

# the Periodical

Southern Adventist University Chemistry Department



## Chemistry Department Adds New Scanning Electron Microscope

During the last week of March, the Chemistry Department received and installed a new benchtop scanning electron microscope (SEM). The SNE-Alpha instrument, purchased from Nanoimages, will provide additional educational and research opportunities for chemistry and biology students as we seek to give our students a greater depth and breadth of experiences in preparation for the workforce.

An SEM works by aiming a beam of electrons at a sample and translating the back-scattered electrons from the sample into an image. Electron microscopy is particularly useful when particles with sizes less than 200 nm are being studied. Not only can an SEM resolve particles smaller than 200 nm, it can also produce an image that has the entire particle in focus as opposed to a light microscope, which has a limited focus and therefore does not



generate high-quality images of three-dimensional structures. This can be incredibly helpful when evaluating the morphology, size, shape, and other physical characteristics of particles and nanostructures of both natural and synthetic origin.

In the Chemistry Department, Professor Nuvia Saucedo will be the primary user of the SEM as she develops her undergraduate research program in nanochemistry. In conjunction with collaborators in California and Thailand, Saucedo is

involved in the synthesis and characterization of nanoparticles with potential space-based applications. Experience in the field of nanochemistry will benefit students who seek employment as chemists following graduation. Graduates with an understanding of nanochemistry will be increasingly sought after as practical applications of the materials in this field become more common. In addition, the SEM will allow us to develop new lines of interdisciplinary research

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# From the Department Chair

As I host prospective students and their families, there are several things they want to know as they are deciding whether to choose Southern Adventist University and the Chemistry Department. They want to know about our Seventh-day Adventist viewpoint, our faculty, our classrooms, our labs, our equipment, our curriculum, our student outcomes, and similar considerations. They don't often ask about how the other students in the Chemistry Department will impact their experience here at Southern. However, I've learned that our students are one of the most valuable educational resources that our department has to offer, and not just because of the essential roles of student workers.

Last fall, one of our second-year majors talked with me about adapting to life as a chemistry major during her first year here, and how advice and encouragement she received from her older sister (also a

chemistry major) was critical to her collegiate success to date. She asked me whether the Chemistry Department could start some kind of peer mentoring program so other students could benefit from students' knowledge and experience, as she had. After a few conversations among our faculty, during the winter semester we launched the Catalyst Program, in which upper-division chemistry majors volunteer to mentor lower-division chemistry majors. Three of our third-year students each mentored two to four first-year students, and one of our seniors mentored four of our second-year students. Most of these second-year students, in turn, agreed to mentor prospective students who were accepted to Southern and had expressed interest in being chemistry majors. We invited prospective students to connect with these current students to receive information and advice about life as a chemistry major at Southern. Now, as these students begin their studies in chemistry this fall, they'll have some idea of what to expect and someone that they've already become connected



*Brent Hamstra*

with. Soon they'll be ready to pass along what they've learned and experienced to future students.

The Catalyst Program exists because we provide an environment in which students are comfortable to express themselves, encouraged to care for others, and receive the guidance and independence necessary to be leaders. We think that choosing to let our majors lead in developing a student-centered mentoring program will make a difference for our students while they're with us and after they graduate. If you'd like more information about the Catalyst Program, please contact me by phone, email, or through our social media channels.

## Chemistry Department Adds New Scanning Electron Microscope (continued)

that will involve both biology and chemistry faculty and give students with interests in both areas the opportunity to explore research at the biology/chemistry interface. Additional collaborations with other local educational institutions and industrial partners may also arise, as common interests develop.

Funding for the SEM came from Southern's capital

equipment budget and the affinity funds of the Chemistry Department and Biology and Allied Health Department. "Contributions by alumni and friends of the Chemistry Department during Giving Day events and at other times were critically important to our ability to purchase this instrument," said Chemistry Department Chair Brent Hamstra. "And by working with our colleagues

in Biology, we were able to accomplish something together than neither department could do on its own. We look forward to additional opportunities to cooperate with our STEM colleagues to maximize opportunities for students."

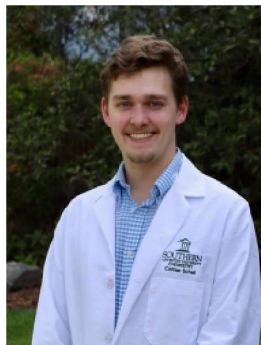
*Brent Hamstra &  
Nuvia Saucedo*



# 2023 Chemistry Graduates and Their Plans for the Future



**Charlotte Ishikawa**  
BA Chemistry  
Loma Linda University  
School of Medicine



**Conner Schell**  
BS Chemistry  
Loma Linda University  
School of Medicine



**Elodie Manalo**  
BA Chemistry  
Loma Linda University  
School of Medicine



**Emmanuel Venegas**  
BS Chemistry  
Gap Year  
School of Pharmacy



**Issac Abraham**  
AS Chemistry  
ICU Cardiovascular Nurse  
in Maryland



**Jared Freeman**  
BS Chemistry  
McKee Foods Research Center



**Joseph Lim**  
BA Chemistry  
Loma Linda University  
School of Dentistry



**Josh Kim**  
BS Chemistry  
Loma Linda University  
School of Medicine



**Kevin Gonzalez**  
BA Chemistry  
Loma Linda University  
School of Pharmacy

## Outstanding Seniors & Top Achievers 2023



Outstanding Seniors: Josh Kim and Elodie Manalo  
and in the center Professor Brent Hamstra, PhD



Top Achievers: Left to Right: Tryg Stokes,  
Nathan Turner, Connor Grant, and Brooke Reams.



# Biblical Applications

## “Trusting God’s Perfect Timing”

Life is often filled with decisions that require our patience and trust in God’s leading. We may find ourselves at a crossroads, torn between different opportunities, and uncertain of the best path to take. It is during these moments that we must remember the wisdom found in Proverbs 19:21NIV: “Many are the plans in a person’s heart, but it is the Lord’s purpose that prevails.”

When I was finishing my PhD and in the process of applying for a teaching position, I was faced with a difficult decision. After going to many interviews at different universities, I had narrowed my decision to two possible universities: university X and Southern, both of which had their own merits and possibilities. The problem I faced was that university X had already offered me a position and stipulated a deadline for me to give them an answer, while Southern had just started the hiring process. At that time, they had only interviewed me and would probably not be able to give me an answer or offer before my deadline with university X.

When considering both universities, Southern had a special place in my heart because it is the place where I learned to love my field of specialization, which is Organic Chemistry. Part of me wanted to go back to my alma mater, but at that time I was not 100% sure that this was what God had in mind for me. I decided to share my unique situation with the chair of the Chemistry Department, and he told me that he would do his best to give me an answer by the deadline, but

it would be difficult, since it was such a short time frame.

While waiting for the deadline date to approach, I kept diligently praying and seeking for God’s guidance, asking Him to reveal His will and lead me to the place where I could make the greatest impact. The deadline date arrived, and I had until 5 p.m. to give my answer to university X, but still I did not feel like I knew exactly what God wanted me to do. I remember being in my apartment and staring at the clock, hoping that a miracle would happen, but nothing. After much contemplation, I decided to accept the job offer at university X, believing it was the path God had laid for me, as I still did not have an answer from Southern and my deadline was quickly approaching. At around 3 p.m. I emailed university X, accepting the job position.

As I was settling into my decision, I received a text message from Southern just five minutes later, offering me the faculty position, which for me was a miracle since they were still very early in their hiring process. The message I had received contained the exact answer I had asked God for in my prayers earlier, bringing clarity and confirmation that God had a different plan in mind than my own. In that pivotal moment, I learned a valuable lesson about the power of patience and surrendering my plans to God. I realized that God’s timing is perfect, and He works behind the scenes to align everything according to His divine purpose. Even though I had initially chosen one job, God intervened to show me that He wanted me to

work at Southern. This experience taught me the importance of seeking God’s guidance and then patiently waiting for His response. It reminded me that even when circumstances seem unclear, God hears our prayers and answers them in His perfect time. His ways are higher than ours, and His plans for our lives exceed what we can imagine.

Reflecting on this life experience and Proverbs 19:21, I am reminded that even when we make decisions with good intentions, God can redirect us to where He wants us to be. In the midst of our choices, He remains faithful to guide us along the path that aligns with His purpose. When I received the message that aligned with my prayer, I felt a sense of awe and gratitude. I realized that God had orchestrated everything to show me the way I should go. As I reflect on my last four years at Southern, I realized that this teaching job provided me with blessings and opportunities I had not anticipated, and I am grateful for God’s divine intervention.

In our own lives, we may encounter situations where we face difficult decisions and uncertain circumstances. We may feel the weight of deadlines and the fear of making the wrong choice. In those times, let us remember to be patient and stay open to His leading. Let us surrender our plans to His will, knowing that His purpose prevails, even if it requires a change of direction. Today, if you find yourself in a season of waiting, facing a hard decision or questioning the path you have chosen, remember

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# Alumni Spotlight

## Jessica Davis, MD

### What years did you attend Southern?

WOW, it feels like a LIFETIME ago! I attended from August 2012 to December 2015.

### When did you graduate?

I graduated from Southern in December 2015.

### What attracted you to this university?

Several things that attracted me to Southern Adventist University. First of all, the campus is BEAUTIFUL! I had never been to Tennessee before, and I immediately loved the campus. Another big thing that attracted was the congregation of like-minded individuals who were there not only to pursue high-level education, but who wanted to make an impact as Christians in the world. I felt loved and cared for, and experienced a sense of belonging.

### Why did you choose to study chemistry?

I ultimately knew I was going to study pre-med in college in hopes of attending medical school thereafter, but I was not sure which degree I would pick. I always gravitated toward chemistry, as it was more analytical and involved mathematics. I was able to take advanced chemistry courses in high school, and it seemed like the right choice for me to pursue it in college, as well.

### What is your favorite memory from your experience at Southern?

My time at Southern were some of the best years of my life, and I remember my time there very fondly. Some of my favorite memories at Southern involved being part of the Chemistry Club and having regular



Jessica Davis and her husband, Jacob Davis

get togethers at Professor Bruce Schilling's house, where we had Vespers, sat by the fire, and ate his famous pumpkin bread.

### Where was your favorite place to study?

Being a chemistry major meant studying A LOT! I would rotate my study locations to try and keep everything from becoming so monotonous; however, my favorite place to study was in the courtyard outside of the cafeteria (if it wasn't super hot). It was the perfect balance of quiet with just the right amount of chatter, plus it was a chance to be outside and, of course, was close to food!

### What was your favorite class?

This is tough. I came to the quick realization that I was so lucky to be a chemistry major, as the Chemistry Department has the BEST professors on the entire campus, which meant every class was unique and fun in its own way. However, I think it's tied between two classes as my top overall

favorite: Organic Chemistry with Professor Loren Barnhurst and Quantitative Analysis with Professor Bruce Schilling.

### What school did you attend immediately after Southern, and when did you graduate?

Given I was able to graduate in December 2015, it gave me some time to travel before starting my master's degree the following fall, August 2016. I was able to take this time to work at Erlanger Hospital as a nursing assistant, travel to Europe, and then move across the country to Loma Linda, California, to start graduate school. I completed a Masters Degree in Biomedical Sciences in one year and started Medical School at Loma Linda University in August 2017. I completed medical school in May of 2021 and matched to Loma Linda University to complete my residency training in obstetrics and gynecology. Currently, I am about to start my third year of residency at Loma Linda University.

### What are some challenges you encountered?

Overall, this educational journey has been very long and trying. I am happy to say I'm almost done! So far, residency has been the most challenging part, as it involves long work hours and a lot of learning. Even though work can be hard, I feel so blessed by the support of my spouse, friends, and family. I am so happy that I get to live my dream every day.

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# Alumni Spotlight (continued)

## What are some rewards?

I feel so privileged in my journey getting here and thankful to all who played a role in helping me fulfill my dream. I am mostly rewarded by the work I do and the role I play in women's health, which places me with the best patients. I also feel extremely blessed to have done this whole journey with my incredible spouse, Jacob, by my side. Coincidentally he was the person who convinced me to attend Southern Adventist University, where it all started.

## What are you doing today?

Today I continue my medical residency training in obstetrics and gynecology. I am just about

to begin my third year of training (four years total). Afterward, I'm not sure where I'll move to practice. (Let the adventures begin!)

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

Take YOUR time and enjoy this moment! It's so easy to focus on that next exam, getting through the next semester, and looking forward to that time after college. This time will FLY by, and it's such a special and memorable time in life. You're growing into the person you're going to be - not only professionally, but in life. It's important to take your time cultivating relationships and

friendships and spending time with Jesus, as what you do at this point will shape who you become.

## Anything else you would like to share with us?

I feel incredibly blessed by everyone I was able to interact with during my time at Southern. It was the perfect place to be for such a crucial time in my life. I will never forget the professors in the Chemistry Department who made this experience so wonderful and who helped me achieve my goals. This is a special place, and I will forever be grateful for the impact Southern Adventist University has made in my life.

*By Dennisse Blood*

**To be featured in the Alumni Spotlight, please write us at [chemistry@southern.edu](mailto:chemistry@southern.edu).**

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# Department Happenings

## Chem Club News

As a graduating senior, my college experience has been dominated by the pandemic. Freshman year was cut short, and the following two years had different levels of restrictions in place. This year, I had the opportunity to serve as Chemistry Club president and loved the opportunity to pick up where things left off my freshman year.

The year started off with our usual vespers program at Professor Bruce Schilling's house and we were blessed with an incredible turnout of more than 60 people. It was wonderful to see the club officers, faculty, club members, and guests mingling and enjoying fellowship together. The usual puzzles at the Schillings, Fall Outing to Harrison Bay State Park, and White Elephant Christmas celebration were each full of

friendships and memories that the club members have made. One particular highlight for me was our Pumpkin Bread Fundraiser at 423 Night Market, where we broke a record for the most loaves sold, profits earned, and appetites satisfied by selling Professor Bruce Schilling's "World-Famous Pumpkin Bread". Second semester included a community service project and a convocation and vespers before the end of the school year.

Since I arrived at Southern, the Chemistry Club and Chemistry Department welcomed me, and I pray that new students have felt that same welcome. My favorite part of serving as club president and the year in general has been seeing the club members take pride in our organization and our Chemistry Department family. Ryan Howell, club treasurer, described it

perfectly by saying, "As someone who is a member of about 10 clubs, Chemistry Club is by far the best. You meet someone new at every event, the activities are fun and frequent, the instructors are always engaged and involved, and the students from multiple departments come and enjoy the events." That sentiment is echoed by Sophie Blackburn, who appreciates how the professors facilitate a loving, welcoming, and familial atmosphere at the club events.

As I hand over the reigns of Chemistry Club to a new batch of leaders, I hope that they will build on that community and continue to welcome and involve new members and grow the club's standing on campus.

*By Jared Freeman*

## "Trusting God's Perfect Timing" (Continued)

Proverbs 19:21: "Many are the plans in a person's heart, but it is the Lord's purpose that prevails." Pray for His wisdom and clarity, and then trust in His timing and leading. Be patient and receptive to His answers, even if they come in unexpected ways or at unexpected times. Rest assured that God's plans for you are always better than your own.

*By Tamie Suzuki Kawakami*

W	Y	Q	P	U	X	Z	B	B	W	B	U	P	Y	H
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### Word Search

Chemistry  
God  
Guidance  
Intervention  
Perfect  
Prevail  
Purpose  
Southern  
Timing  
Trusting  
Wisdom



**Power for Mind & Soul**

**Chemistry Department**

P.O. Box 370

Collegedale, TN 37315

Phone: 423.236.2931

Fax: 423.236.1931

[southern.edu/chemistry](http://southern.edu/chemistry)

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**Faculty & Staff**

Brent Hamstra, PhD

Matthew Duffy, PhD

Mitch Menzmer, PhD

Nuvia Saucedo, PhD

Bruce Schilling, PhD

Tamie Suzuki Kawakami, PhD

Crystal Zhang, PhD

Dennisse R. Blood, Office Mgr.