

# DIPLOMA CEREMONY FOR CHEMISTRY GRADUATES

DEPARTMENT OF CHEMISTRY, DUKE UNIVERSITY

**Sunday, May 14, 2017**

French Family Science Center



1. Welcome.
2. Recognition of Chemistry Majors Earning Departmental Honors.

**Kenneth Gordon Fellowships for Independent Study.** *Awarded to seniors who participated in the Chemistry Summer Undergraduate Research Fellowship Program. The award provided partial funding for their summer research projects.*

Quinlan Cullen  
Christopher M. Jernigan  
Hope E. Knochenhauer  
Nathan Lam  
Alan T. Makhoul

Brandon Quoc Vinh Ngo  
Benjamin J.G. Rousseau  
Rishabh K. Simhal  
Vaibhav R. Tadepalli  
Michael S. Wang

**Recognition of Majors Earning Graduation with Distinction in Chemistry.** *Awarded to an AB or BS candidate who has earned at least an overall B average in major courses, has submitted a thesis based on their Independent Study research, has been nominated by his/her research supervisor, and has been recommended for this honor by faculty in their major.*

Erin F. Brooks  
Debbie C. Burdinski  
Quinlan Cullen  
Daniel G. Dumitrescu  
Christopher M. Jernigan  
Hope E. Knochenhauer

Nathan Lam  
Vania J. Ma  
Alexis M. Medema  
Christopher E. Monti  
Gopi K. Neppala  
Brandon Quoc Vinh Ngo

Ahmed A. Noor  
Benjamin J.G. Rousseau  
Rishabh K. Simhal  
Rita D. Somogyi  
Nicholas P. Stevenson  
Vaibhav R. Tadepalli

Michael S. Wang  
Grace Z. Wang  
John P. White  
Kelley M. White  
Blair K. Willette  
Jason L. Xu

### 3. Recognition of Chemistry Majors Earning Departmental Awards.

**American Chemical Society Analytical Division Undergraduate Award.** *Awarded to a rising junior or senior to recognize students who display an aptitude for a career in analytical chemistry. The award consists of an 8-month subscription in the Division of Analytical Chemistry.*

Christopher M. Jernigan

**American Chemical Society Organic Division Undergraduate Award.** *Awarded to a major who has "demonstrated excellence in organic chemistry at the undergraduate level." The award consists of a personalized certificate as well as a letter of commendation from the Chair of the ACS Division of Organic Chemistry.*

Luke Tseng

**American Chemical Society Inorganic Division Undergraduate Award.** *Awarded to a major who has "demonstrated excellence in inorganic chemistry at the undergraduate level." The award consists of a personalized certificate as well as a letter of commendation from the Chair of the ACS Division of Inorganic Chemistry.*

Brandon Quoc Vinh Ngo

**Department of Chemistry Award.** *Awarded to a BS candidate who has participated in Independent Study, maintained a truly distinguished academic record, and intends to pursue advanced study in chemistry. The award consists of a one-year student membership in the American Chemical Society and a one-year subscription to an appropriate ACS journal.*

Erin F. Brooks

**Hypercube Scholar Award.** *Awarded to a BS chemistry major who has maintained an outstanding academic record and plans to pursue graduate study in an area of chemistry which utilizes molecular modeling extensively. The award consists of a molecular modeling computer software package generously donated by Hypercube, Inc.*

Benjamin J.G. Rousseau

**Merck Index Award.** *Awarded to an AB or BS candidate who has maintained a truly distinguished academic record and intends to pursue advanced study in medical school. The award consists of a copy of the Merck Index.*

Debbie C. Burdinski

#### 4. Recognition of Chemistry Majors Earning University Honors.

**Latin Honors.** *Latin Honors are awarded by the University to recognize academic performance as measured by grade point average.*

##### **Summa Cum Laude**

Debbie C. Burdinski  
Vaibhav R. Tadepalli

Luke Tseng

##### **Magna Cum Laude**

Matthew W. Cummins  
Claudia G. Dantoin  
Arvind Kumar  
Nathan Lam

Vania J. Ma  
Alan T. Makhoul  
Christopher E. Monti

##### **Cum Laude**

Erin F. Brooks  
Alexander F. Merriman  
Michael Cheng-Han Shih

Rita D. Somogyi  
Michael S. Wang

#### 5. Recognition of Chemistry Majors Earning Other Awards, Scholarships and Fellowships.

##### **James Rolleston Prize for Best Literary Honors Thesis in a Foreign Language**

Vania J. Ma

#### 6. Recognition of External Honors and Awards.

**Phi Beta Kappa.** *Phi Beta Kappa is a national society founded in 1776 to honor scholastic achievements of American college students.*

Debbie C. Burdinski  
Arvind Kumar  
Vania J. Ma

Alan T. Makhoul  
Vaibhav R. Tadepalli

**Tau Beta Pi.** *Tau Beta Pi is a national society founded in 1885 to honor scholastic achievements of engineering students at US colleges and universities.*

Claudia G. Dantoin

##### **Commissioned Officer in the United States Navy, Ensign**

John P. White

**7. Awarding of Diplomas for Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) Degrees.**

Katherine A. Alser, Ph.D. (*Fall 2016*)  
Lin Fu, Ph.D. (*Spring 2017*)  
Danielle E. Gorka, Ph.D. (*Fall 2016*)  
Gregory R. Gossweiler, Ph.D. (*Summer 2016*)  
Charles E. Hendrick, Ph.D. (*Spring 2017*)  
Alyssa M. Hull, MS (*Spring 2017*)  
Minhee Lee, Ph.D. (*Spring 2017*)  
Chen Li, Ph.D. (*Fall 2016*)  
Jennifer E. Link-Schwabe, Ph.D. (*Spring 2017*)  
Chaoren Liu, Ph.D. (*Spring 2017*)  
Xuehong (Keira) Liu, Ph.D. (*Spring 2017*)  
Yang Liu, Ph.D. (*Fall 2016*)  
Gerardo X. Ortiz, Jr., Ph.D. (*Summer 2016*)  
Julia H. Roberts, Ph.D. (*Spring 2017*)  
Mark L. Sleeper, Ph.D. (*Spring 2017*)  
Ian E. Stewart, Ph.D. (*Fall 2016*)  
Jacob C. Timmerman, Ph.D. (*Spring 2017*)  
Qin Wang, Ph.D. (*Spring 2017*)  
Alexandria E. Weber, MS (*Spring 2017*)  
Yang Yang, Ph.D. (*Summer 2016*)  
Du Zhang, Ph.D. (*Spring 2017*)  
Yuqi Zhang, Ph.D. (*Fall 2016*)  
Yuan Zhuang, Ph.D. (*Fall 2016*)

**8. Awarding of Diplomas for AB and BS Degrees.**

(**AB** = Bachelor of Arts, **BS** = Bachelor of Science. **Concentration** in an area means that the student specialized in that area in addition to fulfilling the requirements for a degree in chemistry. **ACS certified** means the major fulfilled the professional degree requirements specified by the American Chemical Society.)

Olanrewaju A. Adisa, *AB*  
Erin F. Brooks, *BS, Pharmacology Concentration, ACS Certified*  
Debbie C. Burdinski, *BS, Pharmacology Concentration*  
Quinlan Cullen, *BS, Pharmacology Concentration*  
Matthew W. Cummins, *BS, Biochemistry Concentration*  
Claudia G. Dantoin, *AB*  
Daniel G. Dumitrescu, *BS, Biochemistry Concentration*  
Christopher M. Jernigan, *BS, Biochemistry Concentration*  
Hope E. Knochenhauer, *BS, Pharmacology Concentration*  
Nathan Lam, *BS, Pharmacology Concentration*  
Yuhkai Lin, *BS, Biochemistry Concentration*  
Vania J. Ma, *BS, Pharmacology Concentration*  
Alan T. Makhoul, *AB, Biochemistry Concentration*  
Alexis M. Medema, *AB*  
Christopher E. Monti, *BS, Biochemistry Concentration*  
Gopi K. Neppala, *BS, Environmental Chemistry Concentration*  
Brandon Quoc Vinh Ngo, *BS, Pharmacology Concentration*  
Ahmed A. Noor, *BS, Biochemistry Concentration*

Brian Petkov, *BS, ACS Certified*  
Benjamin J. G. Rousseau, *BS, ACS Certified*  
Michael Cheng-Han Shih, *BS, Pharmacology Concentration*  
Rishabh K. Simhal, *BS, Pharmacology Concentration*  
Rita D. Somogyi, *AB, Pharmacology Concentration*  
Roma Sonik, *AB*  
Nicholas P. Stevenson, *BS, Pharmacology Concentration*  
Vaibhav R. Tadepalli, *BS, Pharmacology Concentration*  
Spencer W. Telford, *BS, Pharmacology Concentration*  
Collean M. Trotter, *AB*  
Luke Tseng, *BS, Biochemistry Concentration*  
Michael S. Wang, *BS, Pharmacology Concentration*  
Zimu Wang, *BS, Chemical Biology Concentration*  
John P. White, *AB*  
Kelley M. White, *BS, Pharmacology Concentration, ACS Certified*  
Blair K. Willette, *BS, Pharmacology Concentration*  
Jason L. Xu, *BS, Chemical Biology Concentration*

Majors Receiving Diplomas with Other Departments:

Arvind Kumar, *AB*  
Chenguang Liang, *BS, Pharmacology Concentration*  
Alexander F. Merriman, *AB, Biochemistry Concentration*  
Jiayi Yuan, *BS, Pharmacology Concentration*

## 9. Closing Remarks.

### TITLES OF INDEPENDENT STUDY RESEARCH PROJECTS

**Erin F. Brooks\***

"Unexpected Stress-Responsive Properties of Spiropyran-Benzophenone Conjugates in PDMS Elastomers"  
Prof. Stephen Craig, Chemistry

**Debbie C. Burdinski\***

"Glucose Deprivation Causes Enhanced Cytotoxicity via Increased Oxidative Stress in ATM-null Cells with Mitochondrial Dysfunction"  
Prof. Michael Kastan, Pharmacology and Cancer Biology

**Quinlan Cullen\***

"Characterization of Aquaporin-3 in Liver-stage Plasmodium Infection"  
Prof. Emily Derbyshire, Chemistry

**Matthew W. Cummins**

"5-hydroxymethylcytosine and Ten-eleven Translocation 1-3 Proteins: Expression and Regulation in Neuropathic Pain"  
Prof. Thomas Van de Ven, Anesthesiology

**Daniel G. Dumitrescu\***

"C-C Bond Formation in Pseudo-Disaccharide Tunicamine Core"  
Prof. Kenichi Yokoyama, Biochemistry

**Christopher M. Jernigan\***

"A Green Chemistry Analysis of Metal Complexes by MADLI-TOF"  
Dr. George Dubay, Chemistry

**Hope E. Knochenhauer\***

"Diastereoselective Synthesis of Cyclic 1,3-Amino Alcohols via Intramolecular Addition of Azaallyl Anions to Epoxides"  
Prof. Steven Malcolmson, Chemistry

**Nathan Lam\***

"Establishing Hammett Parameters for Gold Fragments in Gold (I) Carbene Complexes"  
Prof. Ross Widenhoefer, Chemistry

**Chenguang Liang**

"Engineering and Characterization of Thermally Responsive Proapoptotic Multivalent Protein Fusions for Colon Cancer Therapy"  
Prof. Ashutosh Chilkoti, Biomedical Engineering

**Vania J. Ma\***

"An in vitro Exploration of DFP-induced Damage to Cytoskeleton Proteins"  
Prof. Mohammed Abou-Donia, Pharmacology and Cancer Biology

**Alan T. Makhoul**

"Validating Reporters of Ribosome Trafficking"  
Prof. Christopher Nicchitta, Biochemistry

**Alexis M. Medema\***

"The Role of the Rad50 Zinc-Hook Domain in the Homology-Directed Repair of DNA"  
Prof. Sue Jinks-Robertson, Molecular Genetics and Microbiology

**Christopher E. Monti\***

"Protocol for the Study of Collagen in a Cadaveric Human Heel Pad"  
Prof. Richard Brennan and Erica Washington, Ph.D., Biochemistry  
Prof. Angel Zeininger and Prof. Daniel Schmitt, Evolutionary Anthropology

**Gopi K. Neppala\***

"Exploring the Relationship Between Environmental Pollution and Autism"  
Prof. Junfeng Zhang, Nicholas School of the Environment

**Brandon Quoc Vinh Ngo\***

"Photo-Induced Electron Transfer Reactions in Well-Defined Nanoscale Objects that Feature Electronically Homogeneous Single Walled Carbon Nanotubes Wrapped by Redox Active Polymers"  
Prof. Michael Therien, Chemistry

**Ahmed A. Noor\***

"Molecular Cloning of Plasmodium Shikimate Kinase"  
Prof. Emily Derbyshire, Chemistry

**Brian Petkov**

"Reaction-Diffusion Modeling of Lifelike Self-Replicating Systems"  
Prof. John Reif, Computer Science

**Benjamin J. G. Rousseau\***

"Biological Electron Transfer at High Temperature"  
Prof. David Beratan, Chemistry

**Michael Cheng-Han Shih**

"Catalytically Inducing a Site-Selective Asymmetric Cyclopropanation Reaction"  
Prof. Jennifer Roizen, Chemistry

**Rishabh K. Simhal\***

"Purification of the Dopamine-1 Receptor for Pharmacological Characterization"  
Prof. Robert Lefkowitz, Biochemistry and Cardiology

**Rita D. Somogyi\***

"Development of 3D Printable, Solid-State Electrolyte Composite for Usage in 3D Printed Lithium-Ion Batteries"  
Prof. Benjamin Wiley, Chemistry

**Nicholas P. Stevenson\***

"Synthesis of Non- $\pi$ -heteroatom Stabilized Gold (I) Carbene Complexes"  
Prof. Ross Widenhoefer, Chemistry

**Vaibhav R. Tadepalli\***

"A Novel Method of Double Network Hydrogel Manufacturing using 3-D Printing and its Potential use as a Synthetic Meniscus"  
Prof. Benjamin Wiley, Chemistry

**Spencer W. Telford**

"Metal-Coordination Complexes in Mechanically Responsive Systems"  
Prof. Katherine Franz, Chemistry

**Luke Tseng**

"Umpolung Approaches to Chiral Amine Synthesis: Stereoselective Reactions of 2-Azaallyl Nucleophiles"  
Prof. Steven Malcolmson, Chemistry

**Michael S. Wang\***

"Investigation of Metal-Binding Aroylhydrazone Photoswitches"  
Prof. Katherine Franz, Chemistry

**Zimu Wang\***

"Exploring Chemical Biology Approaches in Antimalarial Drug Discovery"  
Prof. Emily Derbyshire, Chemistry

**John P. White\***

"Encapsulation, Protection and Programmed Release of Retinol from Monodisperse Silicone Gel Particles"  
Prof. Stefan Zauscher, Mechanical Engineering and Material Science

**Kelley M. White\***

"Characterization of Cyclen-based Molecules Capable of Redox Tuning and Transmetalation"  
Prof. Katherine Franz, Chemistry

**Blair K. Willette\***

"Attenuation of Nicotine Self-Administration in Rats by Coupling Chronic Serotonin 5-HT<sub>2C</sub> Activation and Dopamine D1 Inhibition"  
Prof. Edward Levin, Psychiatry and Behavioral Sciences

**Jason L. Xu\***

"Synthesis of a Diphenylfuran-Based Small Molecule Library to Target the MALAT1 Triple Helix"  
Prof. Amanda Hargrove, Chemistry

**\* Graduation with Distinction**

## TITLES OF DISSERTATIONS AND THESES FOR Ph.D. AND M.S. CANDIDATES

**Katherine A. Alser**

"Targeting Virulence as an Approach to Bacterial Pathogenesis: Efforts Towards the Development of Chemical Biology Tools and Anti-Chlamydial Therapeutics"

Prof. Dewey McCafferty

**Lin Fu**

"Soft Self-assembly and Densest Packings in Colloidal Models"

Prof. Patrick Charbonneau

**Danielle E. Gorka**

"Understanding the Toxicity Effects of Nanostructures: I. Effect of Physico-chemical Properties on Environmentally Relevant Organismal Toxicity. II. Design of Novel Nanostructures to Reduce Environmental Toxicity while Retaining Functional Properties"

Prof. Jie Liu

**Gregory R. Gossweiler**

"Mechanochemistry for Active Materials and Devices"

Prof. Stephen Craig

**Charles E. Hendrick**

"Nitrogen-Heteroatom Bond Enabled Synthesis of Pharmacologically Valuable Aminoarenes via Aryne and Aryl-Zinc Intermediates"

Prof. Qiu Wang

**Alyssa M. Hull**

"Investigation of Ultramarine Pigment Excited State Dynamics by Pump-probe Microscopy and Spectroscopy"

Prof. Warren Warren

**Minhee Lee**

"Structure-Based Drug Design in Medicinal Chemistry: I. Development of Translesion Synthesis Inhibitors II. Synthesis and Biological Evaluation of Sulfonyl Piperazine Derivatives for LpxH Inhibition"

Prof. Jiyong Hong

**Chen Li**

"Towards Systematic Improvement of Density Functional Approximations"

Prof. Weitao Yang

**Jennifer E. Link-Schwabe**

"Targeting Protein-Protein Interactions for Disruption of LSD1 (KDM1A) Complexes"

Prof. Dewey McCafferty

**Chaoren Liu**

"Charge Transfer and Energy Transfer: Methods Development and Applications in Bio-molecular Systems"

Prof. David Beratan

**Xuehong (Keira) Liu**

"Detection and Quantification of SWCNT in Environmental and Biological Samples for Evaluation of Fate, Transport and Bioaccumulation"

Prof. Lee Ferguson

**Yang Liu**

"Multifunctional Gold Nanostars for Cancer Theranostics"

Prof. Tuan Vo-Dinh

**Gerardo X. Ortiz, Jr.**

"The Synthesis of Novel N-Heterocyclic Scaffolds and Diazirine-Based Molecular Tags"

Prof. Qiu Wang



**Julia H. Roberts**

"Application of the Stability of Proteins from Rates of Oxidation Technique to the Analysis of Mouse Models of Aging and Parkinson's Disease"

Prof. Michael Fitzgerald

**Mark L. Sleeper**

"A Prochelator Approach to Managing Tumor Growth"

Prof. Katherine Franz

**Ian E. Stewart**

"The Impact of Morphology and Composition on the Resistivity and Oxidation Resistance of Metal Nanostructure Films"

Prof. Benjamin Wiley

**Jacob C. Timmerman**

"Gold(I)-Catalyzed Hydrofunctionalization of Alkenes and Alkylidenecyclopropanes with Carbon and Nitrogen Nucleophiles"

Prof. Ross Widenhoefer

**Qin Wang**

"Development and Characterization of Boronate-Masked Prochelators for Peroxide-Triggered Metal Chelation"

Prof. Katherine Franz

**Alexandria E. Weber**

"The Diastereoselective Synthesis of 1,3-Diamines and Amino Alcohols via 2-Azaallyl Anion Ring-Opening of Aziridines and Epoxides"

Prof. Steven Malcolmson

**Yang Yang**

"Ground and Electronic Excited States from Pairing Matrix Fluctuation and Particle-Particle Random Phase Approximation"

Prof. Weitao Yang

**Du Zhang**

"Electronic Excitations from Density Functional Theory, Time-Dependent Linear Response and Many-Body Green's Functions"

Prof. Weitao Yang

**Yuqi Zhang**

"A Symphony of Charge Transfer Theory, Conductive DNA Junction Modeling and Chemical Library Design"

Prof. David Beratan

**Yuan Zhuang**

"Equilibrium Phase Behavior and Self-assemble Dynamic of a Continuous-Space Microphase Former"

Prof. Patrick Charbonneau