kinetic and Mechanistic Aspects of the Corey-Winter Olefination. **Derek M. Dranichak**, Travis L. Dill, Amanda-Lynn Warner, John A. Wolf, Amanda S. Wriston and Timothy L. Troyer, West Virginia Wesleyan College

428 Effect of pH On Nitrate Levels in Scioto River. **Lyndsey N. Spears**, Danielle N. Locklear, Rachel N. Decker and Mort Javadi, Columbus State Community College

429 Negative Thermal Expansion Materials in the $A_2Mo_3O_{12}$ Family with Mixed Site Occupancy. **Shannon K. Kraemer** and Cora Lind, Associate Professor, The University of Toledo

430 Microwave-Accelerated Halide-Catalyzed Cycloaddition Between Glycidyl Ethers and Isocyanates. Nivhan Arumugasamy, Shannon K. Kraemer, **Amanda J. Lodzinski**, Aileen N. Newmyer, Rommel S. Talan and Steven J. Sucheck, The University of Toledo

431 Exploring Halide Catalysts in a Microwave-Accelerated Cycloaddition Between Epoxides and Isocyanates. Evan A. Bruneau, Bret N. Feirstine, Jesse J. Monroe, Julia F. Mucci, Charles M. Oliver, **Ngam Sy**, Rommel S. Talan and Steven J. Sucheck, The University of Toledo

432 Water Analysis for Nitrate. **Brian C. Gulko, student**, Alexandra M Klinchenko and Brenden P Jenks, Bowling Green State University

433 Isomerization of Itaconic Anhydride to Citraconic Anhydride by Dimethyl Sulfoxide. **Kyle E. Hart, Student** and Jack Williams, Mercyhurst College

434 Oxidation of Primary and Secondary Alcohols by 4-Acetylamino-2,2,6,6-Tetramethylpiperidine-1-Oxoammonium Tetrafluoroborate In Aqueous Media. **Phillip R. Sharrow** and Matthew R. Luderer, University of Pittsburgh at Greensburg

435 Preparation of Enaminones From 1,3-Diones Using Ammonium Acetate In Aqueous Media. **Jake Lorence**, Phillip R. Sharrow and Matthew R. Luderer, University of Pittsburgh at Greensburg

436 Quantum Mechanical (MNDO and 3-21G*) Studies of the 2-D NMR-Derived Structures of the N-Terminal Zinc Finger of the HIV-1 Nucleocapsid Protein Complexed with the Psi-Site Analog, dACGCC (PDB Entries: 1HVO and 1HVN). Salvatore Profeta Jr., **Berhanemeskel A. Nida, Student** and David Everson, DePauw University

437 Light-Induced Degradation of the Pharmaceutical Salbutamol in Aqueous Solutions. **Leah G. Dodson, undergraduate** and Carlos E. Crespo-Hernandez, Case Western Reserve University

438 A Structurally Characterized Series of 1,1,3,3-Tetramethylguanidine Solvated Magnesium Aryloxide Complexes. **Jessie Monegan** and Scott D. Bunge, Kent State University

439 Analysis of Water Samples for Nitrate Ion. **Tyler G. Schroeder, student** and Sarah J Rossiter, Bowling Green State University

440 One-Pot Synthesis of 1,1,3,3-Tetramethylguanidine Solvated d-Block Metal Complexes. **Christopher B. Durr** and Scott D. Bunge, Kent State University

441 Effects of Free Radical System On Enzyme Activity; Chymotrypsin as a Model Enzyme. **Ross VerHeul**, Marley Greiner and Robert Wei, Cleveland State University

442 Determination of Mutagenic Polycyclic Aromatic Hydrocarbons by Vibrio Fischeri-Based Assay. **Klaire Freeman** and Robert Wei, Cleveland State University

443 Analysis of Water From the Capital University Primmer Property for NO_3^- ,PO_4^{3-} , and Bacteria: A REEL Undergraduate Laboratory. **Michael J. Burgess**, Brian E. Huff, David W. Pickering, Matthew S. White and Jens M. Hemmingsen, Capital University

444 Progress In Synthesis and Characterization of 4-Acetylamino-2, 7- Di-Tert-Butyl-9-(2,2,2-Triphenylethylidene)- Fluorene. **Stacy R. Meeks**, Tiffany R. Furbee and Daniel J. Phillips, Bethany College

445 Progress Toward the Synthesis and Characterization of 4-Cyanomethyl-2,7-Di-t-Butyl-9-(2,2,2 – Triphenylethylidene)-Fluorene. **Christopher B. Smurthwaite** and Daniel J. Phillips, Bethany College

446 Accessibility and Affinity of Biotin Binding Sites of Streptavidin Bound to Gold Nanoparticles. **Albert King**[1], Hugh H. Richardson[2] and Peter J. Tandler[1], (1)Walsh University, (2)Ohio University

447 Degradation Strength of An Algal-Bacterial Consortium On Pyrene and Benzo[a]Pyrene. **Aleks Jovanovich**, Cleveland State University

448 Determination of Lead and Mercury Ions in the Sediment of the Cuyahoga River. **Alan Rossio**, Vitaliy Pysmennyy, Scotty Fulton, Jerry Mundell and Anne O'Connor, Cleveland State University

449 In Vitro Biodegradation of Three Polycyclic Aromatic Hydrocarbons (PAH) by Root Tissues. **Elizabeth Maruschak**, Robert Wei and Anne O'Connor, Cleveland State University

450 Extracellular Vs Intracellular Degradation of Polychlorinated Biphenyls by Pleurous Ostreatus. **Michael Arcuri**, Ben Wolfe, Aspasia Sicking, Jerry Mundell and Anne O'Connor, Cleveland State University

451 Phytoremediation Removal of Chromium VI From Soil Samples Using Triticum Aestivum and Sorghastrum Nutans. **Sandra Vilevac**, Juan Carlos Gamarra and Anne O'Connor, Cleveland State University

452 Analysis of Polycyclic Aromatic Hydrocarbons in Soils around Smoking Areas On Cleveland State University Campus. **Aloysus Lawong**, Robert Wei and Anne O'Connor, Cleveland State University

453 Determination of Polychlorinated Biphenyls (PCBs) From Transformer Oil Found in Soil. **Jayme Kacica**, Michael Bauer, Jerry Mundell and Anne O'Connor, Cleveland State University

454 Analysis of Water From Old Man's Cave and Sunday Creek for Chloride and Iron: A REEL Undergraduate Laboratory. **Sierra S. Hill**, Janet M. Downs and William J. Clark Jr., Capital University

455 A Reinvestigation of the Continuous Absorption Spectra of IBr and Icl. **Rachael M. Stuck** and David A. Dolson, Wright State University

456 Extraction Efficiency and Rate of Detoxification of Polychlorinated Biphenlys in Wheat Straw Medium. **Karina Radonich**, Nicholos Yurko, Miranda LaBant, Jerry Mundell and Anne O'Connor, Cleveland State University

457 A REEL Undergraduate Laboratory Water Analysis of NO_3^- and PO_4^{3-} Surrounding the Alum Creek Combined Sewer Overflow in Bexley, Ohio. **Alicia Tysl**, Rachel Yoho, Megan Deeds, Cassady Allen and Jens Hemmingsen, Capital University

458 Quinone-Capped Molecular Wires as Electrocatalysts to Detect Thiols: Synthesis and Electrochemical Studies. **Brian S. Muntean**, Kathryn M. Guinta, Jaskiran Kaur, Thomas R. Wendland, Jhindan Mukherjee, Jon R. Kirchhoff and Liyanaaratchige Tillekeratne, University of Toledo

Friday, May 22, 2009

NSF Undergraduate Education Grants (UEG)

Friday, May 22, 2009, 8:25 AM - 11:30 AM
NSF Undergraduate Education Grants
Sponsor: Fisher Scientific
Garfield (Renaissance Cleveland Hotel)

Organizer: Weslene Tallmadge, Gannon University
Presider: Robert K. Boggess, Radford University

Session Overview: The session will feature an overview of NSF programs that support undergraduate education, including presentations by a Foundation Program Director and current awardees in the CCLI, NSDL, ATE, and other programs. Following the presentation, there will be a question/answer session.

8:25 Welcoming Remarks.

8:35 **459** Programs at the National Science Foundation That Support Teaching and Research Involving Undergraduate Students. **Bert E. Holmes**, National Science Foundation

9:00 **460** Empowering Student Learning in the Geologic Sciences with Three Dimensional Interactive Animation and Low Cost Virtual Reality. **Laura Marie Leventhal**, Dale S. Klopfer, Guy W. Zimmerman and Charles M. Onasch, Bowling Green State University

9:25 **461** Using Modeling and Simulation to Engage and Retain Students In STEM Disciplines. **Steven I. Gordon**, Ohio Supercomputer Center

9:50 Break.

10:15 **462** Collaborative for Excellence in Teacher Preparation for Mathematics and Science in Pennsylvania (CETP-PA). **Narayanaswamy Bharathan**, Indiana University of Pennsylvania

10:40 **463** The ChemCollective: Virtual Labs, Tutors and Scenario Based Learning for Introductory Chemistry. **David Yaron**[1], Michael Karabinos[1], Gaea Leinhardt[2] and James Greeno[2], (1)Carnegie Mellon University, (2)University of Pittsburgh

11:05 PANEL DISCUSSION.

Small Chemical Business: True Stories of Success (TSS)

Friday, May 22, 2009, 8:30 AM - 11:30 AM
Small Chemical Business: True Stories of Success
Sponsor: ACS Division of Small Chemical Business SCHB
Van Aken (Renaissance Cleveland Hotel)

Organizer: Joseph E. Sabol, CHEMICAL CONSULTANTS
Presider: Joseph E. Sabol, CHEMICAL CONSULTANTS

Session Overview: This symposium will present aspects of starting and running a small chemical business, including advice on planning, starting, financing, operating, maintaining, and growing a small chemical business from entrepreneurs who will present their insight to others wishing to start a business.

8:30 Introductory Remarks.

8:35 **464** D&D Consultants: Employee to Entrepreneur. **Carol Duane**, Founder & President, D&D Consultants of Mentor

9:00 **465** Embarking On Your Adventure in 'Real World' Chemistry. **David M. Manuta**, Manuta Chemical Consulting, Inc.

9:25 **466** Chemistry and Patent Law: How to Protect Yourself. **Daniel A. Thomson**, Emerson, Thomson & Bennett

9:50 Break.

10:15 **467** Analyzing Polymeric Composites and Advanced Materials as a Small Lab – A Risky Business or a Nice Niche Market?. **Harlan R. Wilk** and Michael P. Mallamaci, PolyInsight LLC

10:40 **468** Evolving Insurance Needs for the Small Business. **Ronald J. Versic**, Ronald T. Dodge Co.

11:05 **469** Selling to the Government. **Robert W. Fenn**, Program Director, Northeast Ohio PTAC

Chemical Biology & Medicinal Chemistry (CBMC)

Friday, May 22, 2009, 8:35 AM - 11:30 AM
Chemical Biology & Medicinal Chemistry (1)
Severance (Renaissance Cleveland Hotel)

Organizers: Gregory Tochtrop, Case Western Reserve University, Rajesh Viswanathan, Case Western Reserve University
Presider: Gregory Tochtrop, Case Western Reserve University

Session Overview: This session will span the chemistry biology spectrum, and focus on the design, synthesis, and evaluation of small molecules against biological systems.

8:35 **470** Chemical Biology of Marine Natural and Non-Natural Products. **Craig J. Forsyth**, The Ohio State University

9:25 **471** Small Molecule Modulation of Expression in the Inflammatory Response. **Gregory Tochtrop**, Case Western Reserve University
9:50 Break.
10:15 **472** New Sources of Chemical Diversity Inspired by Polyketide Biosynthesis. **Richard E. Taylor**, University of Notre Dame
11:05 **473** Allosteric Control Over Hsp70 Reveals Its Roles in Neurodegenerative Disease. **Jason E. Gestwicki**, University of Michigan

Computational Chemistry (CC)

Friday, May 22, 2009, 8:35 AM - 11:30 AM
Computational Chemistry (5)
Whitehall (Renaissance Cleveland Hotel)

Organizers: Jane S. Murray, Cleveland State Universitiy, Peter Politzer, Cleveland State University
Presiders: Peter Politzer, Cleveland State Universitiy, Jane S. Murray, Cleveland State University

Session Overview: Acknowledgements: We greatly appreciate the support provided by the U. S. Office of Naval Research and the Computers in Chemistry Division of the American Chemical Society.

8:35 **474** Radiation-Free Actinide Chemistry: Exploring New Bonding Motifs. **Jason L. Sonnenberg**, Jia Zhou and H. Bernhard Schlegel, Wayne State University
9:25 **475** Mapping the Network Topology of Chemical Spaces. **N. Sukumar** and Michael Krein, Rensselaer Polytechnic Institute
9:50 Break.
10:15 **476** Agent-Based Models for Chemistry and Physics. **Paul G. Seybold**, Wright State University
11:05 **477** Decision Trees Instead of Linear Regression for Predicting Physicochemical Properties From Chemical Structure. **Adam C. Lee** and Gordon M. Crippen, University of Michigan

Organic Chemistry (OC)

Friday, May 22, 2009, 8:35 AM - 11:30 AM
Organic Chemistry (2)
Halle (Renaissance Cleveland Hotel)

Organizer: Steven J. Sucheck, University of Toledo
Presider: Michael W. Justik, Penn State Erie, The Behrend College

8:35 **478** Oxidations Using 4-Acetylamino-2,2,6,6-Tetramethylpiperidine-1-Oxoammonium Tetrafluoroborate In Aqueous Media. **Matthew R. Luderer**, University of Pittsburgh at Greensburg
9:00 **479** Targeting the Total Synthesis of the Anti-Tuberculosis Agents Thuggacins. **Ting Wang** and Craig Forsyth, The Ohio State University
9:25 **480** Synthesis and Properties of 1,1,2,2-Tetra(3,5-dibromophenyl)-1,2-Ethanediol. **Young J. Cho** and Bob A. Howell, Central Michigan University
9:50 Break.
10:15 **481** Development and Synthesis of Corannulene-Based Organic Materials. **Derek Jones** and James Mack, University of Cincinnati
10:40 **482** Novel Synthesis of Isoxazolo[2,3-α]Pyridinium Salts From Pyridine N-Oxides. **Michael W. Justik, Assistant Professor of Chemistry** and Samantha L. Kristufek, Penn State Erie, The Behrend College

11:05 **483** Corannulene Based Organic Materials. **Praveen Bachawala** and James Mack, University of Cincinnati

Organic Chemistry: Nucleic Acids, Peptides, And Glycans (NAPG)

Friday, May 22, 2009, 8:35 AM - 11:30 AM
Organic Chemistry: Nucleic Acids, Peptides, and Glycans (2)
Sponsor: ACS Division of Organic Chemistry, Quanta BioDesign, Ltd., Toledo Section of the ACS
Case (Renaissance Cleveland Hotel)

Organizers: Xue-long Sun, Cleveland State University, Steven J. Sucheck, The University of Toledo
Presiders: Jun J. Hu, University of Akron, Steven J. Sucheck, University of Toledo

8:35 **484** Oriented Immobilization of Glyco-Capturing Macroligand and Its Glyco-Proteomics and Glycomics Application. **Xue-long Sun**, Cleveland State University
9:00 **485** Factors Governing Protein-Glycan Specificities. **Suri Iyer**, Dan M. Lewallen and David Siler, University of Cincinnati
9:25 **486** Synthesis of Functionalized Carbohydrates and Their Conjugates. **Steven J. Sucheck**, University of Toledo
9:50 Break.
10:15 **487** Thermally-Induced Dielectric Relaxation Spectra of Aldohexose Monosaccharides. **Alan Riga,** Libby N. Kellat, Michael Ellen Matthews, and Xue-long Sun, Cleveland State University
10:40 **488** Glycan Encapsulated Gold Nanoparticles Inhibit Shiga Toxins. **Ashish A. Kulkarni** and Suri S. Iyer, University of Cincinnati
11:05 **489** Combinatorial Chemistry: From Cell Signaling to Catalyst Development. **Dehua Pei**, The Ohio State University

Physical Chemistry (PC)

Friday, May 22, 2009, 8:35 AM - 11:30 AM
Physical Chemistry (3)
Blossom (Renaissance Cleveland Hotel)

Organizers: Carlos E. Crespo-Hernández, Case Western Reserve University, Sarah J. Schmidtke, College of Wooster
Presiders: Sarah J. Schmidtke, College of Wooster, Carlos E. Crespo-Hernández, Case Western Reserve University

8:35 **490** Solvation and Dynamics in Ionic Liquids. Sergei Arzhantsev, Hui Jin, Xiang Li and **Mark Maroncelli**, The Pennsylvania State University
9:25 **491** Effects of Aggregation On the Properties of Individual Conjugated Oligomers and Polymers Probed by Fluorescence Microscopy and Stark Spectroscopy. Gizelle A. Sherwood[1], **Linda Peteanu**[1], Alberto Moscatelli[1] and Jurjen Wildeman[2], (1)Carnegie Mellon University, (2)University of Gröningen
9:50 Break.
10:15 **492** Tracking Ultrafast Equilibrium and Nonequilibrium Chemical Reactions with Multidimensional Infrared Spectroscopy. Jessica M. Anna, Carlos R. Baiz, Robert McCanne, Matthew J. Nee and **Kevin J. Kubarych**, University of Michigan
10:40 **493** Solvent Effects in the Vibrational Cooling Dynamics of 1-Nitronaphthalene in the Triplet Manifold. **Christian Reichardt**, R. Aaron Vogt and Carlos E. Crespo-Hernández, Case Western Reserve University
11:05 **494** The Photochemistry of Small Polyatomic Molecules in Solution. **Patrick Z. El-Khoury, Mr.** and Alexander N. Tarnovsky, Bowling Green State University

Friday, May 22, 2009, 11:30 AM - 12:30 PM
Plenary Lecture: Dr. Linda Abraham-Silver of the Great Lakes Science Center
Whitehall (Renaissance Cleveland Hotel)

Organizer: David W. Ball, Cleveland State University
Presider: David W. Ball, Cleveland State University

Chemical Education: College Level (CECL)

Friday, May 22, 2009, 1:05 PM - 5:10 PM
Chemical Education: College Level
Sponsor: Fisher Scientific
Van Aken (Renaissance Cleveland Hotel)

Organizers: Weslene Tallmadge, Gannon University, Sherri Lovelace-Cameron, Youngstown State University
Presiders: Weslene Tallmadge, Gannon University, Sherri Lovelace-Cameron, Youngstown State University

Session Overview: The purpose of the session is to describe improvements to college level chemistry courses, programs, labs or curricula. Presentations will focus on specific changes and assessment of those changes.

1:05 **495** Should General Chemistry Read Journal Articles? Student Perspectives On the Inclusion of Primary Literature in Science Courses. **Ted M. Clark**, the Ohio State University

1:30 **496** Inclusion of Technology Into a General Chemistry Course. **Erica L. DiCara**, Gannon University

1:55 **497** The Kitchen Is Your Laboratory: A Useful Method for a Research-Based Term Paper Assignment In a Scientific Writing Lecture Course. **Clinton D. Jones**, Mercyhurst College

2:20 **498** Students Teaching Students: The Training of Peer-Mentors in Chemistry. **Ted M. Clark**, the Ohio State University

2:45 **499** The Development of a Research-Based Laboratory Module for the Undergraduate Organic Chemistry Laboratory. Steven J. Sucheck, University of Toledo and **Treasure J. Sucheck**, Mercy College

3:10 Break.

3:30 **500** Experiential Learning for a Doctor of Pharmacy Student: A Rotation as An Organic Chemistry Faculty Member at a Primarily Undergraduate Institution. **Vincent Maloney**, Indiana U. Purdue U. Fort Wayne and Christopher Liston, Purdue University

3:55 **501** Investigating Drinking Water Quality: Theme-Based Activities for a Range of Instructional Levels. **Katherine C. Lanigan** and Elizabeth S. Roberts-Kirchhoff, University of Detroit Mercy

4:20 **502** Teaching Energy and Environmental Chemistry to Non-Science Majors --- Learning by Doing Approach. **Reiko M. Simmons,** and Jennifer N. Williams, Cleveland State University

4:45 **503** Transesterification of Waste Vegetable Oils and Extracts of Coffee Grounds: A Study of Biodiesel Products in An Undergraduate Chemistry Course. **Lois Zook-Gerdau** and Ray Rataiczak, Muskingum College

Energy Storage and Energy Conversion: Space Power (ESSP)

Friday, May 22, 2009, 1:20 PM - 5:10 PM
Energy Storage and Energy Conversion: Space Power
Whitehall (Renaissance Cleveland Hotel)

Organizer: Michelle A. Manzo, NASA - Glenn Research Center
Presiders: Michelle A. Manzo, NASA - Glenn Research Center, Sri R. Narayan, Jet Propulsion Laboratory

Session Overview: NASA is actively pursuing the development of advanced electrochemical energy storage and conversion devices for future lunar and Mars missions. The Exploration Technology Development Program, Energy Storage Project is sponsoring the development of advanced Li-ion batteries and PEM fuel cell and regenerative fuel cell systems for the Altair Lunar Lander, Extravehicular Activities (EVA), and rovers and as the primary energy storage system for Lunar Surface Systems. This session highlights some of the ongoing efforts in support the development of safe, human-rated, reliable, lightweight energy storage and conversion systems to meet those mission requirements.

1:20 Introductory Remarks.

1:30 **504** High Energy Density Cathodes for Next Generation Lithium Ion Batteries. **Arumugam Manthiram**, University of Texas at Austin

1:55 **505** Ultrafine Mixed Oxide Cathode Material for Advanced Li-Ion Cells. **Jinxiang Dai**[1], Ganesh Skandan[1], Farid Badway[1], Krista Martin[1] and Ying Meng[2], (1)NEI Corporation, (2)University of Florida

2:20 **506** Metal Phosphate Coating for Improved Cathode Material Safety. **Christopher M. Lang** and Aron Newman, Physical Sciences Inc.

2:45 **507** Physical Properties, Thermal Stability and Flammability of the Electrolyte Solutions for Lithium-Ion Batteries. **Boris Ravdel**, Yardney Technical Products, Inc. and Brett L. Lucht, University of Rhode Island

3:10 Break.

3:30 **508** Advanced Product Water Removal (APWR) Fuel Cells for Future Space Missions. **William F. Smith**, Infinity Fuel Cell and Hydrogen, Inc.

3:55 **509** Developments in Passive Fuel Cell Performance for Lunar Missions. **Katherine E. Ayers** and Luke T. Dalton, Proton Energy Systems

4:20 **510** Advanced Nanocomposite Membranes for High Pressures PEM Electrolyzers. **Michael Pien**, Marvin Warshay, Steve Lis and Radha Jalan, ElectroChem, Inc.

4:45 **511** A High-Pressure Dual-Feed Water Electrolyzer for Extraterrestrial Energy Storage. **Christopher Eldridge**[1], Robert J. Roy[1], John Graf[2], Mark Hoberecht[3], Sri R. Narayan[4], Andrew Kindler[4], T.I. Valdez[4] and Adam Kisor[4], (1)Hamilton Sundstrand, (2)NASA-JSC, (3)NASA Glenn Research Center, (4)Jet Propulsion Laboratory

Energy Storage and Energy Conversion: Bioelectrocatalysis (ESB)

Friday, May 22, 2009, 1:25 PM - 5:10 PM
Energy Storage and Energy Conversion: Bioelectrocatalysis
Garfield (Renaissance Cleveland Hotel)

Organizer: James Burgess, Case Western Reserve University

1:25 Introductory Remarks .

1:30 **512** Citric Acid Cycle Enzymatic Cascade for Anodic Bioelectrocatalysis. **Shelley Minteer** and Daria Sokic-Lazic, Saint Louis University

1:55 **513** Consolidated Bioprocessing Technologies Using Microbial Fuel Cells Powered by Microbial Consortia. **Gemma Reguera**, Allison Speers, Kwi Kim and Jenna Young, Michigan State University

2:20 **514** Insights From Voltammetry of Electrode-Reducing Bacteria Under Nonturnover Conditions. **Daniel R. Bond**, Ying Liu, Edward LaBelle, Jeffrey Gralnick and Daniel Baron, University of Minnesota

2:45 **515** Electrochemical Impedance Analysis of Mediated Enzymatic Electrodes. **Scott Calabrese Barton** and Deboleena Chakraborty, Michigan State University

3:10 Break.

3:30 **516** Insights From Voltammetry of Early Vs. Late Stage Biofilms of Electrode-Reducing Bacteria. **Daniel R. Bond**, Ying Liu, Daniel Baron, Edward LaBelle, Jeffrey Gralnick and Rhonda Franklin, University of Minnesota

3:55 **517** Stabilized Lithium Metal Powder (SLMP^{TM}) – Material and Application Technologies for High Energy Li Batteries. **Marina Yakovleva**, Brian Fitch, Yangxing Li and Yuan Gao, FMC Corporation

Characterization of Lunar Regolith And Simulants (CLRS)

Friday, May 22, 2009, 1:30 PM - 5:10 PM
Characterization of Lunar Regolith and Simulants
Sponsor: NASA Lunar Dust Mitigation Project
Blossom (Renaissance Cleveland Hotel)

Organizer: James R. Gaier, NASA-GRC
Presider: James R. Gaier, NASA-GRC

Session Overview: A return to the moon within the next dozen years prompts an examination of potential opportunities and hazards. Lunar regolith (or "soil") is both an important source of resources and a material that can degrade our capabilities to explore. This session seeks papers describing the chemical properties of both the lunar regolith and of lunar regolith simulants, with an emphasis on how those properties could affect the success of lunar missions.

1:30 **518** The Lunar Regolith and the LHT Series of Regolith Simulants. **Douglas B. Stoeser** and Stephen A. Wilson, U.S. Geological Survey

2:20 **519** Industrial Scale Manufacturing of Lunar Simulant Components From Oxides with Remotely-Coupled Transferred Arc Plasma. **Michael Weinstein**, Zybek Advanced Products, Inc.

2:45 **520** Synthesis and Stability of Iron Nanoparticles for Lunar Environment Studies. **Ching-cheh Hung** and Jeremiah McNatt, NASA Glenn Research Center

3:10 Break.

3:30 **521** Suitability of Lunar Regolith Simulants for Development of Lunar Processing Equipment. **Kenneth W. Street**, The NASA-Glenn Research Center, Chandra S. Ray, Missouri University of Science and Technology and Douglas L. Rickman, NASA-Marshall Space Flight Center

3:55 **522** Surface Energy of Lunar Soil Simulants. **R. Allen Wilkinson**, NASA-Glenn Research Center and Kenneth W. Street, The NASA-Glenn Research Center

4:20 **523** Thermal, Chemical and Plasma Activation of JSC1a-Fines. **Randy L. Vander Wal**[1], Michael J. Kulis[2], Gordon M. Berger[2] and Kenneth W. Street[3], (1)Penn State University, (2)The NCSER, (3)The NASA-Glenn Research Center

4:45 **524** Particle-Size Dependent Bipolar Charging of Regolith Simulant. **Keith M. Forward**, Daniel J. Lacks and R. Mohan Sankaran, Case Western Reserve University

Chemical Biology & Medicinal Chemistry (CBMC)

Friday, May 22, 2009, 1:30 PM - 5:10 PM
Chemical Biology & Medicinal Chemistry (2)
Severance (Renaissance Cleveland Hotel)

Organizer: Gregory Tochtrop, Case Western Reserve University
Presider: Gregory Tochtrop, Case Western Reserve University

Session Overview: This session will span the chemistry biology spectrum, and focus on the design, synthesis, and evaluation of small molecules against biological systems.

1:30 **525** Small Molecule Transcriptional Switches. **Anna K. Mapp**, University of Michigan

2:20 **526** Zwitterionic Polysaccharides for a Complete Carbohydrate-Based Vaccine. **Peter Andreana,** Wayne State University

2:45 **527** Breaking Down Barriers: Disrupting the Integrity of the Mycobacterial Cell Envelop.. **Donald R. Ronning,** The University of Toledo

3:10 Break.

3:30 **528** Synthesis of Biologically Active Heterocycles. **Jetze J. Tepe**, Michigan State University

4:20 **529** N(epsilon)-Thioacetyllysine as a Multifaceted Chemical Probe for Protein Deacetylase-Catalyzed Reactions. **Weiping Zheng**, University of Akron

4:45 **530** Oxidative Stability and Characterization of Physiologically Relevant Fatty Acids by Calorimetric and Dielectric Analysis. **Hoi Ling Cheung,** Yazid Hussein, Ibrahim Abdelfattah, Kenneth S. Alexander and Alan Riga, Cleveland State University

Chemical Education: K-12 Level (KTL)

Friday, May 22, 2009, 1:30 PM - 5:10 PM
Chemical Education: K-12 Level
Sponsor: ACS Division of Chemical Education (DivCHED)
Halle (Renaissance Cleveland Hotel)

Organizer: LaRuth C. McAfee, Case Western Reserve University
Presider: LaRuth C. McAfee, Case Western Reserve University

Session Overview: The first half of the session will feature presentations on current topics in K-12 chemical education. These will include updates on electronic resources to aid in teaching chemistry, and outreach programs that have been developed to promote and strengthen pre-college chemistry education. The second half of this session will feature a panel discussion and activities led by administrators, teachers, and students who work at or attend STEM high schools in Ohio. They will share how large-scale (school/district-wide) changes in STEM education have promoted academic innovation and success in chemistry, as well as in other STEM fields.

1:30 **531** ACS National Historic Chemical Landmarks Website. **Janan M. Hayes**, Merced College - retired

1:55 **532** ChemSource: A Groundbreaking Concept Charting a New Course. **Mary Virginia Orna**, College of New Rochelle

2:20 **533** Project REEL In Advanced Placement Chemistry. Ted M. Clark, the Ohio State University and **Brian M. Urig**, Oxford High School, Oxford, PA

2:45 **534** Chemistry and Hip Hop: Outreach Efforts to Attract Minority Students to the Chemical Sciences. **Sibrina Collins**, College of Wooster and Juan E. Gilbert, Auburn University

3:10 Break.

3:30 **535** Project-Based Learning Techniques in STEM High Schools. **Jeffrey D. McClellan**, MC2STEM High School, Cleveland Metropolitan School District and Marcy Raymond, Metro Early College High School

Organic Chemistry: Cope Scholar Symposium (CSS)

Friday, May 22, 2009, 1:30 PM - 5:10 PM
Organic Chemistry: Cope Scholar Symposium
Sponsor: ACS Division of Organic Chemistry, Quanta BioDesign, Ltd., Toledo Section of the ACS
Case (Renaissance Cleveland Hotel)

Organizers: Kana Yamamoto, University of Toledo, Steven J. Sucheck, University of Toledo
Presider: Kana Yamamoto, University of Toledo

Session Overview: This symposium will be in honor of Professor Melanie Sanford from the University of Michigan, recipient of a 2008 Cope Scholar Award. Professor Sanford has established herself as a leader in the

field of organometallic chemistry, in particular C-H bond activation. C-H Bond activation has numerous applications in green chemistry, and the transformations have been applied to preparation of many types of functional molecules. One noticeable achievement of her research is on the recognition of new type of palladium catalytic cycle, which shuttles between previously unrecognized oxidation states. Although palladium chemistry is considered a matured field, her discovery has opened a new mode of reactivity that could lead to application into non-traditional transformations. The subject of Professor Sanford's talk will be an overview of the current status of her findings. In addition the symposium will feature a number of invited talks from emerging young investigators throughout the Midwest region.

1:30 **536** Controlled Syntheses of π-Conjugated Polymers: Mechanism and New Microstructures. **Anne J. McNeil**, University of Michigan

1:55 **537** Selective Aqueous-Phase Adhesion by Molecularly Engineered Materials. **Dennis Bong**, The Ohio State University

2:20 **538** Shake It up! Chemistry through High Speed Ball Milling". William C. Shearouse, Daniel C. Waddell, **James Mack**, Dennis A. Fulmer and Indre Thiel, University of Cincinnati

2:45 **539** Zinc-Mediated Palladium-Catalyzed Formation of Carbon-Sulfur Bonds. **James P. Stambuli** and Chad C. Eichman, The Ohio State University

3:10 Break.

3:30 **540** Oxidation of Amino Acids, Peptides and Proteins by Iron Complexes. **Jeremy J. Kodanko,** Wayne State University

3:55 **541** Palladium(II/IV) Catalyzed Reactions In Organic Synthesis. **Melanie S. Sanford**, University of Michigan

Saturday, May 23, 2009

Chemical Education: High School Teacher Award Symposium (CE)

Saturday, May 23, 2009, 8:30 AM - 12:00 PM
Chemical Education: High School Teacher Award Symposium
Sponsor: Penn Ohio Border Section
Van Aken (Renaissance Cleveland Hotel)
Organizers: Doris Zimmerman, Penn Ohio Border Section, Leslie McSparrin, Sharpsville Area HS
Presider: Doris Zimmerman, Penn Ohio Border Section
Session Overview: This symposium is being given by past Central Regional Awardees in High School Chemistry Teaching - basically a "How I Do It" or "What I Do" Symposium.

8:30 Introduction and Award Presentation.

8:40 **542** Facts, Fallacies, Flim-Flams and the Mole-Action Pac. **William E. Snyder, 2009 CRM High School Teacher Award, Penn Ohio Border Section**, Poland Seminary High School, Poland, Ohio

9:10 **543** Ideas for Teaching Stoichiometry. **Kathy Kitzmann, 1997 CRM High School Teacher Award, Detroit Section**, Mercy High School, Farmington Hills, Michigan

9:40 **544** The Ethanol Project: A Mock Senate Hearing. **Julia Winter, 2003 CRM High School Teacher Award, Detroit Section**, Detroit Country Day School, Detroit, Michigan

10:10 Break.

10:20 **545** Maintaining Student Interest in Chemistry. **Jesse D. Bernstein, 2004 CRM High School Teacher Award, Cleveland Section**, Miami Country Day School, Miami, Florida

10:50 **546** Does Teaching Chemistry by Guided Inquiry Correct Student Misconceptions?. **Leslie McSparrin, 2005 CRM High School Teacher Award, Penn Ohio Border Section**, Sharpsville Area High School, Sharpsville, Ohio

11:20 **547** The Chemistry of Hydroponics. **Jeffrey Bracken, 2008 CRM High School Teacher Award, Columbus Section**, Westerville North High School, Westerville, Ohio

Some events for or of potential interest to undergraduates:

Wednesday, May 20

Career Planning Workshops presented by the ACS

- Planning Your Job Search, 8-9:30am
- Preparing a Resume, 9:30-11am
- Effective Interviewing, 11-12:30pm
- Individual Resume Reviews, 1:30-5pm (sign up for times at meeting registration)
- Plenary talk by Charles Lieber, Harvard University, 11:30am
  - Nanowires: A Platform for Nanoscience and Nanotechnology
- Undergraduate meet and greet with Dr. Lieber, 12:30-1:30pm
- Workshop: Patent Law for Chemists, 1:30-3:30pm
  - Learn some of the basics of intellectual property, which has been a growth area for employment.
- General Poster session. 5-6:30pm
  - Will the undergraduate poster session be your first poster session? Come to the general poster session to see what it's like.

Thursday, May 21

- Interview Skills/Mock Interviews, 9:30-11:30am
  - This session is led by two young chemists, one working in technical job placement and the other for a biotech R&D laboratory.
- Plenary talk by Daniel Nocera, MIT, 11:30am
- Undergraduate meet and greet with Dr. Nocera, 12:30-1:30pm*
- Undergraduate Research Poster session, 5-6:30pm
- Graduate School information session, 4-6:30pm*

Other events that do not yet have a scheduled time

- Undergraduate Career Panel Discussion, *Thurs. pm or Friday
  - A panel of chemists working in both traditional and non-traditional jobs will discuss their work and the journey they took to their current career.

*Tentative day and/or time. Check the Program Book for up-to-date locations and times.

CERMACS Workshop Schedule

Wednesday, May 20

Morning

8 a.m. – 9:30 a.m. **Planning Your Job Search (ACS)**
Superior Room Presenter: Richard Bretz

This one hour workshop addresses employment trends and professional values (self assessment). Then, the process of networking is explored: who is in your network, how to expand it. Strategies such as informational interviewing will be discussed.

9:00 p.m. – 10:30 a.m. **Patent Law for Chemists (Renner Kenner)**
Garfield Room Facilitator: Tama L. Drenski

The basic principles of patent law that should be understood by chemists will be discussed by associates of Renner Kenner. Included will be a review of notebook requirements and preparation of an invention disclosure. Also included will be requirements for patentability, inventorship, and an overview of the U.S. patent process. A brief overview on careers for chemists in intellectual property law will follow.

9:30 a.m. – 11:00 a.m. **Preparing a Resume (ACS)**
Superior Room Presenter: Richard Bretz

Your résumé is a personal introduction and leaves an impression. In this one hour workshop you will learn which personal data format is right for your "marketing plan," and construct a winning résumé.

9:30 a.m.– 11:00 a.m. **SciFinder (CAS)**
Holden Room Presenter: Larry Gallina

SciFinder, Chemical Abstract Service's computerized literature searching system, is now web-based! The desktop client has been phased out in favor of browser-based searching capabilities. This short workshop will review the changing face of SciFinder, with the goal of familiarizing attendees with its new functionality.

11:00 a.m. – 12:30 p.m. **Effective Interviewing (ACS)**
Superior Room Presenter: Richard Bretz

Many job seekers think their work ends once an interview is secured. Think again! This one hour workshop will examine the entire interview process, types of interviews, frequently asked questions, and how to evaluate an offer.

Afternoon

1:30 p.m. – 3:30 p.m. **Patent Law for Chemists (Renner Kenner)**
Holden Room Facilitator: Tama L. Drenski

The basic principles of patent law that should be understood by chemists will be discussed by associates of Renner Kenner. Included will be a review of notebook requirements and preparation of an invention disclosure. Also included will be requirements for patentability, inventorship, and an overview of the U.S. patent process.
A panel discussion on careers for chemists in intellectual property law will follow.

1:30 p.m. – 5:00 p.m. **Individual Resume Review Appointments (ACS)**
Superior Room

ACS Careers Consultants will be available to provide resume reviews and career assistance. Individual 30 minute resume reviews will be offered. You must bring a copy of your resume. Sign-up will be available at meeting registration.

Thursday, May 21

Morning

8:00 a.m. – 9:30 a.m. **SciFinder (CAS)**
Carnegie Room Presenter: Larry Gallina

SciFinder, Chemical Abstract Service's computerized literature searching system, is now web-based! The desktop client has been phased out in favor of browser-based searching capabilities. This short workshop will review the changing face of SciFinder, with the goal of familiarizing attendees with its new functionality.

9:30 a.m. – 11:30 a.m. **Interview Skills/Mock Interviews**
Carnegie Room Presenters: Natalie Karsti and Chris Ciolli

This presentation will focus on how to prepare for phone and on-site interviews. It will also discuss the thought process that employers use to screen out the best candidates and the behavioral- based questions that are becoming more important in today's interview process. Negotiation techniques will also be briefly discussed. The presentation will be thirty minutes long followed by a fifteen minute question-answer session. An hour long "mock interview" session will follow the presentations, which will be dedicated to work with attendees one-on one to provide coaching and guidance on interviewing techniques.

Afternoon

1:00 p.m. – 4:00 p.m. **Transport Phenomena and Multiphysics Workshop (COMSOL, Inc.)**
Rockefeller Board Room Presenter: Linus Andersson

In this workshop, we will demonstrate the COMSOL Multiphysics simulation software and its applications within transport phenomena. The optional second half of the workshop will be a hands-on exercise at the computer. Please note that in order to participate in the hands-on session, attendees will need to bring a laptop computer with them.
Areas covered will be simulations of:
- Coupled nonlinear multiphysics
- Momentum transport: Navier-Stokes and Porous media flow
- Mass transport and diffusion-convection-migration phenomena
- Heat transfer

1:30 p.m. – 3:30 p.m. **Tools for Entrepreneurs (Kauffman Foundation)**
Carnegie Room Presenter: Todd Smith

Thinking about starting a business? Already have a business? A representative of the Kauffman Foundation, the largest foundation dedicated to advancing entrepreneurship in America, will share a variety of relevant, practical "just-in-time" information, tools, and resources to assist aspiring and existing entrepreneurs who are building companies that innovate and create jobs and wealth. This session will include interactive exercises and facilitated discussions around starting and running high-impact companies. If you have a business idea or already lead a business, bring your thirty-second elevator pitch to share.

Saturday, May 23

Afternoon

1:00 p.m. – 3:00 p.m. **Spectroscopy for Kids Workshop**
Van Aken Room Presenters: Mr. Roy G. Biv (a.k.a. Ken Street), his evil nemesis Dr. Vib Gyor, and noted sidekick Sara or Clemens

Q. What do a rainbow, Rembrandt's palette, a light bulb and the fiber optic phone network have in common?
A. Come learn about spectroscopy and see the light!
The distinguished Roy G. Biv is a spectroscopist – can you say spectroscospopituitssst? A spectroscopist deals with the many types of interactions between light and matter. While in his (her) job, these interactions involve complex instruments and often rely on advanced mathematics, physics, and chemistry. However, many of these interactions occur about us every day and are readily observed by us on a daily basis.

In the presentation, we will cover from kindergarten through high school level demonstrations which can be customized for any particular audience level. We will learn interesting acronyms like how to remember the colors of the rainbow and in correct order! We will disperse white light and learn why green is green and red is red (there is homework for this so you had better come early!). Mr. Biv will then present his famous exhibit of Spectroscopy Art!

In closing, Dr. Gyor will show other exciting things like fluorescence, phosphorescence, and electrify the audience with atomic spectroscopy in a light bulb. There will be a laser safety lecture (must have a safety demo in every good lecture, although the quiz is only for adults in the audience!). Vib will also tie light in a knot and make things disappear before your very eyes.

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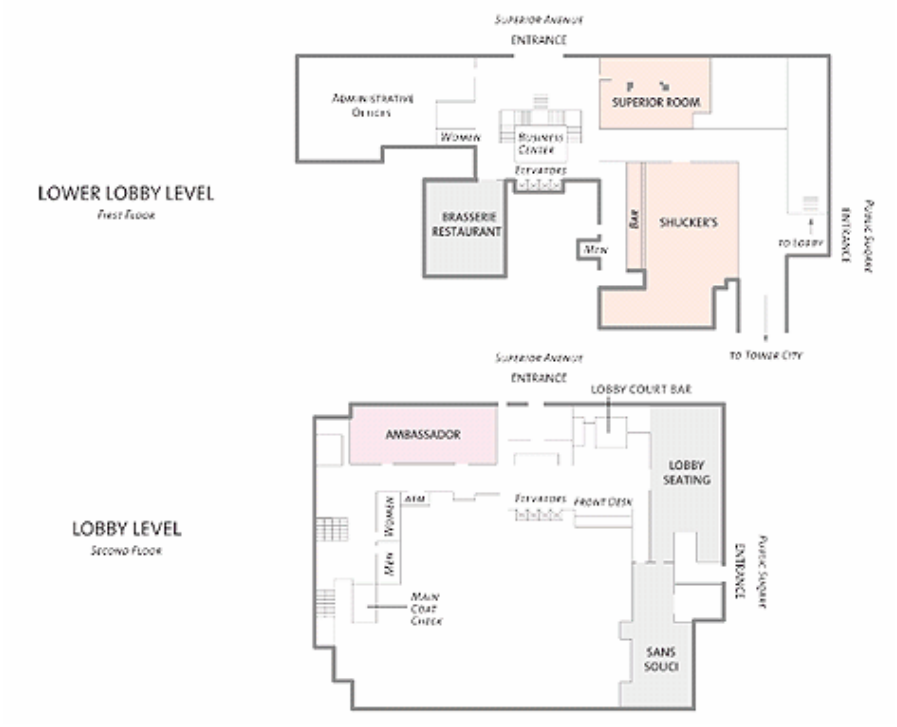
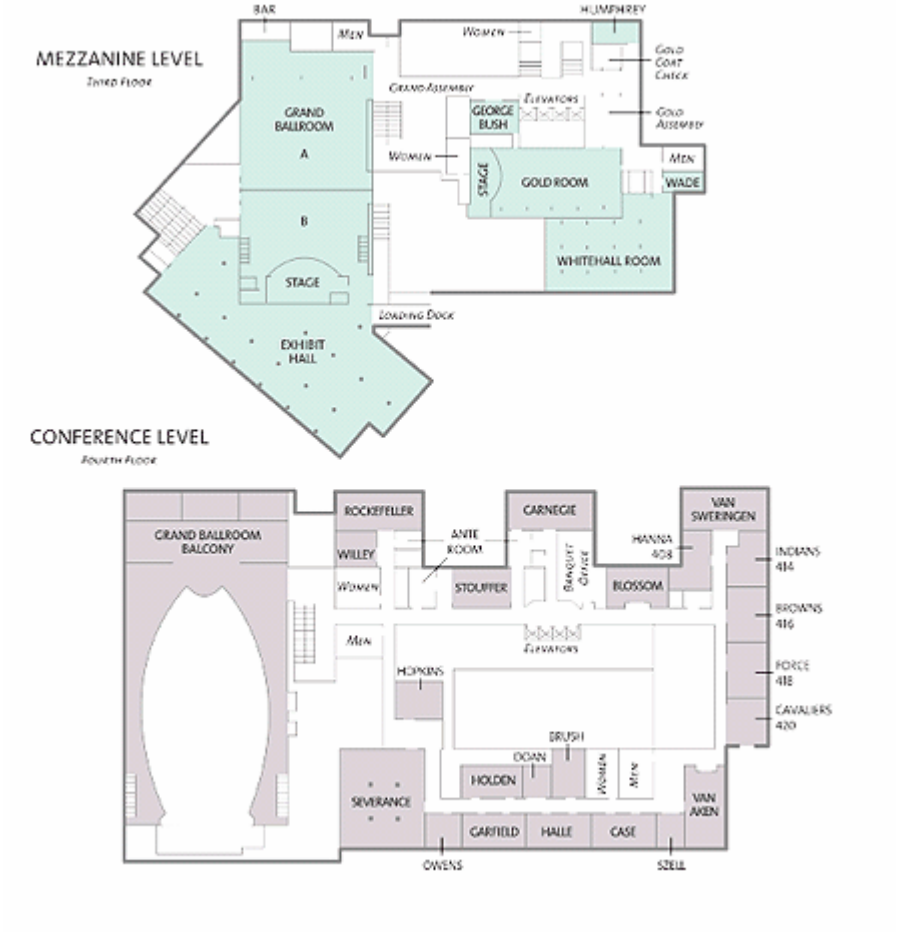
Meeting Rooms at the Cleveland Renaissance Hotel





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