



IONIC BONDS

Fall 2011

Volume 6, Issue 1

Iona College's Chemistry Newsletter
We Create Strong Bonds!

A Warm Welcome from the New President of Iona College, Dr. Joseph E. Nyre

Iona College will inaugurate its eighth President, Joseph E. Nyre, PhD on October 28, 2011. President Nyre succeeds Brother James A. Liguori, and becomes the first non-Christian Brother to lead Iona College. President Nyre is a U.S. Naval veteran who has held key academic and administrative positions at the University of Kansas, Harvard Medical School, Baylor University, and the University of Illinois at Chicago. Most recently, he served as President and CEO of The Hope Institute for Children and Families, a statewide university affiliated organization headquartered in Springfield and Chicago, Illinois.

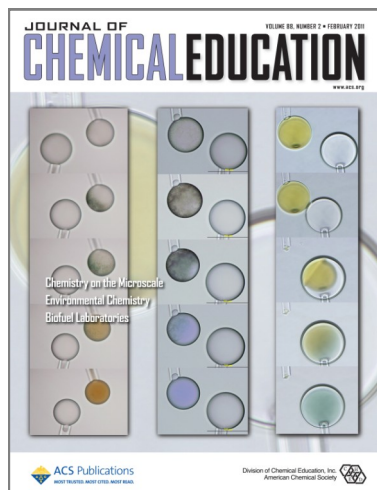
In his welcome to the Iona Chemistry community, President Nyre remarked: "The Iona College Chemistry Department has made significant inroads in the recent past. Its achievements have been made possible largely due to the collective efforts of dedicated faculty and students in their pursuit of excellence in teaching and learning."

Dr. Lee, chair of the department, said: "We are grateful for enormous support received from the administration. Their vision, and recognition of and investment in our program, have been crucial in bringing the Chemistry program to the present level."



Joseph Weiner '10 Coauthors Peer-Reviewed Paper, Cover Graphic in *J. Chem. Ed.*

A recent article by Sunghee Lee, PhD, Chemistry, with undergraduate co-author Joseph Wiener, '10 is featured as the cover of the *Journal of Chemical Education*, February issue, 2011. The cover illustrates demonstrations of the predominant characteristic feature of microdroplets, their very large ratio of surface area to volume, and chemical phenomena that occur within micrometer-scale aqueous droplets. You can read the full article by visiting pubs.acs.org: Lee, S.; Weiner, J. "Visualizing Microdroplet Fluidic Reactions One Droplet at a Time", *J. Chem. Ed.*, 2011, 88(2), 151-157. DOI: 10.1021/ed100518k



The cover of *J. Chem. Ed.* featuring the work of Dr. Lee and Joseph Weiner '10. Only the most exciting, cutting-edge submissions with the broadest appeal to the readership are featured on the cover of a peer-reviewed journal. Congratulations!

The *Journal of Chemical Education* (*J. Chem. Ed.*) is the official journal of the Division of Chemical Education of the American Chemical Society (ACS). Articles in *J. Chem. Ed.* are peer-reviewed and intended for chemical educators at all levels from middle school to undergraduate programs. Dr. Lee and Joseph Weiner's contribution will enable chemical educators to demonstrate reactions in microdroplets without the use of an expensive microscope, via the real-time video content they have disseminated in this work.

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Editors:
Dr. Sunghee Lee, Chair
Dr. Kathleen Kristian

Strong Presence of Iona Chemistry Students at the American Chemical Society (ACS) National Meetings

Each summer, as a capstone to student's research experience, Iona chemistry undergraduate research students attend the National Meeting of the American Chemical Society (ACS).

Summer 2010: Seven students attended the 240th ACS National Meeting in Washington DC with Dr. Lee, and presented two posters.

Summer 2011: Dr. Lee and five students presented two posters at the 242nd ACS National Meeting in Denver, Colorado. Around the theme, "Chemistry of Air, Space & Water," over 10,000 chemists from all over the world joined this national meeting to share their knowledge, network and learn about cutting-edge research.

One poster was presented at the Colloid and Surface Science Division, "Effect of cationic surfactant template and its interaction with specific anion" by Paul Sanstead '11 and Nick Florio '11. Another poster was presented at the Division of Chemical Education, entitled, "Modulation of contact angle of droplet interface bilayers: Effect of ionic nature and strength" by Darius Fartash '13, Zuzanna Michalak '13, and Nousin Haque '13. The research is funded by the National Science Foundation (NSF). This is the second year of a three-year, \$157,705 NSF grant, which supported research



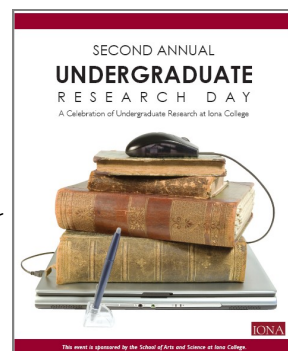
of eight students in the summer of 2010. The grant will support nine students in 2012. The students are also grateful to the Patrick J. Martin Foundation, Eli Lilly/WCC, and AMEX grant for enabling them to attend this conference opportunity.

Six Research Projects by Ten Students Presented at the Second Annual Undergraduate Research Day



On April 1, 2011, Iona College hosted the second Undergraduate Research Day (URD). This annual event provides the perfect opportunity for students to highlight their research accomplishments, share their work with fellow students, and inspire others. Of about seventy

undergraduate presenters from seventeen disciplines of the School of Arts and Science, six research projects were contributed by ten chemistry and biochemistry students.



Two Students Received Freshmen Chemistry Awards

The chemistry faculty have awarded two Freshmen Chemistry Awards to **Peter Vitale ('14, Biochemistry)** and **Jaclyn Robustelli ('14, Biochemistry)** for their outstanding accomplishment and potential in the chemical sciences. Peter Vitale was named the recipient of Iona's 2011 CRC Press Chemistry Achievement Award which is sponsored by the Taylor and Francis Group.

Jaclyn Robustelli was named the recipient of the American Chemical Society Westchester Section Outstanding Chemistry Award.





Student Spotlight

Senior Honors Thesis Receives Distinction

Paul Sanstead ('11) recently received a distinction on his senior honors thesis, "Effect of Specific Anion on Templated Crystal Nucleation at the Liquid-Liquid Interface" (Dr. S. Lee, advisor/mentor). "Paul is a rare student who is more than deserving of this honor. He will graduate with two peer reviewed articles to his name - a

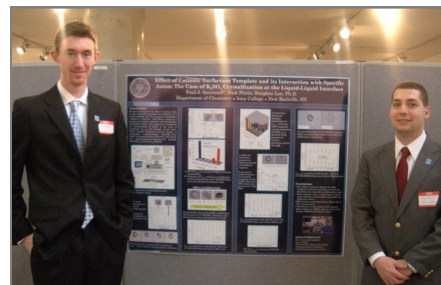
rare and impressive accomplishment for any undergraduate." said Dr. Zaino, director of the honors program, and Dr. Lee, chair of the chemistry department. His thesis was also chosen as semifinalist for Portz scholars of the National Collegiate Honors Council. Paul will be heading to graduate school to pursue his PhD in chemistry.

Iona Students' Poster Win Awards at NY YCC Symposium

Two Iona College Chemistry students have won a prize for best poster presentation at a recent New York - American Chemical Society (NY-ACS) symposium. The students, **Paul Sanstead ('11)** and **Nick Florio ('11)**, presented a poster on their research, entitled "Effect of cationic surfactant template and its interaction with specific anion: The case of K_2SO_4 crystallization at the liquid-liquid interface," at the Inaugural NY ACS Younger Chemist Committee

(YCC) Research Symposium at The Cooper Union, New York, NY on March 19, 2011. The prize is given for both the quality of the scientific investigation represented by the poster and for skill in presentation. Their work was performed under the mentorship of Dr. Sunghee Lee. "Nick and Paul's achievement marks a milestone in the upward trajectory of Iona Chemistry. People are beginning to take notice of how we integrate undergraduate

students and research, and I am especially proud of how well they represented our efforts," said Dr. Lee.



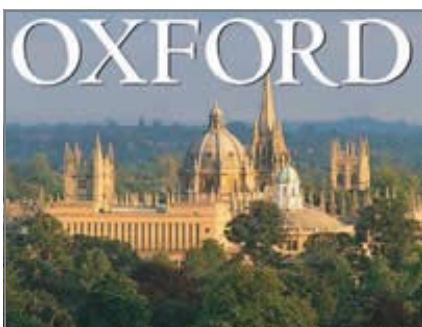
Iona Sophomore Wins Eli Lilly/WCC Travel Award



Zuzanna Michalak ('13), a chemistry student at Iona College, has been selected by the American Chemical Society's (ACS) Woman Chemists Committee to receive a 2011 Eli Lilly/WCC Travel Grant. This highly competitive award is given to a select few outstanding female students from undergraduate, graduate, and post-doctoral programs. Zuzanna is one of only eight female chemists in the

country to have won this award, and one of only two undergraduates to have won. Six of the eight awardees were PhD students, yet Zuzanna was in this prestigious club as an undergraduate. Her research project, performed under the tutelage of Dr. Lee, deals with understanding membrane interactions with ions in a simplified model bilayer.

Oxford/Blackfriars Fellowship Awarded to Chemistry Major



Kathryn Lynch ('13), a chemistry major has won an Oxford/Blackfriars Fellowship to support her academic year abroad in 2011-2012. Dr. Zaino of the Oxford Committee writes: "The committee was very impressed with Kathryn's application and her interview." Kathryn has been chosen as one of two students at the College to represent Iona at Oxford during the 2011-2012 academic year.

Dr. Lee says: "Kathryn will be representing Iona College well in this prestigious capacity. She richly deserves this honor on account of her hard work and talents."





Scholarly Activities

Iona Students Give Total of 13 Conference Presentations involving 26 students at the local, regional, and national level conferences

The Second Annual URD at Iona College	Six posters presented by ten students
The First NY ACS YCC Symposium, The Cooper Union, NY	One poster presented by two students (awarded best poster presentation awards)
The 59 th NY ACS Undergraduate Research Day, The College of Mount Saint Vincent, Riverdale, NY	Two oral presentations by two students
The 240 th ACS National Meeting, Boston, MA	Two posters presented by seven students
The 242 nd ACS National Meeting, Denver, CO	Two posters presented by five students

Peer Reviewed Journal Articles (Student Coauthors Underlined)

<u>Joseph Wiener</u> and Sunghee Lee, "Visualizing Chemical Phenomena in Microdroplets", <i>J. Chem. Educ.</i> 88 (2), 151-157, 2011. Featured as Cover Art on February Issue of <i>J. Chem. Educ.</i> http://pubs.acs.org/action/showLargeCover?issue=356109856
<u>Loreta Geneviciute</u> , <u>Nick Florio</u> , and Sunghee Lee "Towards Polymorph Control in an Inorganic Crystal System By Templated Nucleation at a Microdroplet Liquid/Liquid Interface: Habit Control of Potassium Hexacyanoferrate (II) Trihydrate" <i>Crystal Growth & Design</i> , DOI: 10.1021/cg200628a (Publication Date (Web): August 22, 2011)
LoPachin, R.M., Gavin, T., Geohagen, B.C., Zhang, L., Casper, D., Lekrhaj, R., and Barber, D.S., "β-Dicarbonyls Enolates: A New Class of Neuroprotectants". <i>Journal of Neurochemistry</i> 2011, 116, 132-143.
Zhang, L., Gavin, T., Barber, D.S. and LoPachin, R.M., "Role of the Nrf2-ARE Pathway in Acrylamide Neurotoxicity", <i>Toxicology Letters</i> 2011, Aug 10;205(1):1-7. Epub 2011 Apr 21.
Martyniuk, C. J., Fang B., Koomen J. M., Gavin, T., LoPachin R. M., Barber, D. S., "Molecular Mechanisms of α,β-Unsaturated Carbonyl Toxicity: Cysteine Adduct Formation Correlates with Loss of Enzyme Function" <i>Chemical Research in Toxicology</i> 2011, submitted.
Richard M. LoPachin, Terrence Gavin, Anthony DeCaprio and David S. Barber, "Application of Hard, Soft Acid and Base (HSAB) Theory to Toxicant-Target Interactions: Understanding Mechanisms at the Atomic Level", <i>Chemical Research in Toxicology</i> 2011, submitted.

External Awards and Fellowships for Students

2011 Semifinalist for the National Collegiate Honors Council Portz Scholars	Paul Sanstead '11
2011 ACS Division of Inorganic Chemistry Undergraduate Award in Inorganic Chemistry	Paul Sanstead '11
2011 ACS Division of Analytical Chemistry Undergraduate Award in Analytical Chemistry.	Darius Fartash '13
NY ACS YCC Symposium Best Poster Presentation Award	Paul Sanstead '11, Nick Florio '11
ACS Women Chemists Committee (WCC) and Eli Lilly Award	Zuzanna Michalak '13
CRC Press LLC Freshman Chemistry Achievement Award	Peter Vitale '14
2011 Westchester Chemical Society Student Award	Jaclyn Robustelli '14
Fellowship: Oxford/Blackfriars	Kathryn Lynch '13
2011 ACS Certified Bachelor of Science in Chemistry Degree Recipients	Paul Sanstead '11, Nick Florio '11, Jacob Varghese '11

Exceptional Internship Placements

NSF Research Experience for Undergraduates: Univ. of Minnesota, Twin City	Paul Sanstead '11
Summer Research Opportunity Program: Univ. of North Carolina, Chapel Hill	Garner Soltes '11
St. Luke's - Roosevelt Hospital (vascular surgery unit), New York, NY	Nousin Haque '13, Peter Vitale '14
Department of Anesthesiology, Weill Cornell Medical Center, New York, NY	Nick Florio '11
Industrial Research Internship: Metabolix, Cambridge, MA	Erin Morgan '13
Westchester County Forensic Science Laboratory, Valhalla, NY	Jaclyn Robustelli '14, Cari Anderson '13
Industrial Research Internship: Bidel, Inc. Danbury, CT	Cari Anderson '13

Attention Alumni! Does your company/institution have an internship opportunity you would like to share with Iona students?

Contact Dr. Sunghee Lee, Chair, department of chemistry, slee@iona.edu

Faculty News

New Chemistry Professor: Dr. Kathleen Kristian

Dr. Kathleen Kristian joins the department this year as assistant professor of chemistry with a specialization in inorganic chemistry. She writes; "I'm excited to begin my career at Iona this summer and look forward to becoming a part of the Iona Chemistry Community. I grew up in Yonkers, attended Maria Regina High School in Hartsdale, and then moved to Pennsylvania to attend Swarthmore College. As an undergraduate, I was able to satisfy my interests in transition metals and reaction mechanisms through research with a faculty member, which was a key factor in my decision to become a professional chemist. I went to graduate school at Columbia University,

where I completed a PhD. in Prof. Jack Norton's research group. The work was in the area of organometallic reaction mechanisms with a focus on Ti- and Zr-(η^2 -imine) complexes. While in Manhattan, I also managed to find some time to trying new restaurants, go to concerts and the NYC ballet, and bake (my favorite hobby). Following graduate school, I was ready to take a break from early transition metals and sought a position studying the reaction mechanisms of late transition metals. I was fortunate to join Prof. Andreja Bakac's group at the Department of Energy Ames Laboratory/Iowa State University in Ames, IA, where I worked on rhodium and cobalt

nitrosyl complexes. I hope to begin some related work in collaboration with Iona undergraduates in the near future. I am glad to be back to the area that I consider "home" (and to once again eat real bagels and pizza). I am excited to be part of a department that focuses on quality undergraduate education and hope to make a significant contribution to the curriculum and student development. I'm looking forward to meeting all of you as the year progresses!"



Dr. Sunghee Lee: Honors Faculty/Advisor of the Year



On behalf of The 2011 Honors Class, Dr. Lee was awarded Honors Faculty/Advisor of the Year Award. (Photo left: with Dean Nickerson, Dr. Lee and Paul Sanstead)

Dr. Castonguay: Computational Design for Energy Storage

Since a hydrogen-based energy economy has potential to rid the world of many of today's current problems, e.g., air pollution, greenhouse gas production, and global security, research into the use of hydrogen as an energy carrier is growing at a rapid pace. A particular challenge that researchers face is the development of materials that are capable storing hydrogen safely. Dr. Castonguay says, "My research focuses on the use of modern computational approaches to model the relevant molecular-level interactions as a way to guide the design of hydrogen storage materials, materials that require a delicate balance of properties in order to meet the needs of practical device application."

Dr. Gavin: Cellular Protection Through Chemistry

Cellular oxidative stress is implicated in the mechanisms of numerous human diseases, e.g., Alzheimer's disease, and stroke. Dr. Gavin's research has discovered that a series of 1,3-dicarbonyl compounds (e.g., acetylacetone) can scavenge (neutralize) toxic electrophiles and thereby protect against oxidative stress-induced damage in cell cultures. This discovery is inspired by the well-documented cytoprotective properties of curcumin and other plant-derived poly-

phenols. This promising work has already been the subject of an International Patent Application, and has been recently published (*J. of Neurochemistry* 2011, 116, 132-143). The next step in the development process is to determine the "in vivo" efficacy and toxicity of these compound. This work has been done in collaboration with Dr. R. M. LoPachin (Montefiore Medical Center/Albert Einstein College of Medicine).

Dr. John Hand: New Adjunct Professor

Dr. John Hand joins the department this year as adjunct professor. He brings a wealth of industrial analytical chemistry expertise, combined with high school teaching experience, to the Iona Chemistry Department. He will be involved in enriching general chemistry education at Iona. Dr. Hand earned his PhD in Biochemistry at the New York Medical College. Welcome, Dr. Hand!



Alumni Matters

Oxford Nanomedicine Summer Program: Thanks to Ongoing Generosity of Iona Alumnus, Patrick J. Martin, PhD '62

Four outstanding Iona College undergraduate students in science had the honor of participating in an exceptional learning opportunity at Oxford University, as part of the five-day 2011 Nanomedicine Summer School



Program. It was the first time that Iona students attended this scientific short course held at one of the world's most renowned and oldest universities. The visit was funded in full by the ongoing generosity of Iona alumnus, Dr. Patrick J. Martin. During their stay, the students engaged in an intensive program on the latest applications of nanomedicine technology in medicine. Nanotechnology is a new exciting field that is transforming the way that medical and healthcare solutions are developed and delivered.



Erin Morgan ('13), Zuzanna Michalak ('13), Dr. Sonia Trigueros, Garner Soltes ('11), Dr. Lee, Paul Sanstead ('11). Dr. Trigueros was a lead tutor for Nanomedicine program at Oxford.

Cornelia Professionals Networking Social Event a Success

The Cornelia Professionals-Student Networking Social event was held on April 9, 2011 in Cornelia Hall. This inaugural event was planned to bring



Cornelia Professionals and Iona students together for networking opportunities. During this informal gathering, we celebrated students' research accomplishments, with poster presentations, refreshments, and lab tours. Nousin Haque ('14, Biochemistry, photo right)

Dr. Todd ('70, photo left) was a featured alumni speaker during the inaugural Cornelia Professionals Networking Social Event held on April 9, 2011.



shared her internship experience working under the guidance of Dr. Todd at the St. Luke's - Roosevelt Hospital.

Stay Connected Through Science Alumni Networks: (1) Careers in Science at Iona: CSI (2) The Cornelia Professionals Network

The Careers in Science at Iona (CSI) program actively seeks alumni to serve as guest speakers. Since 2004, over 60 speakers have participated at this event. Please join us and share your wisdom and experience with Iona's science students. For details, contact: Sunghee Lee or Jerome Levkov (JLevkov@iona.edu).

We have newly established The Cornelia Professionals Network as a LinkedIn group. This group is composed of experienced professionals with proven dedication to the growth and advancement of college students in the sciences, especially at Iona College. Through this network, we are hoping to build the

tight connection between current students and professionals in diverse fields in an effort to enrich the educational experiences and preparedness of our students. To join, contact Sunghee Lee (SLee@iona.edu). **Alumni! We want to feature your news in our newsletter. Please send us your updates for sharing.**



Chemistry Department News

Eight Students Inducted to National Chemistry Honor Society

Iona College's National Chemistry Honor Society Chapter recently inducted the following chemistry and biochemistry majors at a ceremony held at the College. The keynote speaker was Edward V. Filardi '65, an attorney and Iona chemistry alumnus, who shared his story of a successful career in intellectual property law. The inductees for 2011 are:

**Cari Anderson '13, Daniel Lutolf Carroll '13
Danielle Guerrino '11, Nousin Haque '13
Kathryn Lynch '13, Zuzanna Michalak '13
Erin Morgan '13, Nadine Ninivaggi '13**



Mr. Filardi ('65) was a featured alumni speaker at the National Chemistry Honor Society on April 9, 2011.

Three Students Earn ACS-Certified NYS Approves 5-year BS in Chemistry Degrees Chemistry/MST in Education

The Iona College Department of Chemistry was accredited by the American Chemical Society (ACS) in Spring 2010. Iona's ACS-certified chemistry degree program offers students a quality education that is recognized by chemical professionals everywhere. Three students from the class of 2011 received American Chemical Society certified degrees.



From left to right: Nick Florio '11, Paul Sanstead '11, and Jacob Varghese '11

Iona College Department of Chemistry and Department of Education have succeeded in implementing a new degree program, the bachelor of science in chemistry/MST in education. The combined 5-year BS/MST program in adolescent education in chemistry prepares students for teaching grades seven through twelve. The program leads to bachelor of science and master of science in teaching degrees as well as New York State initial certification to teach adolescent education in chemistry. Students complete the core curriculum and chemistry major requirements for the undergraduate degree and enter the education graduate program in the fifth year.

Iona Chemistry Celebrates International Year of CHEMISTRY 2011

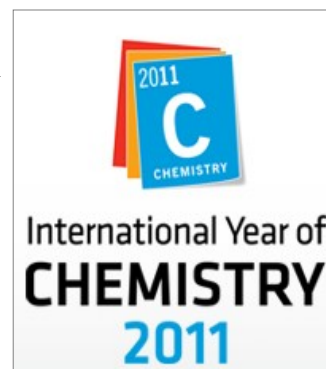
The International Year of Chemistry 2011 (IYC 2011) is a worldwide celebration of the achievements of chemistry and its contributions to the well-being of humankind. Under the unifying theme "Chemistry—our life, our future," IYC 2011 will offer a range of interactive, entertaining, and educational

activities for all ages. The Year of Chemistry is intended to reach across the globe, with opportunities for public participation at the local, regional, and national level.

IYC 2011 events will emphasize that chemistry is a creative science essential for sustainability and improvements to our

way of life. Activities, such as lectures, exhibits, and hands-on experiments, will explore how chemical research is critical for solving our most vexing global problems involving food, water, health, energy, transportation, and more.

-From www.acs.org



Why Study Chemistry at Iona?

Chemistry is the study of the world around us at the atomic and molecular scale. It occupies a central position among the sciences interfacing with mathematics and physics, with engineering, biology and medicine.

The study of chemistry, with its uniquely wide span within the scientific spectrum, is an excellent way to develop one's intellect. You acquire a powerful battery of analytical skills for problem solving, as well as the ability to analyze critically and to ask the pertinent questions.

These skills are transferable to almost any context and are highly valued in the world of commerce and finance.

As of September 2011, the chemistry department offers:

- ◆ Bachelor of science in chemistry (ACS -Certified and non Certified)
- ◆ Bachelor of science in biochemistry
- ◆ Bachelor of science in chemistry/MS in computer science (5 Year)
- ◆ Bachelor of science in chemistry/MST in education (5 Year); and
- ◆ minor in chemistry.



Chemistry at Iona provides a high level education with the flexibility needed for students to specialize in their areas of greatest interest. It allows for venturing into overlapping scientific disciplines as well.

Congratulations to 2011 Graduates!

Congratulations to twelve chemistry and biochemistry majors. We wish them the best of luck in their next journey!



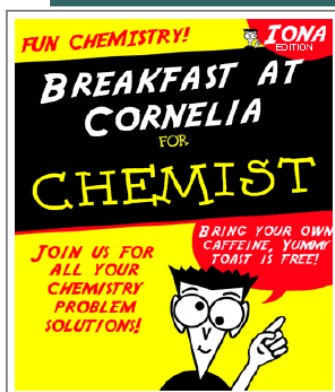
Biochemistry (5): Edgar Hernandez; Stacey Mangroo; Diana Nunes; Garner Soltes; Jared Welsh

Chemistry (7): Kostas Fekkas, Nick Florio; Alyssa Marra; Danielle Guerrino; Dean Saccomanno; Paul Sanstead; Jacob Varghese

minor in Chemistry (1): Gina Rahon

Iona SA Wins Chapter Award Three Years in a Row

ACS recognizes successful Student Affiliates (SA) Chapters for conducting exceptional programs and activities during the academic year. The Iona College student affiliate chapter received the "commendable" award three years in a row, establishing a wonderful track record. Join us in congratulating Iona SA Chapter of ACS for a job well done!



"Breakfast at Cornelia" is a weekly chemistry problem session supported by the Iona Chemistry Community. Please join us for solving chemistry problems over breakfast!



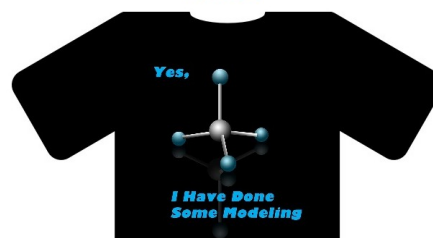
Order Iona Chemistry T-Shirt and Support Club Activity

To order, please email DFartash@iona.edu

FRONT



BACK



Chemical Society E-Board Member
for academic year 2011-2012

President: Erin Morgan ('13)

Vice President: Zuzanna Michalak ('13)

Secretary: Kiersten Giusto ('12)

Treasurer: Jaclyn Robustelli ('14)

Webmaster: Darius Fartash ('13)

Public Relations: Nadine Ninivaggi ('12)

To join the Iona Chemical Society, please contact EMorgan@iona.edu