



the Periodical

Southern Adventist University Chemistry Department



Loren Barnhurst Leaving the Chemistry Department

Professor Loren Barnhurst, PhD, is leaving Southern Adventist University at the end of this semester after 17 years of outstanding service to the Chemistry Department and its students.

During that time, he has established an outstanding reputation as an engaging and effective teacher and advisor, receiving numerous glowing testimonials from students in his Organic Chemistry and Survey of Chemistry courses on university course evaluations and elsewhere. His innovative teaching techniques, incorporating catchy mnemonic devices, interactive lectures, novel uses of course management systems, and incentives for students to spend time studying the subject have been frequently cited by students as providing a superior organic chemistry education that prepares students for success on entrance exams such as the MCAT and DAT and in professional and graduate schools.

Along with the praise from his students, Professor Barnhurst has received multiple awards from the

university for his teaching work. He is a two-time recipient of the President's Award for Excellence in Teaching (2005 and 2009), and he also received the President's Award for Commitment to Student



Success in 2017. In addition, he was named Adviser of the Year in 2014.

Rhonda Scott, PhD, who chaired the Chemistry Department during most of Barnhurst's time at Southern, testifies to his contributions as a colleague, stating that "Loren is an enthusiastic professor who is willing to try new methodologies in the classroom and enthusiastic about sharing those methods that work well. He is always happy to help with any

technical issue that comes up."

Brent Hamstra, PhD, current department chair, says that "Loren has been an essential component in developing the Chemistry Department's outstanding reputation for educational excellence. His passion for student success is unmatched, and a generation of students owes him an immeasurable debt for the foundation he laid for their success through his hard work and dedication. He will be deeply missed."

Professor Barnhurst says: "The support I've been given by my colleagues in the Chemistry Department over the years has played a crucial role in melding me into the teacher that I am today. I can't tell you how many times I'd pop into the offices of the MaSSH (you know, Menzmer and Scott, Schilling, Hamstra) over the years to pick their minds about chemistry concepts, or pedagogy, or challenging interactions with students. They are such great people who are willing to share their wealth of knowledge, and that is why I'm so confident in the

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Department Chair News

Perhaps you noticed that we didn't produce an edition of *The Periodical* this past fall. We did not get our newsletter ready to publish prior to office manager Heidi Olson's maternity leave, and once she was out of the office, our publication process fell victim to the relentless march of time.

Time has been on my mind a great deal over the past few months. For 17 years, I've had the privilege to work alongside Loren Barnhurst. It has been time well spent. We've been part of a team that has worked together to build a Chemistry Department that provides extraordinary opportunities for students to learn. And if you're a big Loren Barnhurst fan like I am, you might be wondering how we're going to continue to grow and develop without him.

To answer that question, I want to tell you that along with time, I've also been thinking about timing. I have seen how the timing worked out for Dennisse Blood to return to the Chemistry Department as our office manager when we needed someone with her skills to pick up where Heidi left off, and how this remarkably smooth transition has been a good thing for the department.

I have also seen how the timing has worked out during our search for someone to fill the position that Loren is vacating. The timing of this opening, and the timing of events that took place during this search, leads me to believe that God has brought us the right person at this time. We're excited that one of our own graduates, Tamie Suzuki (BS Biochemistry 2014) is coming back to Southern and will be



Brent Hamstra

working along with Matthew Duffy to continue the work that Loren started. The full story, however, will need to wait for our next newsletter in the fall. (Yes, we will have an issue in the fall.)

So because I've seen how God has worked out the time and timing for the Chemistry Department from the beginning to the end of Loren's years with us, I am confident in His ability and willingness to continue to work things out for us in the future. I look forward to being a part of that.

Wiley Austin Dies at Age 88

Professor Wiley Austin died on Monday, February 25, 2019, at the age of 88. Professor Austin taught in the Chemistry Department from the late 1970s through the mid-1990s and also taught as an adjunct faculty member in the department for a couple of years following his retirement.

Professor Austin remained a devoted friend and supporter of

the Chemistry Department throughout his retirement. He was instrumental in establishing and supporting the John Christensen Chemistry Scholarship Fund, which has aided the education of many of our chemistry majors over the past 20-plus years. The Austin family has requested that gifts to Southern Adventist University in his memory be directed

toward this fund.

A memorial service for Professor Austin will be held at a later date. The Chemistry Department mourns with his family and friends but joyfully remembers his service, support, and friendship, and we look forward to being reunited with our friend when Jesus returns.

Loren Barnhurst Leaving the Chemistry Department

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continued success of our program here, because I know the core nucleus will continue to do the same for our new DSS faculty (Duffy, Saucedo, and Suzuki). They are educators in the truest sense and will always have my respect and friendship."

Barnhurst adds: "The second

reason why Southern's Chemistry Department will continue to thrive is our students. Over the years I've been motivated, encouraged, challenged, pushed, and continually supported by our amazing students. The memories I'll cherish most of passing on chemical knowledge in class and

lab will be surpassed only by the amazing people I had the privilege first to teach and eventually to become friends with. I'm especially blessed that my former student, Tamie Suzuki, will be stepping in to continue our mission and carry on the approach that I've developed over the years."

Alumni Spotlight

Alexandria Cooke, MD

When did you attend Southern Adventist University?

I enrolled in 2005 and graduated in May 2009 with a B.S. in Chemistry, biochemistry emphasis.

What attracted you to Southern?

Location and proximity to my parents' home.

Why did you choose to study chemistry?

Chemistry was one of my favorite subjects in high school, and I really enjoyed chemistry labs.

Describe your experience at Southern.

Outside of the Chemistry Department, I was always involved in music. I sang in Bel Canto for a semester and then joined the Symphony Orchestra for a few semesters. I was also a member of the One Praise Gospel Choir during my four years at Southern and especially loved the people

I met through the choir and the ministry opportunities it gave us.

Where was your favorite place to study?

Hickman's third-floor library

What was your favorite class?

Organic Chemistry

Tell us about your life immediately after Southern.

After graduating, I spent seven months as a student missionary in Fria, Guinea, Africa. In Guinea I served as a health educator, helping to coordinate and present various community events for the local Adventist church in Fria. I started my medical training at

Meharry Medical College in 2012 and graduated in 2016.

What are you doing today?

I'm finishing my last year of family medicine residency at UT College of Medicine in Chattanooga, Tennessee, and I work primarily at Erlanger Hospital.

Tell us about your residency.

Family medicine is a challenging specialty, because we treat all ages. Often my days include seeing children, pregnant women, and elderly patients with complex medical histories, and I also perform in-office procedures such as cyst removal.

What are some challenges?

Work/home life balance is tough, especially in residency, because you tend to be always on the go. Residency is a unique opportunity to learn as much as you can in a relatively short amount of time before you enter the world as a completely independent physician. Learning to balance the endless learning opportunities with your home life can be difficult, and at times your clinical responsibilities will consume more time that you would like, but ultimately it's worth it.

What are some rewards?

The greatest compliment I've yet to receive is when patients tell me how upset they are that I'll be graduating from residency soon and will no longer be their doctor; that is a compliment of the highest order. It's amazing how we build these relationships with patients over the course of a few years and become attached. I'm always



Chemistry graduate Alexandria Cooke, MD, recently received the Alper Award for demonstrating integrity, compassion, and community service in her work as a family medicine resident in Chattanooga, Tennessee.

honored to hear a patient tell someone, "That's my doctor."

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

Be involved! Join a choir, go to vespers, participate in Chemistry Club, study abroad, be a student missionary. ...Take all of the opportunities that present themselves to you, and enjoy your time at Southern, because there will never be another time in your life like it. Trust me, you'll miss things you never thought you would (vespers, pasta day, SonRise, lawn concerts, etc.). Study hard and excel academically, but remember that there's more to the college experience than books.

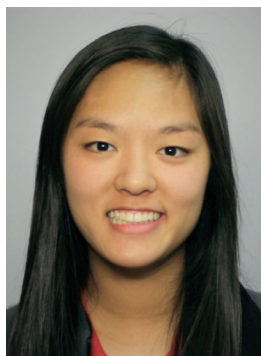
Anything else you would like to share with us?

Thank you to the Chemistry Department for this opportunity to share and for providing part of the foundation that helped me get to where I am currently in my career!

Interview by Dennisse R. Blood

Chemistry Graduates 2018-2019

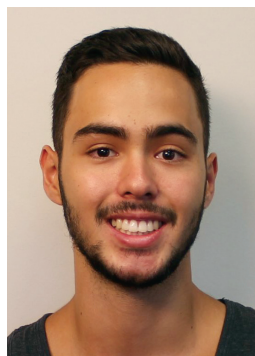
and Their Plans for the Future



Adlene Chang
B.A. Chemistry
*Loma Linda University
School of Dentistry*



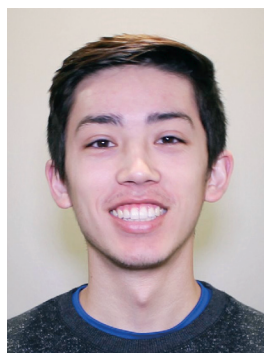
Carter Ware
B.S. Chemistry,
Biochemistry Emphasis
*Loma Linda University
School of Medicine*



Gabriel Tanaka
B.S. Chemistry,
Biochemistry Emphasis
*UNC Chapel Hill
School of Dentistry*



Hyun Choi
B.A. Chemistry
Undecided



Kevin Leeper
B.A. Chemistry
Medical School



Kyle Shaw
B.S. Chemistry,
Biochemistry Emphasis
*Loma Linda University
School of Medicine*



Marissa Chang
B.A. Chemistry
*Loma Linda University
School of Dentistry*



Megan Schlinsog
B.S. Chemistry
B.S. Math
*Iowa State University
PhD Physical Chemistry*



Melody O'Rawe
B.S. Chemistry,
Biochemistry Emphasis
*Loma Linda University
School of Medicine*



Nathan Kim
B.A. Chemistry
*Loma Linda University
School of Medicine*

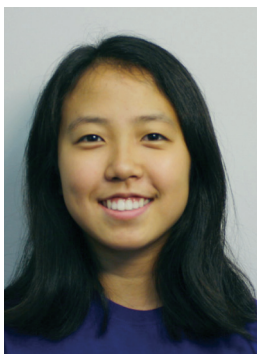


Raymond Gowsujo
B.A. Chemistry
Pharmacy School



Ryan Nelson
B.S. Chemistry,
*Ohio State University
PhD Inorganic Chemistry*

Chemistry Graduates



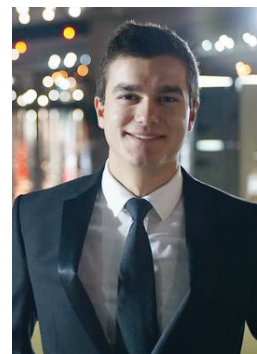
Sarah Lim
B.A. Chemistry
Loma Linda University
School of Dentistry



Scot Brunner
B.S. Chemistry,
Biochemistry Emphasis
Mercer University
School of Medicine



Spencer Cooper
B.A. Chemistry
Loma Linda University
School of Dentistry



Vance Gentry
B.A. Chemistry
Loma Linda University
School of Medicine

Department Happenings

Office Manager Transition



After four years of devoted service to the Chemistry Department, Heidi Olson resigned in December in order to spend more time with her family, which doubled in size following the birth of twin daughters Piper and Quinn in October. We are happy that she will remain in the area, and

we look forward to watching the twins grow up under her care.

Heidi was essential in helping the department to run smoothly and in maintaining communication with our students and alumni. She was widely appreciated for her joyful attitude, her work in making the Chemistry Department a more pleasant place for our students to work and study, and for providing a welcoming atmosphere for prospective students.

The Chemistry Department's new office manager, Dennisse R. Blood, took up her duties in February. Dennisse is familiar to the Chemistry Department and to many of you from her service as the office manager prior to Heidi joining the department. She is happy to be back working with faculty and students.

Dennisse's familiarity with the



Chemistry Department has helped to make the transition between office managers exceptionally smooth for our students and faculty. We are grateful to have Dennisse back, and expect that she will build upon the fine reputation for customer service that she, Heidi, and our other office managers have established for the department.

We want to hear what you have been up to since you graduated. If you or someone you know would like to be featured in the Alumni Spotlight, please email us at: chemistry@southern.edu

Biblical Applications

“Significant”

Since I’m a scientist, the word “significant” has a very specific meaning to me. Significance can be determined by a statistical treatment of data using equations such as:

$$t_{calc} = \frac{|\overline{x_1} - \text{known value}|}{s} \sqrt{n}$$

For example, the effect of a variable on a system can be unimportant, or a measured quantity can be determined to be an outlier and thus not belong in that group of data.

Sometimes I treat myself as data, and I want to determine my significance through an equation. If I do this and don’t do that and do a lot of this and abstain from that, I = significant, I = part of group. I can tell you that this is a sad way to live life and determine worth. This “do/don’t” equation will leave anyone feeling a little “less than.” Praise God for the textbook He left us.

“Look at the birds of the air; they do not sow or reap or store away in barns, and yet your heavenly Father feeds them. Are you not much more valuable than they?”

You = God’s son or daughter
You = valuable

Matthew 6:26

“Can a mother forget the baby at her breast and have no compassion on the child she has borne? Though she may forget, I will not forget you!”

You = on God’s mind
You = cared for by God

Isaiah 49:15

“My Father’s house has many rooms; if that were not so, would I have told you that I am going there to prepare a place for you? And if I go and prepare a place for you, I will come back and take you to be with me that you also may be where I am.”

You = future dweller in God’s heavenly home!

John 14:2-3



I enjoy being an analytical chemist. But praise God that these statistical equations have their respective places and are not to determine my worth. You don’t have to have any specific degree or career or eating habits to increase your worth to God. He paid the most costly price for you—His own blood was shed to redeem you. You belong. You are significant.

By Nuvia Saucedo

N U F E D Q V R G D A N S A B
F E N O P N E E O F N O N C I
Y R V N R D E G D A M I E C G
F J E A E G F I W B E T S E O
R A O E E O I A R K I A O P E
W D M U D H D V Z F C E H T I
K E U L B P F M E E K R C E E
D G I Q W R L O N N H C I D T
V H T V U C V G N A L W E H T
C T R E A S U R E E Z E M V W
D E V O L E B L N K Z N T J L
X X H T W I P B P B V I V W X
S E Z B V M F E Z U M W T O P
U D K H E I R F P W C V D I R
S V N T L V P I X H D D K W C

BELOVED
CHILD OF GOD
TREASURE
FRIEND
FORGIVEN
CHOSEN

CITIZEN OF HEAVEN
HEIR
ACCEPTED
TEMPLE
FREE
NEW CREATION
REDEEMED

As the world around us increases its pressure to influence us, let us find rest in the loving arms of Christ.

Department Happenings

Chemistry Club News

Chemistry Club has had a very good year, fostering connections between students interested in the chemical sciences through fellowship and activities, while also learning more about chemistry and how it affects our lives.

We kicked off the fall semester with the Organizational Showcase, where students played a Guess That Element game to compete for a gift card. We held a club vespers at Professor Bruce Schilling's house in September and enjoyed the annual pumpkin carving event in October.

This year's theme for National Chemistry Week Week was astrochemistry. The Chemistry Club officers got together to decorate Hickman Science Center's third floor with planets, stars, a rocket ship, and posters describing what astrochemistry is and some current research being done in the field. Each day of the week featured something special to celebrate, from taking a punny button to show chemistry pride, to making bracelets out of UV active beads, to searching for "moles" hidden around third floor.

Chemistry Club has also done several fundraising events,



Puzzle Day at the Schillings home

including multiple pumpkin bread bake sales and selling Valentine's Day test tubes with candy inside. Additionally, the Chemistry Club placed fourth in the 1892-minute student club giving challenge, and was awarded \$200!

As always, Chemistry Club likes to give back to our community by serving in various roles. For the fall semester, we volunteered at the Samaritan Center to help unload their donation bay on Saturday night. During the winter semester,

we had a puzzle-a-thon, putting together puzzles for the Samaritan Center to make sure the puzzles had all of the pieces before resale. Additionally, we served at Red Clay Farms for MLK Day, helping plant seeds, weed gardens, and clean wool.

We are currently looking forward to having our second vespers of the year later this semester, as well as celebrating the International Year of the Periodic Table.

By Megan Schlinsog



Chemistry Club Officers 2018-2019:

President - Megan Schlinsog

Vice President - Carter Ware

Secretary - Annette Echevarria

Treasurer - Alex Bahn

Pastor - Kyle Shaw

Sergeant at Arms - Anna Lee

Public Relations - Christian Im

Department Happenings (cont.)

Student Missionary at A.M.O.R. Projects, Pucallpa, Peru

After my junior year as a chemistry major at Southern, I served as a student missionary to Peru. I was a medical worker and Bible worker with Ambassadors Medical Outreach & Relief (AMOR) Projects in Pucallpa, a river city within the Amazonian rainforest of eastern Peru.

To adequately describe the miracles I experienced during my year in Pucallpa, I first need to describe what had happened there before I arrived in 2017.

The story begins a few years ago, when AMOR Projects began offering free medical services to the newly formed community of Dos de Abril. To thank the nonprofit clinic for providing this tremendous benefit, community leaders gave AMOR Projects a small lot on which to build a Seventh-day Adventist church.

To help get the project started, student missionaries who worked in Pucallpa during the 2015-2016 school year started raising money in their home churches. Soon they had collected enough to start pouring the 14 concrete columns that would hold up the roof. But unfortunately, a rumor circulated that some of the community leaders who were friendly with the Adventists had sold the land to AMOR Projects and then pocketed the money for personal gain. Angry citizens formed an opposition group that wanted to make those leaders return the allegedly “pocketed” money.

Early on a Sunday morning, this opposition group decided to break down the columns that had been built in an attempt to scare off the Adventists. As soon as the church



Scot Brunner, '19, worked as a student missionary in Pucallpa, Peru, during the 2017-2018 school year.

members found out, they knelt down and started to pray. Albert, one of the Peruvian Bible workers with AMOR Projects, recalls: “I felt desperate and prayed a lot. After praying, I felt a lot of peace and said to God, ‘This is Your work, and we are under Your wing. Everything is in Your hands.’ The following afternoon, I went to visit the building site and saw that the columns were still in place. Praise God!”

One of the church ladies from the area later reported that when the opposition group had tried to break down the columns with sledgehammers, a swarm of wasps began to attack and drove the angry mob away.

Exactly three weeks after that miracle, the leader of the group opposing the building project was assassinated. It was already dark when Albert and his brother heard gunshots and ran to investigate. After assessing the situation, they quickly returned home to pray. “We were very afraid of what could happen in the future,” Albert admitted.

The people who gathered at the crime scene began to get violent,

accusing the friendly community leaders of murdering the rebel leader. They started to burn the leaders’ possessions and to threaten everyone. Albert later reflected: “We felt imprisoned, not knowing what to do. Trusting in the Lord, again we put everything into God’s hands.”

Next the mob moved to Sister Leysi’s house, where the Adventists were worshipping until the official church could be built. The mob intended to burn down the house with Leysi and her youngest children trapped inside. They heard someone shout, “Let her God save her!” and they heard laughter as people outside started to throw gasoline on her house. Leysi claimed the almighty power of God, and when the mob set fire to her house, the fire immediately went out. The attackers tried again, but nothing happened.

Seeing that they couldn’t burn down Leysi’s house, the mob decided to break it down by tearing off the tin walls and roof and by breaking the wooden supports. One of the leaders of the opposing group, named Castro, grabbed hold of the tin

sheeting and said later that he'd felt an electric shock that knocked him back several meters. He tried again but made no progress. Witnesses later said that there was so much electricity, no one could even touch the house. After several attempts, everyone left.

During the 2017-2018 school year, I moved to Pucallpa, where I stayed busy about 10 days a month helping with mobile clinics, then the rest of the time I worked with one of the local churches. All of the student missionaries were assigned to respective locations for the purpose of evangelizing through house visits and Bible studies. In the mornings after my first month in Peru, we student missionaries started learning how to give questionnaires in Spanish to find out the needs of the people. Next we learned how to give public health presentations that addressed with the health concerns listed on the questionnaire. Presentation topics included how to dispose of trash, how to wash your hands, where to build and/or relocate sanitary kitchens and bathrooms, how to treat the water to avoid parasites, etc. Finally, we started learning how to present "La Fe de Jesús" (The Faith of Jesus), a Bible study series oriented toward evangelism and preparation for baptism.

Each week we went out to practice giving the presentations and lessons that we had just learned. Each of us was paired with another student missionary and also a Peruvian, then we worked in our assigned area. I was paired with Kevin Singh, a biology major from Southern, and with the Bible worker named Albert, who

was from the area of Dos de Abril.

It was a hot morning in mid-October when we first dispersed to fill out the questionnaires. Albert took us directly to the house of a former Adventist, so we could practice with a friendly stranger. Kevin and I struggled as Albert stood there smiling—and occasionally clarifying, when we did not have the proper Spanish words.

As soon as we finished with that house, we went outside and saw a couple who looked to be in their 50s and were cleaning up the lot across the street. Albert asked us in English, "Let's go?" "Vamos," we replied in Spanish.

Kevin and I once again went through our questionnaire, asking the couple about their living conditions, family, and health (both physical and spiritual). After talking with them, we arranged for the wife to receive much-needed medical services for free. We also helped them with other physical needs and started ministering to their spiritual needs through Bible studies.

The names of that husband and wife were Castro and Kelly, two of the main leaders from the opposing group in Dos de Abril. Castro was one of the first who tried to tear down Leysi's house, where the church was meeting.

On December 9, 2017, Albert received a call from Kelly, who told him that she had talked to people living in Dos de Abril, and the community decided that AMOR Projects does indeed own the land, and that they should finish the church that had been started two years earlier.

As a result, Kevin started



Scot, Kelly, Castro and Kevin. Kelly and Castro receive a bible donated by Fannin County Seventh-day Adventist church in Blue Ridge, GA

making a video and sending pictures of the church's concrete columns back to his home church in the United States. The Adventists there raised enough money to continue construction of the church in Dos de Abril during the summer of 2018.

During Spring Break of 2019, I was able to return to Pucallpa, Peru, and worship in the church that Albert, Kevin, and I—along with the student missionaries before us—had worked to create. I saw a completed roof and floor, due to the donations of Kevin Singh's church. There is still more work to do, and even though no one is currently sponsoring the project, the church of Dos de Abril wants to keep praying, growing their membership, and working toward completing the church by the end of this year.

This has been a reminder to me that God has called each and every one of us to do something. Sometimes we are called to go to far-away places and do a work that no other local person could do, and other times we are called to stay right where we are and minister in our hometowns. All over the world, God needs more dedicated missionaries willing to evangelize and preach the gospel to the ends of the Earth.

Will you go?

By Scot Brunner



Power for Mind & Soul

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Nuvia Saucedo, PhD

Bruce Schilling, PhD

Rhonda Scott, PhD

Dennisse R. Blood, Office Mgr.

Research Luncheons

Every semester three research luncheons are held jointly by the Biology, Physics, and Chemistry departments. The luncheons are intended for students currently or previously enrolled in a research course and for their faculty supervisors. Other faculty often

attend, as well.

Attendance has been as high as 45! Presentations are highly interesting, and the discussion and questions that ensue afterward are often vigorous. Lunch is free (pizza, salad, and drink), and full attention is expected out of

courtesy to the presenters. (Use of electronic devices by the audience is deemed unacceptable).

Contact the Chemistry Department for a schedule or more information.

By Mitch Menzmer

Campus Research Day

Senior biochemistry major Marissa Chang was the winner of Southern's first Campus Research Day scholarship competition for research she conducted with Matthew Duffy, PhD, on the synthesis of phosphorus-containing aromatic compounds. This has been a

productive year for our research students who are working under the direction of Professors Matthew Duffy and Mitch Menzmer, PhD. We look forward to continued progress as their research programs continue to grow and flourish.

