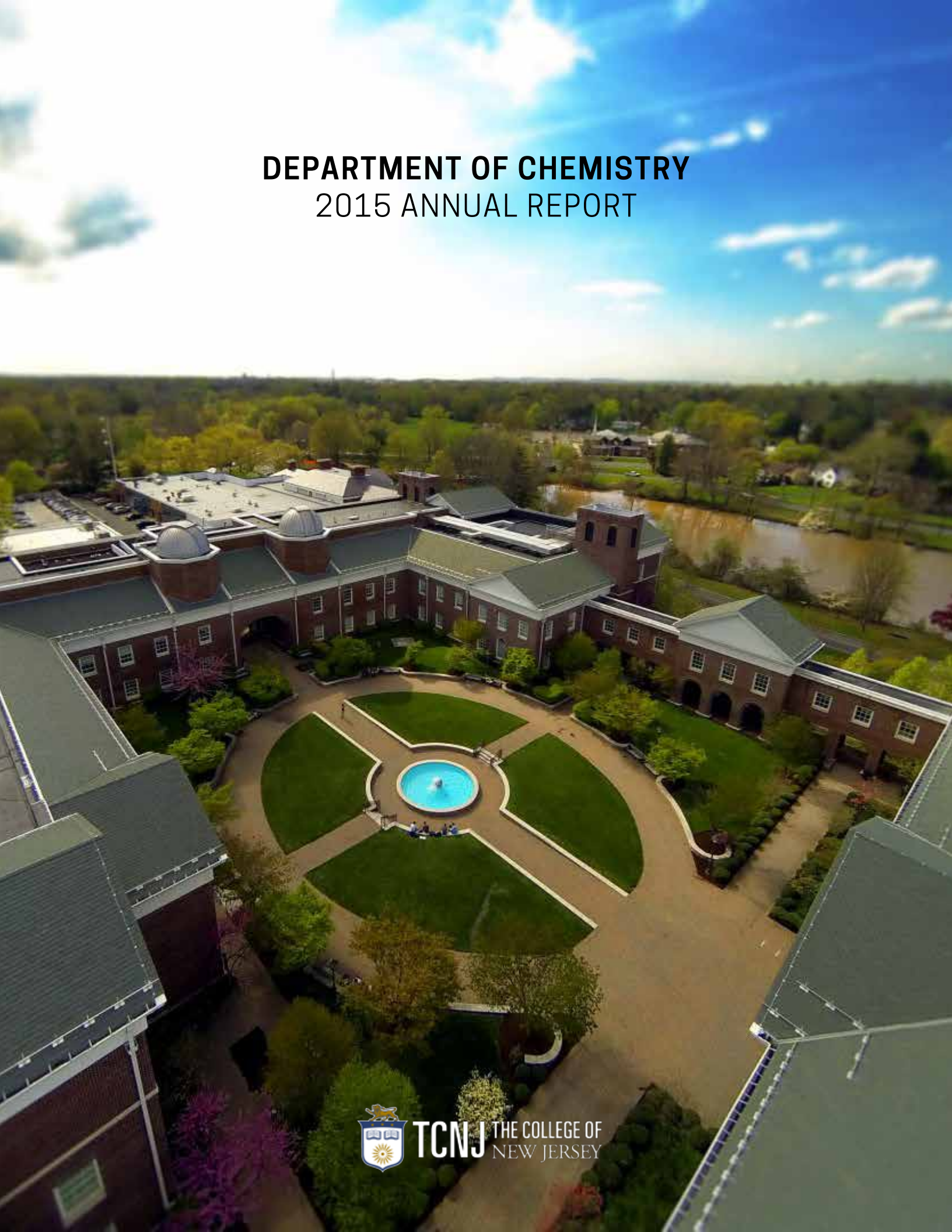


# DEPARTMENT OF CHEMISTRY 2015 ANNUAL REPORT



**TCNJ** THE COLLEGE OF  
NEW JERSEY



# COURSES TAUGHT

## Summer 2014

- Biochemistry and the Human Body (CHE 111)  
*Billmers*
- Exploring London Through the Eyes of Art and Chemistry (CHE 103)  
*Bradley*
- Organic Chemistry II (CHE 332)  
*Hunt*
- General Chemistry I (CHE 201)  
*Huang*
- General Chemistry II (CHE 202)  
*Krichten*
- Chemical Biology (CHE 170)  
*Chan*

## Fall 2014

- Orientation to Chemistry (CHE 099)  
*Chan*
- Biochemistry and the Human Body (CHE 111)  
*Billmers*
- First Year Seminar Program- Natural Science (FSP 141)  
*Allison*
- General Chemistry I (CHE 201)  
*Baker, Bunagan*
- Honors General Chemistry I (HON 201)  
*Krichten*
- Analytical Chemistry (CHE 310)  
*Krichten*
- Sophomore Chemistry Seminar (CHE 316)  
*Hirsh*
- Junior Chemistry Seminar (CHE 317)  
*Abourahma*
- Organic Chemistry I (CHE 331)  
*Abourahma, Bradley, Hunt*
- Organic Chemistry II (CHE 332)  
*O'Connor*

- Essentials of Biochemistry (CHE 350)  
*Sen*
- Forensic Chemistry (CHE 360)  
*Allison*
- Chemical Thermodynamics and Kinetics (CHE 372)  
*Hirsh*
- Instrumental Analysis (CHE 410)  
*Huang*
- Biochemistry (CHE 430)  
*Guarracino*
- Special Topics in Organic Chemistry: Medicinal Chemistry (CHE 476)  
*Hunt*
- Student Teaching (CHE 490)  
*Billmers*

## Spring 2015

- General Chemistry II (CHE 202)  
*Baker, Huang, Krichten*
- Honors General Chemistry II (HON 202)  
*Krichten*
- Sophomore Chemistry Seminar (CHE 316)  
*Bradley*
- Junior Chemistry Seminar (CHE 317)  
*O'Connor*
- Organic Chemistry II (CHE 332)  
*Billmers, Bradley, O'Connor, Sen*
- Quantum Chemistry (CHE 371)  
*Bunagan*
- Biochemistry (CHE 430)  
*Guarracino*
- Inorganic Structure and Bonding (CHE 451)  
*Chan*
- Special Topics in Forensic Chemistry: Forensic Applications of Mass Spectrometry (CHE 471)  
*Allison*
- Special Topics in Condensed Matter: Supramolecular Chemistry and Crystal Engineering (CHE 478)  
*Abourahma*

# INDEPENDENT RESEARCH

CHE 393/ 493 ENROLLMENTS

## **Abourahma**

Ryan E Boyne  
Elizabeth Johnson  
Andrew Glass  
Alec Grossman

## **Allison**

Courtney Amster  
Timothy Castor  
Danielle Miller  
Luisa Gonzalez

## **Baker**

Mark A Norbury  
Jeffrey James Furbish  
Susan Knox  
Maria Ann Minor  
Aleena Andrews  
Troy Anthony Brier  
Heba Jafri

## **Bradley**

Evan Daniel Li  
Shelby Allen  
Cristian Ochoa  
Jessica Leigh Bocanegra  
Taylor Maney  
Amy Elizabeth Solinski

## **Bunagan**

Ryan Chin  
Michael John Giordano  
Michael Pasquale Vermeuel  
Daniel James Curran

## **Chan**

Matthew Gole  
William Peter McDermott  
Lea Palacios  
Patrick Pauls

## **Guarracino**

Maria Ann Minor  
Kayla Gentile  
Susan Knox  
Dylan Nguyen

## **Huang**

Kimberly Benitez  
Margaret Kathy Chen  
Kyle Thomas Webb

## **Hunt**

Andrew Glass  
Alec Grossman  
Jessica Leigh Bocanegra  
Taylor Maney  
Amy Elizabeth Solinski

## **O'Connor**

Andrew Ruff  
Christopher Kirby  
Mia Kunitomo

## **Sen**

Alexis Jones  
Taylor Horsfield

# 2015 CELEBRATION OF STUDENT ACHIEVEMENT

## **Abourahma**

Elizabeth J. Johnson

*Kinetic and Thermodynamic Solubility  
of Pyrazinamide Cocrystals*

Ryan Boyne

*Exploiting Cocrystals for Organic Solid State Synthesis*

## **Allison**

Danielle Miller

*An Attempt to Identify Iron Oxide Compounds  
Using MALDI-MS*

Luisa Gonzalez

*Vibrations and Things that go Bump in the Night*

## **Baker**

Heba Jafri

*Molecular Dynamics Study of the Conformational  
Dynamics of the F4 Fimbrial Adhesin FaeG*

Mark Norbury

*Determining an Effective Computational Protocol for  
the Simulation of Model Lipid Membranes*

## **Bradley**

Evan Li

*Aromatic Silyl Ketones and the Brook Rearrangement*

Amy Solinski

*An Unexpected Aromatization Reaction  
of Cyclohexanedione Ethers*

Shelby Allen

*New Methodologies for Making  
Benzyl Azetidene Compounds*

Cristian Ochoa

*Efficient Methods of Synthesizing Benzyl Azetidines*

## **Bunagan**

Michael Giordano

*Shifting the Conformational Preference of an  
Intrinsically Disordered Peptide*

## **Chan**

Patrick Pauls

*Metal Coordination Chemistry Research in the  
Inorganic Chemistry Classroom*

Matthew Gole

*Metal Chelation of Pyridine Sulfonamide Ligands*

Lea Palacios

*Novel Bismuth Chalcogenides as Potential  
Thermoelectric Materials*

## **Huang**

Margaret Chen

*Effect of Supporting Electrolyte Acidity on the  
Voltammetric Analysis of Cysteine*

Kyle Webb

*The Electroreactivity of Glutathione*



## Hunt (on sabbatical leave)

Taylor Mane

*Studies Toward the Preparation of Acylated Derivatives of Resveratrol*

Ms. Mane was co-supervised by Dr. Bradley

Alec Grossman

*Synthesis of Various Functional Groups on Aminobenzophenones*

Mr. Grossman was co-supervised by Dr. Abourahma

Jessica Bocanegra

*Cu-Catalyzed Reaction of 1-Bromo-2-Iodobenzene and 1,2-Cyclohexanedione*

Ms. Bocanegra was co-supervised by Dr. Bradley

Andrew Glass

*Heterocyclic Ring Formation Using Cyclohexanone-Based Systems*

Mr. Glass was co-supervised by Dr. Abourahma

## O'Connor

Catherine Lee

*Polymerization of Norbornene Using Cationic (pi-allyl) Nickel(II) Dialkylbiaryl Phosphine Complexes*

Christopher Kirby

*Catalytic Transfer Hydrogenation of Aryl Aldehydes Using Cp\*Ir(III)Cl Pyridinesulfonamide Complexes*

Hussnain Sajjad

*Progress Towards the Synthesis, Characterization, and Catalysis of Iridium Complexes Containing [N,N,N]-Pincer Type Ligands*

Mia Kunitomo

*Evaluating the Reactivity of (pi-allyl) Palladium Halides Containing Dialkylbiaryl Phosphine Ligands in Suzuki- Miyaura Coupling Reactions*

## Sen

Alexis Jones

*Disruption of Insect Isoprenoid Biosynthesis with Pyridinium Bisphosphonates*

Taylor Horsfield

*Active Site Analysis of Lepidopteran Farnesyl Diphosphate Synthase- Implications in Homologous Juvenile Hormone Biosynthesis*



# SUMMER RESEARCH

SUMMER 2014

## Allison

Megan Merbach

Studying Interactions of Artist's Media (Egg Yolk) with Pigments - Are phosphopeptides Altered?

## Bunagan

Ryan Chin

Studying the Folding Pathway of Truncated and Full Length Human Serum Albumin via FCS

## Chan

Will McDermott

Discovery of Novel Thermoelectric Materials by the Destruction of the Rock Salt Structure of Bismuth Telluride ( $\text{Bi}_2\text{Te}_3$ )

Lea Palacios

Discovery of Novel Thermoelectric Materials by the Destruction of the Rock Salt Structure of Bismuth Telluride ( $\text{Bi}_2\text{Te}_3$ )

## Guarracino

Kayla Gentile

Development of 'Artificial' Peptides that Bind Collagen as Potential Anti-Thrombosis Agents

Dylan Nguyen

Development of 'Artificial' Peptides that Bind Collagen as Potential Anti-Thrombosis Agents

## O'Connor

Catherine Lee

Polymerization of Norbornene Using Cationic (Pi-allyl)Ni(II) Dialkylbiaryl Phosphine

Mia Kunitomo

Exploring the Reactivity of Norbornene with (Pi-allyl)Pd Cations Containing Dialkyl Biaryl Phosphines

Andrew Ruff

Synthesis, Characterization, and Catalyst Screening for Cp\*Ir Pyridine Sulfonamide Complexes

Husnain Sajjad

Progress Towards the Synthesis of [N,N,N]-Dianionic Pincer Ligands to Stabilize Iridium in High Oxidation States

## Sen

Taylor Horsfield

Analyzing the Use of Bisphosphonates as Inhibitors of Farnesyl Diphosphate Synthase in *Manduca sexta*

Alexis Jones

Analyzing the Use of Bisphosphonates as Inhibitors of Farnesyl Diphosphate Synthase in *Manduca sexta*



# Departmental Committee Reports

## **Academic Affairs 2014- 2015 Activities Report**

*From Danielle Guarracino, 2014- 2015 Chair*

The Academic Affairs Committee was engaged in several curricular activities. The Committee prepared departmental course schedules for the 2015-16 academic year, reviewed and updated the academic bulletin, revised course descriptions, advising newsletter and program planners, and reviewed transfer and change of major applications. In addition to these annual activities, the Committee reviewed and prepared recommendations related to the following: 1) review of the computational biology minor, 2) development of registration procedures and FAQs, 3) implementation and oversight of CHE493 application process, and 4) preparation of materials for Middle States and ACS Accreditations. The committee will continue to implement the Writing Across the Curriculum proposal and will correlate learning outcomes with current course offerings.

## **Student Affairs 2014- 2015 Activities Report**

*From Abby O'Connor, 2014- 2015 Chair*

The Student Affairs Committee was engaged in a wide variety of student-centered activities. The Committee organized several campus events during the academic year, including the new State of the Department assembly and reception, the winter departmental student poster session, the Celebration of Student Achievement lunch and awards ceremony, and the departmental graduation ceremony. In addition, the Committee oversaw the evaluation and distribution of departmental student awards, student admission to Phi Beta Kappa, Goldwater Scholarship nominees, the preparation of two departmental pre-registration newsletters, organization of the department lecture series, and the solicitation and compilation of faculty and student professional activities to be used for the 2014-15 Departmental Annual Report. The Graduation Student Feedback Survey was modified, the 2014 results of this survey were summarized, compared

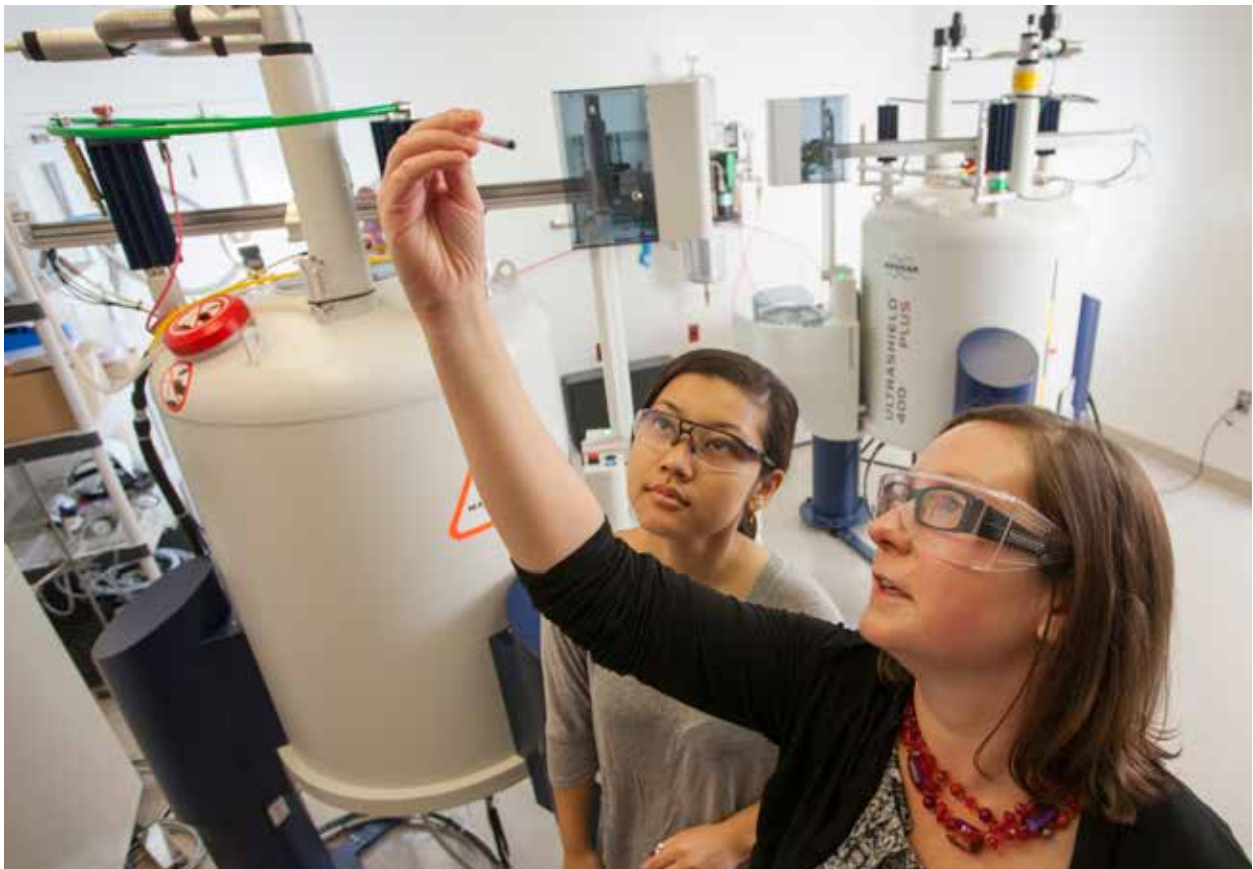


to 2012 and 2013 results and distributed to the department with suggested action items. A new Travel Contract for students attending professional conferences, and a new bulletin board alerting students to REU, MUSE, internships and employment opportunities were created. Three existing bulletin boards showcasing past award recipients, alumni publications, and alumni location were updated. This committee was especially active in fostering alumni relations through events such as tailgating at Homecoming, an alumni social event in December, and a “Good-bye to the Bridge” gathering during Alumni Weekend; all very well attended. The Student Affairs Committee continues to be particularly active in working with both the Office of Alumni Affairs and the Office of Advancement Services on campus.

## **Operations** **2014- 2015 Activities Report**

*From Donald Hirsh and Heba Abourahma, 2014-2015 Chairs*

The Operations committee was engaged in several activities. In addition to preparing IT and renovation requests and overseeing ELF purchases, the Committee reviewed existing instrument service contracts to identify those that could be eliminated, reviewed potential methods to track and categorize general budget purchases, and reviewed the new college guidelines for Industry-TCNJ relations. The committee (with Mirela Krichten as ad hoc member) reviewed the safety handbook with staff from Occupational Safety and developed undergraduate research safety procedures, which were approved by the faculty. In preparation for GHS compliance, the Committee disseminated waste disposal information to the faculty. With the assistance of Joseph Baker, the Department website was updated, new materials prepared and added, and a timeline for future content updates was created.



# Student Organization Reports

## **Student Chemists Association (SCA)**

2014- 2015 Activities Report

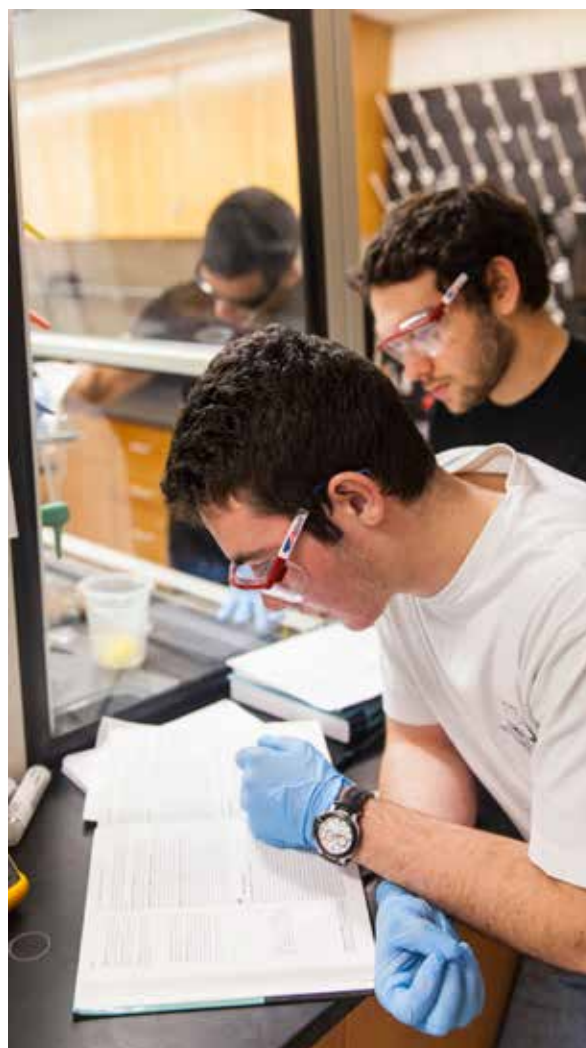
*From Taylor Maney, 2014-2015 president*

The Student Chemists Association at The College of New Jersey had a very active year. To promote professional development of its members, the club sponsored a variety of different speakers and ACS webinars. Additionally, students had the opportunity to tour the Chemical Heritage Foundation in Philadelphia. SCA members also toured the River Horse Brewery along with the Trenton Local Section of ACS to learn about the chemistry of brewing. Finally, many SCA members were afforded professional development opportunities by attending the 248th and 249th ACS National Meetings in San Francisco and Denver, respectively.

SCA members were actively involved in the department, campus, and Ewing community in the 2014-15 academic year. Chemistry demonstrations were conducted at a variety of local schools, as well as during TCNJ Week of Science, Community Fest, and Alumni Visitation Weekend. Freshman "Happy Hour" Fridays were hosted to help new students in the department acclimate to college life. Students in SCA also offered tours to prospective students during departmental open houses. Periodic Table cupcakes were given away in celebration of National Chemistry Week, and club members held a "Rock Candy Giveaway" during TCNJ Finals Fest to teach students about the chemistry of making candy.

Finally, the Student Chemists Association organized a variety of fun social events for its members, including rock climbing, laser tag, a Halloween costume contest, and a Cards Against Humanity stressbuster. The club's most successful social events were the Departmental Thanksgiving Potluck and Chemistry Semiformal.

The annual Potluck provides students and faculty the opportunity to interact outside of the classroom environment while enjoying a wide variety of foods. The catered Semiformal was an opportunity for club members to celebrate the end of a great year and bid farewell to graduating seniors. Overall, SCA's events this year allowed members to reinforce their passion for chemistry outside of the classroom and develop close-knit ties with other students as well as faculty.



## Gamma Sigma Epsilon (GSE)

### 2014- 2015 Activities Report

*From Chris Kirby, 2014- 2015 president*

During the fall semester, the GSE executive board organized and held the 2014 Initiation Ceremony. Run according to the bylaws of GSE National, the ceremony welcomed 11 inductees into the TCNJ GSE Chapter. The ceremony, which was attended by students, parents, and faculty was held in the Chemistry Building and was followed by refreshments of pizza and cake. Inductees were given certificates and lab coats. During the fall semester, GSE initiated a new tutoring program to serve all students enrolled in Chemistry classes. Every Wednesday, for an hour, 2-3 GSE members were stationed in the Chemistry Student Lounge for drop-in tutoring. This highly successful activity

was continued through the spring semester and it is expected that this activity will continue next year. During the spring semester, GSE organized a series of faculty research seminars. These seminars, which were 30 or 60 minutes in length provided underclassman an opportunity to determine what research labs they wanted to apply to work in for CHE 493 credit. GSE expects to schedule additional seminars in Fall 2015. At the end of the spring semester, GSE and SCA jointly planned two social events. The first was a video game night held on Friday, May 1st. Students provided the video game consoles and games which were projected in one of the Chemistry classrooms. On Sunday May 3rd, GSE and SCA held the annual Department Picnic. GSE supplied hotdogs, hamburgers, and veggie burgers for the picnic.

# Class of 2015 Graduates

Shelby Allen  
Benjamin Askin  
Kimberly Benitez  
Jessica Bocanegra  
Ryan Boyne  
David Caceres  
Timothy Castor  
Margaret Chen  
Ryan Chin  
Thomas Foster  
Brian Garsh ^  
Michael Giordano  
Luisa Gonzalez

Lourdes Guerra  
Taylor Horsfield  
Selina Iqbal  
Elizabeth Johnson  
Alexis Jones  
Justine Kasztelan ^  
Christopher Kirby  
Mia Kunitomo  
Taylor Maney  
William McDermott  
Danielle Miller  
Matthew Morel  
Mark Norbury

Cristian Ochoa  
Lea Palacios  
Sarah Patterson  
Patrick Pauls  
Hussnain Sajjad  
Amy Solinski  
Michael Vermeuel  
Kyle Webb  
Ammar Zia  
  
^ teaching certified

# Student Awards

## **Excellence in Chemistry Awards**

Ryan Boyne  
Margaret Chen  
Alexis Jones  
Taylor Maney  
Cristian Ochoa  
Hussnain Sajjad  
Kyle Webb

## **ACS Division of Organic Chemistry**

Shelby Allen

## **ACS Division of Analytical Chemistry**

Marc Casale (Class of 2017)

## **ACS Division of Inorganic Chemistry**

William McDermott

## **New Jersey Institute of Chemists**

William McDermott

## **Northeastern Chemists Association**

Justine Kazstelan

## **American Institute of Chemists**

Michael Vermeuel

## **CRC Press Award**

Mia Kunitomo

## **Joanne and Robert Billmers Chemistry Education Award**

Andrew Kimball (Class of 2016)

## **Joanne and Robert Billmers Chemistry Education Award**

Andrew Kimball (Class of 2016)

## **Philip Dumas Memorial Award**

Elizabeth Johnson

## **Dr. Jerry Goodkin Physical Chemistry Award**

Lea Palacios

## **Mabel Hores Award in Forensic Chemistry**

Timothy Castor

## **Goldwater Scholarship Honorable Mention**

Susan Knox  
Andrew Ruff (Class of 2016)

## **2013-2014 Academic Year Academic Awards**

Top Chemistry Department Freshmen  
Marc Casale  
Sara Martin  
Matt Zajak

## Top Chemistry Department **Sophomores**

William Buchbinder  
Andrew Ruff

## Top Chemistry Department Junior

William McDermott

# Publications 2014-15

Farrokh, J.; Campos, C; Hunt, D.A. A Parham cyclization approach to diaryl-fused seven-membered ring heterocyclketones. *Tetrahedron Lett.* **2015**, Ahead of Print.

Abourahma, H.; Shah, D.D.; Melendez, J.; Johnson, E.J.; Holman, K.T. The Tale of Two Stoichiometrically Diverse Cocrystals, *Cryst. Growth Des.* **2015**, *15*, 3101–3104.

Greig, N.E.; Einkauf, J.D.; Clark, J.M.; Corcoran, E.J.; Karram, J.P.; Kent, C.A.; Eugene, V.E.; Chan, B.C.; de Lill, D.T. Luminescent lanthanide coordination polymers synthesized via in-situ hydrolysis of dimethyl-3,4-furandicarboxylate. *Solid State Chem.* **2015**, *225*, 402-409.

Guarracino, D.A.; Alabanza, A.M.; Robertson, C.T.; Sanghvi, S.S. The role of primary sequence in helical control compared across short  $\alpha$  and  $\beta$ 3-peptides. *J. Biomol. Struct. Dyn.* **2015**, *33*, 597-605.

Farrokh, J.; Campos, C; Hunt, D.A. A Parham cyclization approach to diaryl-fused seven-membered ring heterocyclketones. *Tetrahedron Lett.* **2015**, Ahead of Print.

Abourahma, H.; Shah, D.D.; Melendez, J.; Johnson, E.J.; Holman, K.T. The Tale of Two Stoichiometrically Diverse Cocrystals, *Cryst. Growth Des.* **2015**, *15*, 3101–3104.

Greig, N.E.; Einkauf, J.D.; Clark, J.M.; Corcoran, E.J.; Karram, J.P.; Kent, C.A.; Eugene, V.E.; Chan, B.C.; de Lill, D.T. Luminescent lanthanide coordination polymers synthesized via in-situ hydrolysis of dimethyl-3,4-furandicarboxylate. *Solid State Chem.* **2015**, *225*, 402-409.

Guarracino, D.A.; Alabanza, A.M.; Robertson, C.T.; Sanghvi, S.S. The role of primary sequence in helical control compared across short  $\alpha$  and  $\beta$ 3-peptides. *J. Biomol. Struct. Dyn.* **2015**, *33*, 597-605.

Baker, J.; Courtemanche, N.; Parton, D.L.; McCullagh, M.; Pollard, T.D.; Voth, G.A. Electrostatic Interactions Between the Bni1p Formin FH2 Domain and Actin Influence Actin Filament Nucleation. *Structure* **2015**, *23*, 68-79.



Abourahma, H.; Bradley, L.; Lareau, N.M.; Reesbeck, M. Modified Birch Reduction for the Introductory Undergraduate Organic Laboratory. *J. Chem. Educ.* **2014**, *91*, 443-445.

Guarracino, D. CHI'S Second Annual Meeting of Drug Discovery Chemistry –Macrocyclics and Constrained Peptides. *Drugs of the Future* **2014**, 527-531.

Tucci, V.K.; O'Connor, A.R; Bradley, L.M. A Three-Year Chemistry Seminar Program Focusing on Career Development Skills. *J. Chem. Educ.* **2014**, *91*, 2071-2077.

Tiedemann, M.A.; Mandel, C.L.; Chan, B.C.; Nataro, C. X-ray structures and oxidative electrochemistry of phosphine sulfides and phosphine selenides. *Inorg. Chim. Acta* **2014**, *422*, 193-201.

Rai, K.; Wu, V.; Gupta, P; Laviska, D.A.; Chan, B.C. N-Methyl-N-nitroso-p-toluenesulfonamide. *Acta Cryst.* **2014**, *70*, 782.

Nayak, S.; Fiaschi, M.; King, D.; Tabakin, E.R.; Wood, L.; Hunt, D.A. Development of small molecular proteasome inhibitors using a *Caenorhabditis elegans* screen. *Int. J. Med. Chem.* **2014**, 237286/1-237286/15

Cherney, E.; Macor, J.; Papanagopolous, C.; Hunt, D.A. Tandem cyclization reactions of electron rich aryethylamino acid amides. An entry to the dihydroimidazoisoquinolin-3(2H)-one ring system. *Tetrahedron Lett.* **2014**, *55*, 4837-4839.



# Faculty Presentations

**Guarracino, D.** Invited speaker at American Peptide Society's 24th American Peptide Symposium, June 2015.

**Sen, S.E.** New Avenues for Insecticide Development. Oral presentation for Gamma Sigma Epsilon. TCNJ Department of Chemistry, Ewing, NJ, April 2015.

**Baker, J.L.** Biomolecular Simulation: Bridging Atomistic Scale Dynamics to Macromolecular Properties. Invited talk at Northern Arizona University, Department of Chemistry, Flagstaff, AZ, March 2015.

**O'Connor, A.R.** and **Sen, S.\*** Implementation of NMR spectroscopy into the undergraduate experience at The College of New Jersey. Oral presentation, 249<sup>th</sup> American Chemical Society National Meeting, Denver, CO, March 2015

**Sen, S.E.** New Avenues for Insecticide Development. Oral presentation for Gamma Sigma Epsilon. TCNJ Department of Chemistry, Ewing, NJ, April 2015.

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**O'Connor, A.R.** and **Sen, S.\*** Implementation of NMR spectroscopy into the undergraduate experience at The College of New Jersey. Oral presentation, 249<sup>th</sup> American Chemical Society National Meeting, Denver, CO, March 2015.

**Sen, S.,** Grasso, M., Macor, M., Wood, L. Jacob, R., Jones, A., Horsfield, T., Tomasello, A., Hitchcock, J., and Cusson, M. Unique features of isoprenoid forming enzymes in moths: implications for the biosynthesis of homologous juvenile hormones. Poster presentation, 249<sup>th</sup> American Chemical Society National Meeting, Denver, CO, March 2015.

**Allison, J.** Forensic Science's Battle for Legitimacy, 3rd Annual Convention of the Central New Jersey Paralegal Association, Lindcroft, NJ, February 2015.

**Baker, J.L.** Actin Filament Nucleation is Influenced by Electrostatic Interactions with the Bni1p Formin FH2 Domain. Biophysical Society 59th Annual Meeting, Baltimore, MD, February 2015.

**O'Connor, A.R.** Chemistry in the O'Connor Lab. Oral presentation for Gamma Sigma Epsilon. TCNJ Department of Chemistry, Ewing, NJ, February 2015.

**O'Connor, A.R.** Hydrogen Transfer Catalyzed by Iridium based Half-Sandwich Complexes Containing Pyridinesulfonamide Ligands. Invited lecture. Philadelphia Inorganic Colloquium, Philadelphia, PA, February 2015.

Renkel, N. and **Allison, J.** Spectroscopy with a Camera—Is it Possible? Northeast Association of Forensic Scientists, 40th Annual Meeting, Hershey, PA, November 2014.

**Huang, J.,** Chen, M., Benitez, K. Effect of Organic Additive in Running Buffer on Capillary-Electrophoretic Analysis of Amino Acids. The Eastern Analytical Symposium, Somerset, New Jersey, November 2014.

**O'Connor, A.R.** and **Chan, B.C.** Integration of Research into the Curriculum Using XRD and NMR Structural Analysis. Invited symposium. Eastern Analytical Symposium, Somerset, NJ, October 2014.

**Guarracino, D.** Development of 'Artificial' Peptides that Bind Collagen as Potential Anti-Thrombosis Agents. Poster presentation, 1st TCNJ Interdisciplinary Research Forum, Ewing, NJ, October 2014.

**Allison, J.** Forensic Science's Battle for Legitimacy, Royal Society of Chemistry US Chapter Fall Meeting, Hancock, MA, September 2014.

# Student Presentations

## 2015

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Johnson, E. and **Abourahma, H.**, Kinetic and thermodynamic solubility of pyrazinamide cocrystals. 249<sup>th</sup> American Chemical Society National Meeting, Denver, CO, March 2015 [Poster presentation].

**Sen, S.**, Jones, A.,\* and Horsfield, T. Disruption of insect isoprenoid biosynthesis with pyridinium bisphosphonates. 249<sup>th</sup> American Chemical Society National Meeting, Denver, CO, March 2015 [Poster presentation].

**Sen, S.**, Horsfield, T.,\* and Jones, A. Active site analysis of lepidopteran Farnesyl diphosphate synthase: Implications in omologous juvenile hormone biosynthesis. 249<sup>th</sup> American Chemical Society National Meeting, Denver, CO, March 2015 [Poster presentation].

Ochoa, C. and **Bradley, L.M.** Efficient Methods of Synthesizing Benzyl Azetidines. 249<sup>th</sup> American Chemical Society National Meeting, CO, March 2015 [Poster presentation].

Allen, S.C. and **Bradley, L.M.** Formation and Reactions of Benzyl Azetidine Compounds. 249<sup>th</sup> American Chemical Society National Meeting, Denver, CO, March 2015 [Poster presentation].

Chen, M., Webb, K., and **Huang, J.** Voltammetric determination of sulfur-containing biomolecules using screen-printed electrodes. 249<sup>th</sup> American Chemical Society National Meeting, Denver, CO, March 2015 [Poster presentation].

Kirby, C. and **O'Connor, A.R.** Catalytic transfer hydrogenation of aryl aldehydes using Cp\*Ir(III) pyridinesulfonamide complexes. 249<sup>th</sup> National Meeting of the American Chemical Society, Denver, CO, March 2015 [Poster presentation, selected for SciMix]. *This presentation partially funded through an ACS Division of Inorganic Chemistry Student Travel Award.*

Ruff, A., Chan, B.C., and **O'Connor, A.R.** Catalytic transfer hydrogenation using Cp\*Ir(III)Cl pyridinesulfonamide complexes. National Meeting of the American Chemical Society, Denver, CO: March 2015 [Poster presentation, selected for SciMix].

Sajjad, H. and **O'Connor, A.R.** Progress towards the synthesis, characterization, and catalysis of iridium complexes containing [N,N,N] pincer type ligands. 249<sup>th</sup> National Meeting of the American Chemical Society, Denver, CO, March 2015 [Oral presentation].

Maney, T., Sajjad, H., Kirby, C., **O'Connor, A.R.**, and **Chan, B.C.** The student chemists association at The College of New Jersey. 249<sup>th</sup> National Meeting of the American Chemical Society, Denver, CO, March 2015 [Poster presentation].

## 2014

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Palacios, L.,\* McDermott, W.,\* Kennedy, L., Kita, M., Ndichie, E., Roesch, R., **Chan, Benny C.** New potassium rare earth nitrogen chalcogenides with potential thermoelectric properties. 248<sup>th</sup> National Meeting of the American Chemical Society, San Francisco, CA, August 2014. Poster presentation.

Sajjad, H. and **Laviska, D.A.** Exploiting dehydrogenation of primary amines by a PCP-iridium complex: Catalytic generation of several useful nitriles and discovery of an air-stable cyclometalated complex. American Chemical Society National Meeting, San Francisco, CA, August 2014.

Vermeuel, M.,\* Chin, R., Giordano, M., Gupta, P., and **Bunagan, M.** Studying the folding pathway of truncated and full-length human serum albumin via FCS. American Chemical Society National Meeting, San Francisco, CA, August 2014.





# Faculty Grants

## Internal Grants

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### Support of Scholarly Activity award (SOSA), 2014-2016

Heba Abourahma  
John Allison  
Stephanie Sen

### Support of Scholarly Activity award (SOSA), 2015-2017

Joseph Baker  
Danielle Guarracino  
Abby O'Connor

### Mentored Undergraduate Summer Experience award (MUSE), 2014

Michell Bunagan  
Benny Chan  
David Hunt  
Danielle Guarracino  
Abby O'Connor  
Stephanie Sen

### School of Science Mini grant, 2014-2015

Donald Hirsh  
David Hunt

### Sabbatical Leave, academic year 2015-2016

Benny Chan

### AFT Career Development grant, 2014-2015

Heba Abourahma  
Joseph Baker  
Abby O'Connor

## External Grants

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**Travel Award CIBA/Younger Chemists Committee of the American Chemical Society (ACS).**  
Danielle Guaracino, 2014.

**National Science Foundation (DUE), PERSIST 2.0 in Biology and Chemistry (Program to Enhance Retention of Students In Science Trajectories in Biology and Chemistry).** PI: Benny Chan, Co-PI: Lynn Bradley, Sudhir Nyak, Don Lovett. Funded, 2015-2017.

**National Science Foundation Extreme Science and Engineering Discovery Environment,** *Investigation of the Structure and Dynamics of Type IV Pilus Filaments Using All-Atom and Coarse-Grained Molecular Dynamics.* PI: J. Baker. Funded, 2015-2016.

**American Chemical Society  
Petroleum Research Fund,**  
*Synthesis of Cationic Nickel(II)  
Complexes Containing Hemilabile  
Arms for use as Alkene  
Hydrogenation Catalysts.* PI: A.R.  
O'Connor. Funded, 2013-2015.

**Research Corporation  
(Competitive), 2012-2014,  
funded, \$35,000.** Program title,  
*New Ni(II) and Pd(II) Complexes  
Containing Hemilabile Pendent  
Arene Groups to Catalyze the  
Polymerization of Olefins and Polar  
Monomers.* PI: A.R. O'Connor.  
Funded, 2013-2015.

**National Science Foundation,**  
*REU: Integrated Computational  
and Experimental REU Site.*  
PI: T. Pintauer, Co-PI: A.R. O'Connor.  
Renewal, funded, 2013-2015.

**American Heart Association  
Grant-in-Aid,** *The Development of  
Cyclic Peptides as First Generation  
Anti-Thrombosis Therapeutics.* PI: D.  
Guarracino. Submitted, July 2014.

**Research Corporation for  
Scientific Advancement,**  
*Investigation of the Structure and  
Dynamics of Type IV Pilus Filaments  
Using All-Atom and Coarse-Grained  
Molecular Dynamics.* PI: J. Baker.  
Submitted, August 2014.

**National Science Foundation,  
Chemistry Division (Chemical  
Catalysis), Collaborative  
Research RUI: Iridium Catalysts  
for Enantioselective Transfer  
Hydrogenation.** PI: A.R. O'Connor,  
B.C. Chan, and D.J. Jacobs (Rider U.).  
Submitted, October 2014.

**National Science Foundation,  
Division of Undergraduate  
Education, IUUSE: FIRSTS  
(Foundation for Increasing and  
Retaining STEM Students)  
Program– A bridge program to study  
the sociological development of  
science identities.** PI: B.C. Chan, S.  
Nayak, L. Gazley, S.M. Pulimood, and  
S. Vander Sandt. Submitted, January  
2015 (recommended for funding).

**National Institutes of Health,**  
*Allosteric modulators of EAAT2 for  
neuroprotection* PI: A.C. Mortensen  
(Drexel University College of  
Medicine) Co-PI: J.M Salvino (Drexel  
University College of Medicine), D.  
Schnur (Drexel U and TCNJ), and J.  
Baker. Submitted, February 2015.

**Human Frontier Science Program,**  
*Exploring the molecular origins of  
ionic liquid effects on biological  
membranes.* PI: J. Baker, G. Lindberg  
(Northern Arizona University), and  
A. Srivastava (Molecular Biophysics  
Unit, Indian Institute of Science  
Bangalore). Letter of interest  
submitted, March 2015.

# Departmental Seminars

## October 8, 2014

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**Dr. Malcolm Forbes**, Presidential Professor, University of North Carolina Chapel Hill

*Photodynamic therapy, toils and troubles: Problems solved with tiny bubbles*

## November 5, 2014

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**Dr. Daniel Mindiola**, Professor, University of Pennsylvania

*Methane activation and dehydrogenation of volatile alkanes C2-C8. Can we do better than burn or crack them?*

## November 19, 2014

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**Dr. Paramjit S. Arora, Professor**, New York University

*Plucking the high hanging fruit: A systematic approach for targeting protein interfaces*

## February 4, 2015

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**Dr. Robert Gambogi**, Research Director and Fellow, Johnson and Johnson

*Lessons learned in consumer healthcare*

## March 4, 2015

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**Dr. Nicole Beveridge**, Senior Research Chemist, 3M

*From bone tissue engineering to industrial adhesives research – the journey from graduate academic research to industry*

## April 15, 2015

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**Dr. Gerrick Lindberg**, Assistant Professor, Northern Arizona University

*Ions at the air-water interface: Determining the pH of interfacial water*



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