



# the Periodical

Southern Adventist University Chemistry Department



## From the Department Chair...

By Brent Hamstra

Chemistry can reasonably be described as a study of relationships. Many of these relationships can be described in mathematically simple ways:  $d = m/V$ ,  $PV = nRT$ ,  $M_1 V_1 = M_2 V_2$ , and  $\text{rate} = k[A]^m$  are just a few examples of straightforward expressions of the relationships between different properties of substances. In a less mathematically obvious way, the periodic table arranges the elements in order to reveal the relationships in their properties, allowing us to quickly note similarities in elemental characteristics and trends in how these characteristics vary from element to element.

Our colleague Ray Hefferlin valued the power of the periodic table to describe these relationships, and for several decades he sought to expand the use of the principle of periodicity to describe molecular relationships as well as elemental relationships.

He did this quite successfully as he continued his research into the last days of his life, which ended on March 7. But his greater contribution to Southern Adventist University and the world beyond this valley came from his understanding of the value of human relationships. In so many ways his life demonstrated the high value he placed on those relationships as he cherished and nurtured the relationships his teaching and research allowed him to develop with his students and with his colleagues near and far. In his countless kind words and deeds he reflected the character of God to thousands of individuals in Collegedale and around the world. His example of Christian



scholarship provides a pattern for us and our students to follow as we pursue our own teaching and research.

Hopefully our newsletter plays a part in helping to preserve and develop the relationships we have with you. No relationship stays healthy for long without good communication. We hope that you'll take

the time to communicate with us and let us know how you're doing, whether by mail, phone, e-mail, or through Facebook at [www.facebook.com/chemistryatsouthern](http://www.facebook.com/chemistryatsouthern) (Yes, as of January we do have our own Facebook page that we try to update regularly). We appreciate your calls, e-mails, notes, and visits. If there's anything we can do to improve our communication with you, please let us know.

# Chemistry students recognized

By Brent Hamstra

Several chemistry majors were recognized for their academic performance and contributions to the department.

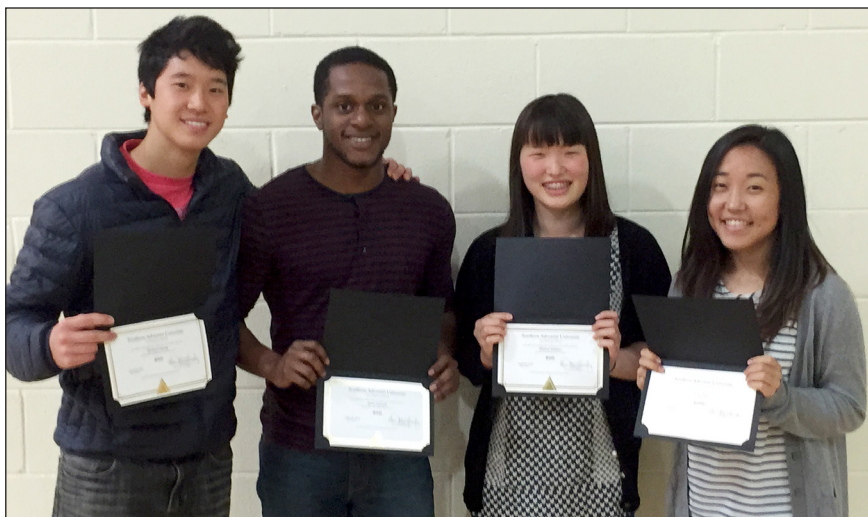
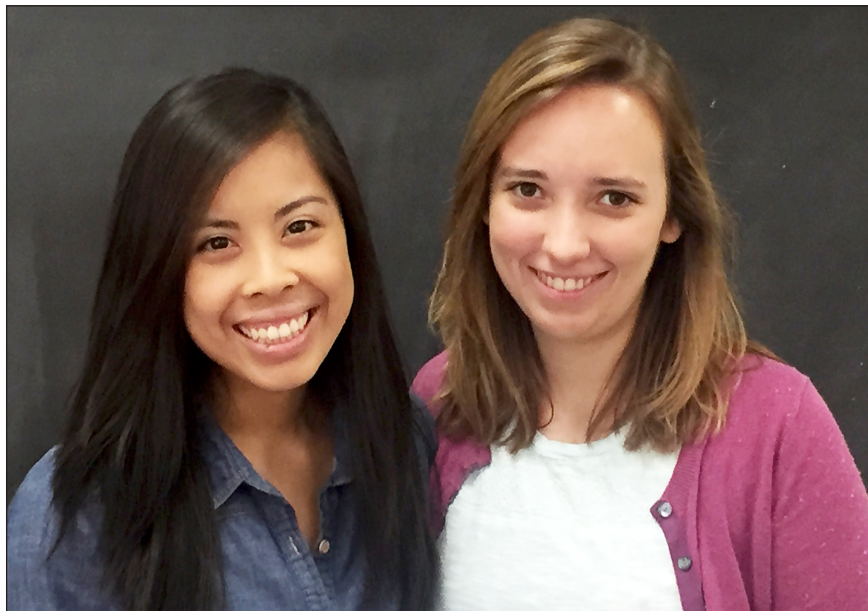
Emily Moses is the 2015 Outstanding Senior in Chemistry, and Emelyn Magtanong is the 2015 Outstanding Senior in Biochemistry. Both women have maintained excellent academic performance while working for the Chemistry Department as laboratory assistants and serving as Chemistry Club officers.

Emily will begin graduate study in chemistry at the University of California, Riverside this fall. Emelyn is pursuing research opportunities and applying to start medical school in the fall of 2016.

Michael Chung, Jeron Estwick, Melissa Nishino, and Krista Min were all named as Top Achievers by the Chemistry Department at the awards convocation on April 16. Each of these students is receiving a \$500 scholarship in recognition of their academic performance in chemistry. Michael and Jeron are juniors, Melissa is a sophomore, and Krista is completing her first year at Southern.

Jeron Estwick was awarded the Outstanding Student Award, which includes a \$250 scholarship by the Chattanooga section of the American Chemical Society. This award is presented to a student demonstrating interest in pursuing a career in chemistry who has demonstrated academic excellence in their chemistry courses. The award is given to students from the Chattanooga area colleges and universities on a rotating basis.

We congratulate each of these students for their accomplishments and thank the donors who helped fund these educational programs and scholarships.



Top, Emelyn Magtanong, left, and Emily Moses were recognized as the 2015 Outstanding Seniors in Biochemistry and Chemistry, respectively. Above, Michael Chung, from left, Jeron Estwick, Melissa Nishino and Krista Min were named as Top Achievers by the chemistry department. At left, Jeron Estwick received the Outstanding Student Award, which includes a \$250 scholarship by the Chattanooga section of the American Chemical Society.



# New office manager enjoys her work in Chemistry Department

**H**eidi Eisele Olson, office manager for the Chemistry Department, loves working with people.

About five years ago, she graduated with a bachelor's degree in psychology from Union College. After graduation, she moved to Tennessee to be near another Seventh-day Adventist community.

Shortly after moving, Heidi attended a Friday evening bonfire sponsored by the psychology club at Southern. In between roasting marshmallows and interacting with the friendly students, Heidi met Daniel Olson, the man she would eventually marry.

"He was the loudest person at the bonfire," Heidi says with a laugh. "In fact, he still is at most gatherings."

Daniel and Heidi started dating a couple months later. They were married in September 2013. They live in Cleveland, Tenn., and have three dogs – a boxer named Oi and two Australian shepherds, Cali and Ares.

In her spare time, Heidi enjoys oil painting and reading.

"I have always been interested in art," says Heidi, who prefers



Heidi Eisele Olson started working as the office manager in the chemistry department in December 2014.

oil as a medium. "My father and grandmother are excellent painters."

After working locally as a medical receptionist for two years, Heidi started working at Southern in December 2014.

"After having fast-paced jobs in the past, I am enjoying working in the chemistry department, where the environment is usually quieter," she says.

Heidi has adapted well to her surroundings on the third floor of Hickman Science Center.

"I am thankful that the previous office manager, Dennisse Rios-Blood, was an immense help when I started," Heidi says. "We spent many hours conversing via phone and email."

Heidi was thrilled in April when her husband joined her at Southern as the career counselor in the Student Success Center.

"I love working at Southern," Heidi says. "It's a pleasure getting to know the students and faculty, as well as making new friends."

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## Southern hosts chemical society meeting

By Rhonda Scott

**O**n March 26, the Chemistry Department at Southern hosted the monthly meeting of the local section of the American Chemical Society (ACS).

Dr. James Dillard, president of the local ACS section, presented a talk in the Presidential Banquet Room titled "Galvanic Deposition of Po-210 on a Rotating Nickel Disk Electrode in Preparation for Alpha Spectroscopy" about research he

conducted while a quality assurance specialist at Tennessee Valley Authority (TVA) in Oak Ridge, Tenn. Several students attended as guests of the department thanks to the donations alumni have made to our affinity fund.



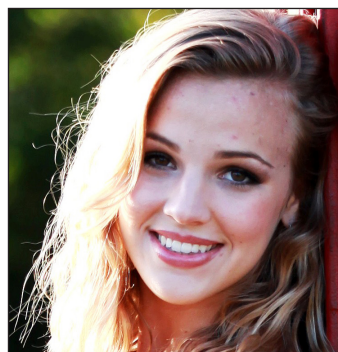
# May 2015 graduates



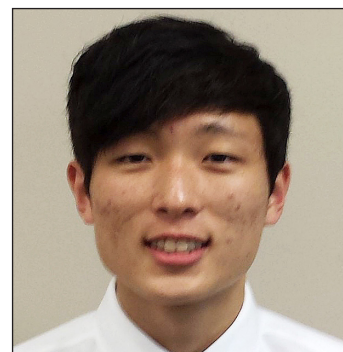
**Wesley Cho**  
**B.S. Chemistry,**  
**Biochemistry Emphasis**  
Future plans: Work in  
laboratory in San Diego



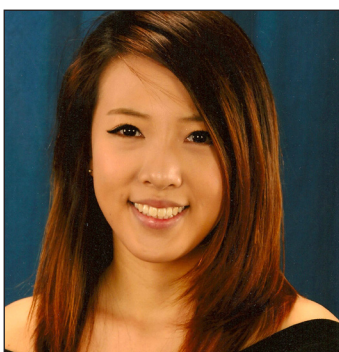
**Phenicia Davis**  
**B.S. Chemistry,**  
**Biochemistry Emphasis**  
Future plans: Work with a  
pharmaceutical company



**Victoria Howe**  
**B.S. Chemistry,**  
**Biochemistry Emphasis**  
Future plans: Career in  
pediatric neurology



**Jay Hwang**  
**B.A. Chemistry**  
Future plans: Attend LLU,  
School of Medicine



**Esther Joung**  
**B.S. Chemistry,**  
**Biochemistry Emphasis**  
Future plans: Become a  
dentist, spend time in Korea



**Angela Kanna**  
**B.S. Chemistry,**  
**Biochemistry Emphasis**  
Future plans: Attend LLU,  
School of Medicine



**Emelyn Magtanong**  
**B.S. Chemistry,**  
**Biochemistry Emphasis**  
Future plans: Work in  
research, medical school



**Emily Moses**  
**B.S. Chemistry**  
Future plans: Attend  
University of California,  
Riverside for Ph.D. program



**Risa Nakahara**  
**B.A. Chemistry**  
Future plans: Apply to  
medical or dental school



**Justin Nishino**  
**B.A. Chemistry**  
Future plans:  
Attend dental school



**Lindsey Robison**  
**B.S. Chemistry,**  
**Biochemistry Emphasis**  
Future plans: Attend  
pharmacy school



**Noelle Stafford**  
**B.S. Chemistry,**  
**Biochemistry Emphasis**  
Future plans: Attend  
medical school



# May 2015 graduates



**Grace Whetsell**  
B.A. Chemistry in  
December 2014  
Future plans: Attend  
pharmacy school



**Skyler Williams**  
B.S. Chemistry,  
Biochemistry Emphasis  
Future plans: Apply to  
dental school



**Melissa You**  
B.A. Chemistry  
Future plans: Attend  
University of Southern  
California dental school

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## Chemistry students present undergraduate research

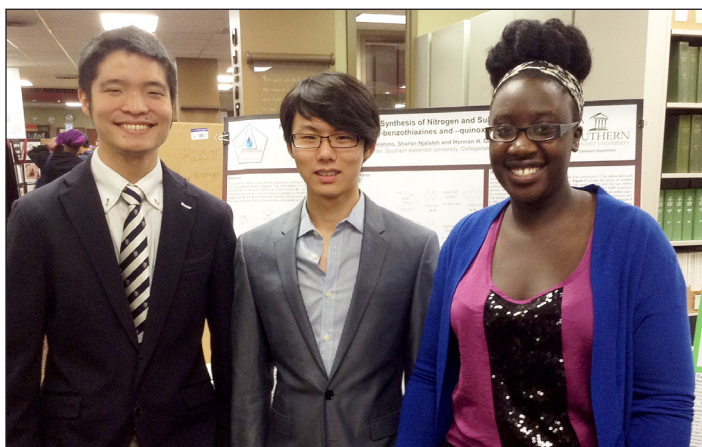
By Herman Odens

**O**n April 14, eight different posters were presented during Campus Research Day at Southern.

Emelyn Magtanong presented *An Innovative Synthetic Pathway for Diltiazem and Clentiazem Analogs* for her work on the development of a cardiovascular disease drug analog.

Angela Kanna and Noelle Stafford presented their work on *A New and Improved Methodology for the Synthesis of 2-Alkyl-5,6-bis(alkylthio)benzo[d]thiazole-4,7-diones*, a new cancer research project.

Risa Nakahara presented her poster on *2-Thio-substituted-3H-phenazin-3-one: A New Generation of Antibiotic*



Chemistry majors Wesley Cho, Justin Nishino, Sharon Njalaleh presented their poster during Campus Research Day.

*Agents*, an anti-infective research project.

Melissa You displayed her poster *In the Quest for a New Class of Psychopharmacological Agents: Synthesis 2-Thio-substituted-3H-phenothiazin-3-ones* for her work on a possible drug for neurological disorders.

Megan Holladay presented *A Novel*

*Synthesis of 6-(Alkylthio)-3-phenylbenzo[e][1,2,4]triazin-7(1H)-ones via Amidrazones*, another anti-infective disease project.

Wesley Cho, Justin Nishino, Sharon Njalaleh presented their poster, *Novel Approach Towards the Synthesis of Nitrogen and Sulfur Derivatives of 6,7-bis(alkylthio)-benzothiazines and –*

*quinoxalines*. This poster was a combination of three projects designed to find a cancer drug.

Phenicia Davis presented her work on *An Effective and Efficient Method to Generate 5-(alkylthio)-1H-benzo[d]imidazole-2,6-diones*. This project is aimed to develop a breast and prostate cancer drug.

All of these students worked under the guidance of Herman H. Odens, associate professor of chemistry.

Emily Moses presented her poster on *Kinetic investigation of acid-catalyzed formation of cyclohexenyl cation from cyclohexanol and cyclohexene* under the supervision of Mitch Menzmer, professor of chemistry.

# Biblical Applications

By Brent Hamstra

For a man living thousand years or so before the time of Christ, Gideon was a pretty good scientist. Gideon questioned whether God had called him to deliver Israel. So he hypothesized that God could clearly and understandably answer this question if he asked the right way. He designed an experiment, setting out his fleece to see how God would answer the question. Having conducted the experiment, Gideon collected the experimental data by taking the fleece, wringing it out, and getting a bowlful of water.

Analyzing the results of this experiment, Gideon drew the conclusion that the experiment was inconclusive—perhaps there were reasons other than an answer from God for the water he observed. Like good scientists do when determining that the results of an experiment are inconclusive, he cycled through the process again, performing a second, similar experiment. On repeating the experiment, Gideon obtained a fleece that was dry—a result that he considered to be clear and unambiguous affirmation that God had, in fact, called him to deliver Israel.

While Gideon may have been a pretty good scientist, he was not a great scientist — for had Gideon been a great scientist, he would have thought similarly to the noted organic chemist Frank H. Westheimer, who was known to ask the question, “Why spend a day in the library when you can learn the same thing by working in the laboratory for a month?”

In other words, a scientist shouldn't spend time designing and conducting experiments to answer questions that have already been answered. If a question has already been answered, a scientist conducts all subsequent inquiries on the basis of that answer unless there is evidence to suggest that the previous answer is incorrect. To do otherwise would be a waste of time, effort, and resources.

Gideon already had an answer from God before he conducted his experiment, and he knew it. When Gideon began this questioning process, he initially told God “...if You will deliver Israel through me, as You have spoken...” (Judges 6:36, NASB) In other words, Gideon knew that God had already spoken to him, telling him that he was chosen by God to deliver Israel. Gideon didn't have to put out the fleece in order to answer this question because God had already answered it. Gideon failed to give proper weight to the answer he had been given.

Daniel was a better scientist than Gideon. Like Gideon, Daniel proposed an experiment, which is recorded in the first chapter of Daniel. He and his three friends would try a different diet for ten days and see what the results were. Daniel also received a clear affirmation of God's will.



But there is a critical difference between Daniel's experiment and Gideon's experiment. Gideon's test was designed to determine what God would say; Daniel's test was designed to demonstrate what God had said. Gideon had heard the Word of

God spoken to him. But he wasn't willing to accept God's Word; instead, he needed to have a visual indication of what God wanted him to do. Daniel understood and accepted God's Word regarding what he was supposed to eat, and the purpose of his test was to demonstrate to his captors in Babylon the truth of what God said.

As scientists operate within a Biblically-based worldview, we must understand that the purpose of science is not to prove God's existence nor is it to determine whether God has acted or continues to act.

Science provides us with a tool to demonstrate the ways in which God has acted and continues to act on His creation throughout history and to show how God's truth can be applied to the world in which we live. We differently phrase some of the questions we pose because we understand that God's Word has already given us some answers.

See GIDEON, page 8



# Joseph Brannaka, Ph.D.

**What years did you attend Southern Adventist University?**

I started in the fall of 2005 and graduated in the spring of 2009.

**What attracted you to Southern?**

My parents attended Southern and had been trying to convince me that it was the place to go. After visiting and getting a feel for the people and the place, I decided that it was a good fit.

**Why did you choose to study chemistry?**

During high school, I greatly enjoyed chemistry and other sciences. I was considering chemistry as a major. During my first semester at Southern, I signed up to take general chemistry from Dr. Hamstra. I found the course challenging and intriguing. After many interactions with the faculty, much prayer, and much research, I decided to study chemistry.

**Describe your experience at Southern. What is your favorite memory at Southern?**

I really enjoyed the spiritual atmosphere, the close access to outdoor activities, and getting to



Joseph Brannaka with his wife, Maira, and their daughter.

know the people.

**Where was your favorite place to study?**

My dorm room and the library.

**What was your favorite class?**

Organic chemistry was the class where I discovered my love for chemistry.

**Tell us about your life immediately after Southern.**

One of the reasons my parents wanted me to attend Southern was to find a wife; God had other plans. I met Maira,

the love of my life, the summer after graduation in a colporteur program in Florida. We married three years later and now have a young daughter. After graduating from Southern, I attended the University of Florida where I synthesized and characterized volatile organometallic precursors for use in electron beam induced deposition (among other things). I received a Ph.D. in organic chemistry in December 2014.

**What are your plans for the near future?**

I have recently started

as an assistant professor of chemistry at Walla Walla University. I will teach organic chemistry and the associated labs, as well as upper-division organic and organometallic courses.

**Can you share any experiences at Southern that helped you in your professional and/or personal life?**

The teaching in the chemistry department was excellent and did a good job of preparing me for graduate level classes. The teaching also gave me examples to model my teaching style after. The spiritual aspect was helpful when I attended a secular university. From the training in the theology classes, I became a leader in my local public campus ministry.

**What advice do you have for current students who want to make the most of their time at Southern?**

Don't hesitate to get involved in non-academic activities. Grades are important, but Southern offers a spiritual focus that is hard to come by if and when you leave the Adventist bubble. Take advantage of that.



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Chemistry Department  
P.O. Box 370  
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Phone: 423.236.2931  
Fax: 423.236.1931  
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## Faculty and Staff

Loren Barnhurst, Ph.D.  
Jan Cathey, M.S.T.  
Brent Hamstra, Ph.D.  
Mitch Menzmer, Ph.D.  
Herman H. Odens, Ph.D.  
Bruce Schilling, Ph.D.  
Rhonda Scott, Ph.D.  
Heidi M. Eisele, Office Manager

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# Gideon

**Continued from page 6**

For example, instead of looking for evidence to prove that God created the earth and life on it, or for proof that a global flood caused major geological changes and death on a massive scale, we look for those phenomena that we would expect to see as a result of those events.

Although the way in which we formulate and express our questions may differ from the way someone frames those questions without Scripture, our data collection methods and our

experimental designs remain largely the same. In many cases, there is no substantial difference in the questions we ask because Scripture is silent on those particular topics.

In basing our scientific understanding and practice on Scripture, we should always keep in mind that our understanding of Scripture, like our understanding of nature, is limited and subject to change as we study it further. We may confuse our understanding of Scripture's message with Scripture's actual message, and consequently base our work on human ideas rather than divine inspiration.

We can be confident that God has spoken through His Word,

and that He continues to speak to us through His Spirit and through others so that we can understand God's will as He wants us to. But we must be humble, recognizing the limitations of our understanding and the possibility of being deceived.

When we act in faith, God will reward us as he rewarded Gideon, and our faith will grow. When scientists reject the temptation to assume that God works only in ways defined by our own expectations, and place our work on the foundation of God's sovereignty, He will bless our inquiries, bring clarity to our analyses, and lead us to correct conclusions.