The Reaction Times

VOLUME VII March 2022 Spring Edition

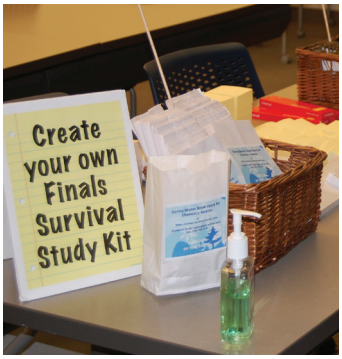
The impetus for *The Reaction Times* newsletter was a series of discussions members of the Equity & Diversity Committee had with undergraduates, graduate students, postdocs, faculty, and staff, who indicated that they would like to learn more about others in the UMass Chemistry community.

Dessert Social

With the idea of community in mind, the department hosted a Dessert Social for faculty, students, and staff to enjoy good conversation on Reading Day last fall. It was a great opportunity to interact with other members of the department while enjoying tasty treats.

Final Exam Survival Kits were available to all chemistry majors, and students enthusiastically created their own personalized goodie bags from an assortment of supplies and treats. Words of encouragement and fun puns about the items were mixed in with the supplies and generated additional smiles.

This event is a wonderful way to decompress and regroup before the start of exams. This spring's Dessert Social will be held on Thursday, May 5th, from 2-4pm in the Chemistry Resource Center (CRC) ISB 325, with Final Exam Kits available next door in ISB 329.

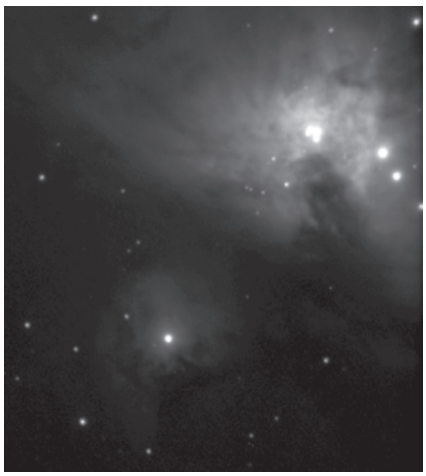


Emeritus Faculty

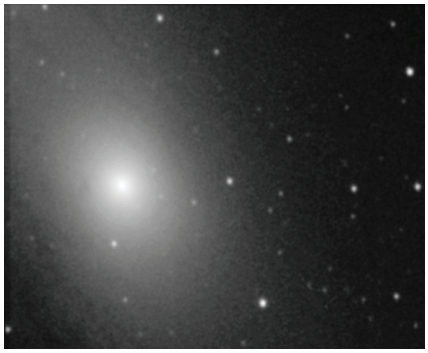
A Chemist Delves into Astronomy By Prof. Emeritus Paul Lahti

I have been interested in astronomy since my childhood, when my father pointed out how to find the North Star and some simpler constellations. Post retirement, I have had the opportunity to pursue this interest. Most recently, astronomy has been a fine activity during COVID induced isolation. I acquired two telescopes: a 90 mm aperture, 900 mm focal length refractor with a manual equatorial mount, as well as a 200 mm aperture, 1200 mm focal length Dobsonian reflector with a tilt-type altitude/azimuth mount. The latter has the strongest light gathering ability. With it, I have looked at numerous Messier object galaxies and star clusters, the seven other major planets, and a couple of bigger asteroids (thank you, computerized star maps!). I saw Comet Leonard during December 2021, marveling as the fuzzy ember with a faint gossamer tail passed stars in the near line-of-sight during a couple hours of observation.

The smaller telescope is an adequate setup for EAA (electronically assisted astronomy). With a small mount-drive motor, the scope can follow Earth's rotation, locking onto an observed target. The scope eyepiece can be replaced with a small CMOS camera designed for photographing the moon, solar system objects of sufficient brightness, and brighter deep space objects. Using freeware written and generously made web-available by amazingly clever people, movies can be made of the scope view, or multiple photos acquired at a given exposure length. The exposures can be "stacked" exposures using other freeware to see faint features that are almost or completely invisible to the eye alone, even using the scope.



Orion Nebula, Messier Objects M42 and M43; the full detectable the extent of Orion star-lit cloud extends well beyond the field of view in this photo



Andromeda Galaxy, Messier Object M31, whose disk extends well beyond the brighter galactic core

Full Moon: sepia coloration added post processing; big white splash crater on lower moon is Tycho, the bigger white splash crater amidst the upper plains area is Copernicus with Kepler to its left; the large lava plain in upper left is Oceanus Procellarum, the large plain above Copernicus is Mare Imbrium, the grey plain directly above Tycho is Mare Nubium.

Half-Moon: Mare Serenitatis and Mare Crisium are upper grey plains (l to r), Mare Tranquillitatis the large plain in the middle, Mare Fecunditatis to the right of Tranquillatitis with the bright white Langrenus Crater further to the right, Mare Nectaris the "lowest" grey plain with three sizeable craters on its left border; note the heavy cratering of the lunar lower, south pole region, emphasized by lighting at this phase.

Chemistry-learned skills are valuable, such as spectroscopy (use of filters to limit light pollution, a problem even miles from university lights) and data analysis (choosing individual exposure frames using quantitative measures). I started EAA only recently, after much web-reading. It takes time to learn, but I have seen the progress from this "do it to learn it" activity – similarly to chemistry! I do this for fun, but it shows that, as we all know, chemistry provides broad experience to do many things not directly considered to be chemistry.

A final note: There are many, many web articles, discussion sites, and even sky-map sites that allow one to explore almost endlessly what you can see, or even not see, in the night skies above you. Try looking at websites that you can find by a web-search for "telescope dealers." They often have articles, newsletters, external links, and lots of useful information. I also like sites and software that can be found by a web-search for "interactive star maps." You can find a myriad of things to learn and to try, whether the skies are clear or not!

The Legacy of the RC

By Prof. Emeritus Michael Maroney

Once upon a time, in a department very different than today, six young faculty members faced a conundrum posed by their senior colleagues. They were simultaneously being asked to use their youthful energy and new ideas to revitalize the department, while others resisted changing the way things have always been done. Strength in numbers – and a bit of additional fortification – were just what these upstarts needed. Hence the inception of the "RC," proposed in this memo I rolled off a Daisy wheel printer and addressed to Profs. Jackson, Lahti, Martin, Voigtman, and Weis on September 8, 1988 with the subject line "Untenured Faculty PAC":

Whereby it has come to our attention that we have much more in common than we have differences, and as it seems that we have much to gain from an uninhibited discussion of the issues and problems before us, I would like to attempt to organize a regularly scheduled meeting. I propose that we start meeting once a month, on the last Friday of the month, beginning with 9/30/88 from 3:30 until whenever. All those in favor please signify by signing this memo and stuffing it in my box. Bret [Jackson] has been kind enough to offer his office as an initial meeting place. In order to aid the uninhibited nature of the discussion, we will try to organize a scotch tasting as well. The goal will be to attempt to sample as many single malt scotches as possible during the coming academic year. I will kick off this activity by providing the first bottle. If there are scheduling problems, please let me know as soon as possible.

On the last day of the Easy Rider Lounge and Quantum Theory Institute (May 6, 2021) Profs. Jackson, Voigtman, and Tyson (left to right) enjoy a last dram while cleaning out the MTs. Left insert: Prof. Voigtman reminisces about a bottle of 1975 Brora (current value $3500 - $4500) while modeling a T-shirt commemorating the budget cuts of the early 90s. Right insert: It's all uisge breatha under the bridge now. (Photos: Prof. Maroney)

Thus, what rapidly became known as the Untenured Revolutionary Council, or URC, was born, with the unstated goal of having a more unified voice for the untenured faculty on Departmental issues. As the signatories were granted tenure, the name evolved into, simply, the Revolutionary Council, or RC. Many of those of "a certain age" will remember experiences they had at an RC meeting. Others will know of the organization only by reputation (such as it is).

The RC continued to meet over the years through over three decades, mostly in Bret's office, aka Bret's Easy Rider Lounge and Quantum Theory Institute. RC membership (basically anyone who wanted to show up) continued to increase. In 1989, the Department hired Prof. Julian Tyson away from Loughborough University in the UK, and sometime in the 90's, following the name change to "RC," he became a regular attendee. As a card-carrying Scotsman and former brother-in-law of the distiller of 'The Singleton,' Tyson raised the caliber of both the discussion and scotch tasting, the latter by contributing bottles from the source. Attendance rapidly grew to test the capacity of the venue, and included on occasion some senior faculty, notably Howard Stidham (who occasionally brought salmon he caught in Alaska), Earl McWhorter, and Dean Leon Osterweil (College of Natural Sciences and Mathematics). The European travels of several other council members, notably Frank Stolle, contributed many bottles not readily available in the US. Other faculty and administrators, who shall not be named, contributed greatly to consumption.

Thus the caliber of the beverages and also snacks increased over time. A favorite (?) event was the annual showing at Thanksgiving break of the classic film "Paint Your Wagon" which is memorable (actually, once seen, you can't un-see it) for having Clint Eastwood in a singing role. Spouses attended at times, and oftentimes the meetings concluded with a dinner at a local restaurant.

In 2020, COVID made it more difficult to get together, and then Bret's office/ Easy Rider Lounge became a victim of the Goessmann renovation in May 2021. By that time, RC members had consumed at least 175 bottles of single malt scotch (there are bottles that have gone missing), although meetings had by then, after some retirements, become less frequent, called on a "as-needed" basis (usually corresponding to the end of a semester). The less quantifiable legacy of the RC includes favorable tenure decisions, Departmental policy changes, and deep friendships.

For now, although the Easy Rider Lounge is gone, the RC, like the Norwegian Blue, may be "just resting."

Staff Snapshot

The department would like to give a warm welcome to our new Head's Assistant, Allie Lopez-Swetland. Allie majored in anthropology as an undergraduate here at Umass and went on to complete a Master's in plant and soil sciences at the Stockbridge School of Agriculture. Allie previously worked for the Massachusetts Department of Agricultural Resources in Amherst, focusing on the export of agricultural plants and surveys of crops, soils, and wild plant species. Allie enjoys painting pictures of fruits and veggies as well as playing recreational volleyball.

Allie takes over the role of Head's Assistant from Rebecca David, who is now our full time Graduate Program Manager. We thank Rebecca for her excellent work as Head's Assistant, which she continued to carry out while serving as our Interim GPM.

Found in the Lab: Tape Ball Grows Up

By Amanda Bennett

Every year in the orgo lab, students write their name on color-coded tape as a way of labeling their personal equipment drawers. Tape Ball (as we fondly call her) has grown as the result of peeling off the tape from four+ years of drawers, as students pass through the lab via Chem 269, Chem 267 and 268 (orgo lab for majors), as well as Chem 342 (inorganic chem lab). Tape Ball is the star exhibit in our little "Oddities of Organic Chemistry" museum, which we created in our prep room as a way of housing some of the very random things we have made/collected/found over the years. Items include foil sculptures (left over from drying a lot of glassware for Grignard synthesis!), assorted objects that students have somehow managed to get stuck in assorted glassware, and several ancient relics left over from the days of hard copies of lab reports. We occasionally even have seasonal/limited time exhibits: pipet bulbs that have swollen up to comical sizes after being dropped in solvent bottles, left over dry ice magic shows, etc.!

Graduate Students

A Seat at the Table

By Kim Bolduc

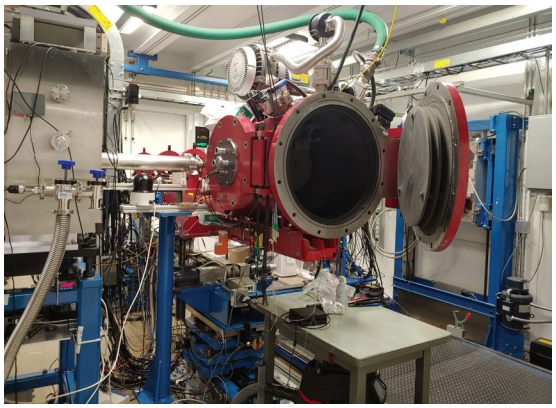
Striding towards the Enterprise Rental Car counter, I kept repeating in my head, "You have a seat at the table." I knew that I looked the part – crisp, tall brown leather boots, black leggings, rust-and-cream striped Calvin Klein sweater, matching brown leather purse with a golden buckle, London Fog grey wool coat. I definitely didn't look like I scoured the Burlington Coat Factory sale racks, or searched the JCPenney discount section, or perused the Costco clothing tables to achieve this look on a graduate student's salary.

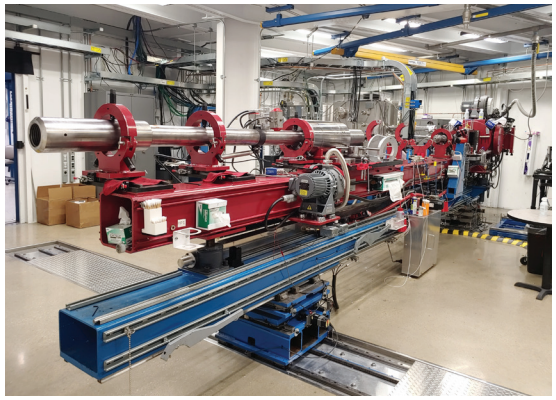
At the counter, I pulled out my confirmation code and relaxed, trying to look cool. The lady across the counter casually asked what brought me to Chicago. Before I knew what I was saying, the words, "I'm here to conduct experiments at the APS at Argonne National Lab," passed over my lips. Immediately her face changed, and her look said "Wow!" before her mouth could. I immediately felt the urge to specify that I was a graduate student, and therefore nobody of any consequence. As she walked me to the rental car lot, I depreciated myself further by letting slip how nervous I was. She turned to me, rested her eyes on me for a second, and said, "You're going to kill it! You've got this."

By the numbers, Argonne is impressive. The national laboratory itself covers 1,500 acres. The Advanced Photon Source (APS) itself boasts a storage ring for its 7-GeV electrons that is 3,600 feet – roughly two-thirds of a mile – in circumference. After seeing first light on March 26, 1995, the facility has grown to welcome more than 5,500 researchers every year.

From the outside, the APS lies low on the horizon. An uninformed eye would think it was simply a collection of gun-metal grey office buildings. In fact, the synchrotron ring is cloaked in these unassuming structures from every angle. The best way to see the ring is either from Google Earth, or from the upper floors of the user office building, where the grand scale of the ring can finally come into view. The flat, once-white roof of the synchrotron reflects light in the daylight, giving it a glowing appearance. At night, the gentle curve of the structure is reminiscent of the waxing moon above, awakening thoughts of the awesome power of mankind to mimic natural phenomena.

Inside, the building is divided into 35 sectors, each one pulsating with the incredible power of the x-rays generated by the synchrotron, but each one unique in capabilities. At Sector 16, the High Pressure Collaborative Access Team (HPCAT) can compress samples using diamonds to achieve conditions comparable to Earth's core. At Sector 35, the Dynamic Compression Sector (DCS), the team can send plates of metal flying at a target to induce shockwaves in the sample. Apart from the sectors aimed at achieving extreme temperatures and pressures, other sectors can assess the structures of proteins or other structures within the cell. In 2009 and 2012, two Nobel prizes were awarded for work conducted at the APS: one for the discovery of the structure of the ribosome, the second for the structure of the G-protein receptors. The workhorse diagnostic of all these experiments is based on access to the x-rays contained within the synchrotron storage ring.





continued - Seat at the Table

For a researcher visiting for the first time, the APS can be daunting. The incredible expertise and knowledge of the beamline scientists is overwhelming. Many of the scientists were there when the APS first came online in 1995 – which is, for comparison, the year I was born. However, as many researchers who gather from around the world to cluster into one of the experimental hutches that stick out like unpushed-in chairs around the synchrotron table, it is fitting to remember that we all have earned a seat at the table – at this great table of scientific experimentation and discourse.

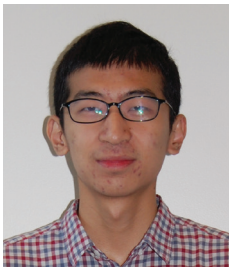
Lu-Diaz Awarded Donald Kuhn Graduate Fellowship

Michael Lu-Diaz (DV group) was awarded the Donald Kuhn Graduate Fellowship for outstanding research, and an interest in pursuing a career in research or teaching.

Research Summary: Chemically doped conjugated polymers comprise a myriad of applications among organic electronics. The chemical doping process consists of introducing a molecule to partially oxidize or reduce a polymer's backbone and create a charge. Although this charge is presumed to be mobile, it experiences a strong, attractive Coulomb interaction with a dopant, ultimately affecting charge transport. I am studying methods to screen this Coulomb interaction and help this charge move. Our experiments and models indicate that the dielectric permittivity is a tunable and crucial parameter to reduce polymer-dopant Coulomb interactions. We used a charge hopping model and fabricated polymer composites with nanocrystals with tunable dielectric permittivity. Ongoing studies focus on understanding how different physical properties of a polymer impact polymer-dopant Coulomb interactions to create more efficient materials.

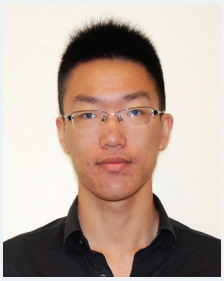
Buz and Wang Receive PPG Fellowships for Outstanding Research in Materials Chemistry

Enes Buz (Kittlestved Group): Transition-metal doped metal oxide semiconductors, in particular Zn1-xMxO, have attracted tremendous interest as potential candidates not only for the semiconductor-compatible magnetic components for spintronic applications but also room-temperature magnetism. While ZnO is a diamagnetic semiconductor, introduction of magnetic dopants such as Fe imparts magnetism on ZnO. In the Kittilstved research group, I study different methods to tune the oxidation state of Fe dopants in ZnO nanocrystals (NCs) in a controlled way which will allow us to control the properties of ZnO NCs in turn. With the support of the PPG fellowship, I will be furthering my studies to investigate and directly show the specific oxidation state of Fe in ZnO NCs by utilizing various dopant-specific spectroscopic techniques. This study will help us to shed light on the mechanism of magnetism in ZnO NCs and to develop materials of interest for magnetism-related applications.



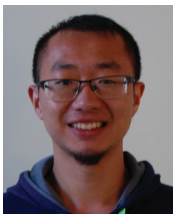
Tongkun Wang (Auerbach Group): Our group focus is on the study of zeolites, which are atomic crystals formed by tetrahedral atoms like Si with bridging atoms like O. As noticeable members of molecular sieves, zeolites have interesting porous structures and channels. To better understand their formation mechanism, we performed periodic density functional theory simulations and probed key precursors. Combined with experimental results from our collaborators, we successfully used Raman spectroscopy and thermodynamics calculations to reveal defects and explained why or why not they can be healed with the presence of organic structure directing agents. In future works, I will extend my ab initio molecular dynamics simulations in aqueous environment and study processes from monomers, via important building units, to full crystalline, which will help us to predict and design the synthesis for zeolites we want.

Sun Receives Paul Hatheway Terry Scholarship



Zhining (Jennings) Sun (You group) was awarded the Paul Hatheway Scholarship in recognition of excellence in research.

Research Summary: Genetically encodable RNA-based fluorescent sensors have been a revolutionary tool for real-time imaging of important biological small molecules in live cells. Guanosine tetraphosphate (also known as ppGpp or "Magic Spot") in particular is one of the targets that plays an integral role in cell regulation. Its presence in bacteria cells triggers the stringent response which helps the cells to survive the harsh living conditions via various pathways. Although much researches has been done to study its functions, people still have not been able to fully understand it due to the lack of tools to monitor it in live cells. I engineered a naturally occurring ppGpp riboswitch into an RNA-based fluorescent sensor and achieved imaging of ppGpp in live E. coli cells. After half a century since its discovery, we are the first group to ever visualize ppGpp and provide information on its cellular dynamics and cell-to-cell variations. Now I'm working on the multiplex imaging project to study ppGpp and other related targets simultaneously, which will discover the potential correlation between the targets as well as how they affect the cell biology.



Zhang Receives Marvin D. Rausch Fellowship

Xianzhi Zhang (Rotello group) was awarded the Marvin D. Rausch Fellowship for outstanding research in organic chemistry.

Research Summary: Bioorthogonal chemistry uses abiotic chemical processes to create a new toolkit for biological and biomedical applications. Bioorthogonal catalysis via transition metal catalysts (TMCs) provides a particularly promising direction that employs the high catalytic activity and chemical specificity inherent in TMCs. The direct application of TMCs in living cells is challenging due to the generally poor water solubility and instability of these hydrophobic catalysts in biological environments. In the Rotello lab, these issues can be addressed by incorporating TMCs into nanomaterials to generate bioorthogonal "nanozymes". Nanozymes can activate imaging and therapeutic agents from their inactive precursors, creating on-demand "drug factories". By engineering surface functionality and size of nanomaterials, I synthesized various nanozymes with biostability and/or stimuli responsiveness. Furthermore, I also designed and synthesized a library of substrates for nanozymes to broaden their applications for bioimaging, cancer chemotherapy and immunotherapy. The therapeutic potential of nanozymes was demonstrated both in vitro and in vivo, creating an anti-cancer treatment with increased efficacy and reduced side effects.

Science Communication at the Local Level

By Spencer Shorkey

I live in Montague currently, and believe it is important to provide effective science communication to the community. *The Montague Reporter* is a weekly paper that has somewhere around 1000 subscribers, and since the start of this year, I have taken over managing the monthly science page, contributing my own content as well as coordinating with other science writers.

My first article detailed Massachusetts' plans for a renewable energy systems by 2050. The renewable energy angle is even more relevant today, with fossil fuel rising to new highs amid war and sanctions. If you're thinking of decarbonizing your home in 2022, give the article a read, since in it I also discussed the economics and grants applicable to renewable energy transitions in Massachusetts.

http://spencersphere.science/Moar/SciComm/January-6-2022-Science%20page.pdf

our January science page

COMMENTARY

Time to Look Up

Faculty

Solving Pandemic Stress with Serene Sophie-dog Auerbach

By Scott Auerbach

Yes, things have been stressful these past two years, with the unpredictability of new COVID-19 variants, social distancing, mask wearing, remote learning, and more. And if you're a senior trying to complete a research thesis, things are really stressful, with trying to navigate a major research project for the first time on a tight deadline with unpredictable access to labs and other facilities. The good news is that we're back to teaching in-person, but that in itself can do little to deal with major sources of stress. But in-person instruction opened a door to something (or somebody) who CAN remove stress: say hello to Sophie-dog Auerbach!

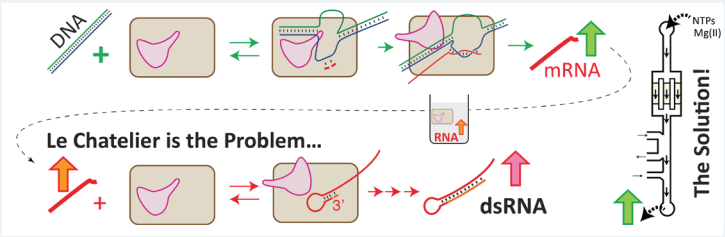
I've been teaching the iCons senior seminars (ICONS 489FH and ICONS 489SH), in which STEM students from more than 20 majors work on the communication and reflection aspects of their senior theses. I can tell you there was a lot of stress in the room, and a fair amount of absences from class. That is, until I started bringing Sophie to class. Now students almost always attend each meeting, and appear much more relaxed. True, students may be a little distracted by Sophie when, e.g., I'm trying to explain the nuances of a certain communication genre, but honestly, that is such a small price to pay for having everybody's stress lowered and morale high.

Sophie was born November 21, 2020—a true COVID puppy. We adopted her on January 16, 2021, and have been living the dream ever since. The plan has always been for me to bring her to my classes, but I was nervous at first that she would be disruptive (at best), and/or have an accident in the room (at worst). So I waited until the first class meeting after Thanksgiving 2021 when I knew the students would be at a low point. And voila! They were immediately thrilled to be with Sophie (and by extension, to be in class). Now, if I show up to class without Sophie, they threaten a mutiny!

These iCons seminars are heavily discussion-based, so in retrospect bringing Sophie is no big deal. The next chapter will be when I bring Sophie to a lecture course like Chemistry 585. Stay tuned for that story in a future issue of *The Reaction Times*!

RNA, Equilibrium, and the Martin Lab

By Craig Martin



The Martin lab has always loved RNA. The phenomenal success of the COVID vaccines has brought this molecule center stage and the rest of the world now more fully appreciates the need for large amounts of high quality RNA. It's not exactly polystyrene yet, but many hundreds of kg of purified RNA have already been produced for the highly successful COVID vaccines. As reported in previous issues of The Reaction Times, using our deep understanding of the RNA polymerase, we are developing much better ways to synthesize ("manufacture") RNA. Others have taken notice: this fall we received a Manning/IALS Phase II Innovation Award to accelerate our NIH-funded efforts to develop mechanism-based approaches to RNA manufacturing. Shortly following that, we received a major award from the Wellcome Leap R3 international initiative, the aim of which is to "increase exponentially the number of biologic products … and to create a self-sustaining network of manufacturing facilities providing globally distributed, state-of-the-art surge capacity to meet future pandemic needs."

Related to this issue's focal point on "equilibrium," the theme of Martin Lab improvements is "Le Chatelier." Or rather, we aim to defeat Le Chatelier-driven side reactions that generate contaminant double stranded RNA. Elvan Cavac published one approach this past summer and Kithmie MalagodaPathiranage has just submitted a manuscript describing a related approach. These developments will feed into our Holy Grail of developing a flow reactor. Because the unwanted reactions are driven by accumulation of product in current batch reactions, our flow reactor will whisk away product as soon as it is generated—defeating Le Chatelier!

Checking In with PhD Alumni: Faculty Focus

Every year, 20 to 30 new students from all over the world join our Chemistry PhD program to continue their education, pursue their passion for chemistry, and prepare themselves for a career in science. After they have finished their coursework, made it through their prospectus and ORP exams, discovered some fascinating new chemistry, passed their data defense, and successfully celebrated their final defense, they are ready for a new career in the "real" world. Most PhD chemists from our Department eventually take positions in companies, but some students seek a job at a university or college to train the next generation of scientists.

The Reaction Times editors tracked down Chemistry PhD grads who recently (in the last five years) started faculty positions. We asked them why they chose a career in academia, and what about UMass prepared them for their current positions. Here's what they had to say.

Patanachai 'Kong' Limpikirati, PhD 2020 (Vachet group)
Lecturer (2020-present), Department of Food and Pharmaceutical Chemistry
Chulalongkorn University, Thailand

Before going to UMass, I wanted to work in academia because of my love for teaching and my childhood dream that I wanted to be a teacher. UMass Chemistry helped strengthen my basic knowledge, trained me how to conduct research, and shaped my soft skills and respect for diversity and equity. Over years at UMass, I realized that being a professor is a purpose of my life to improve the field of Pharmaceutical Analysis through research and outreach and to serve my students. I always remember my professor saying that "A big part of being a good teacher is caring for your students and being willing to help them in the way that works best for them."

Cornelius Taabazuing, PhD 2015 (Knapp group)
Assistant Professor (2022-present), Department of Biochemistry and Biophysics
University of Pennsylvania Perelman School of Medicine

I'm currently an Assistant Professor in the Department of Biochemistry and Biophysics at the University of Pennsylvania Perelman School of Medicine. I decided to become a professor because I love discovering new things that have the potential to impact humanity in a positive manner. My undergraduate and graduate education at UMass Amherst had a major impact on my career decision. I was instilled with a curiosity about how the natural world works that still drives me today. I had the opportunity to participate in research during my junior year as an undergrad and absolutely fell in love with it! The combination of fantastic mentors and phenomenal educators, exposure to diverse research areas, and excellent curriculum at UMass prepared me well for life as a faculty member.

Nicholas Borotto, PhD 2016 (Vachet group)
Assistant Professor (2019-present), Department of Chemistry
University of Nevada

I was drawn to academia for two major reasons: 1) the freedom to pursue and publish on the topics I find most interesting; and 2) to mentor the next generation of early career scientists. The University of Massachusetts provided an excellent environment to grow as an early career scientist. It fostered the development of numerous skills required of academia (e.g writing and mentoring). The excellent community of graduate students advanced my networking and softball skills. But most importantly, my time at UMass began to give me the confidence and resilience that is necessary to prosper in the academic environment.

Ying Jiang, PhD 2016 (Rotello group)
Assistant Professor (2020-present), College of Chemistry
Beijing Normal University

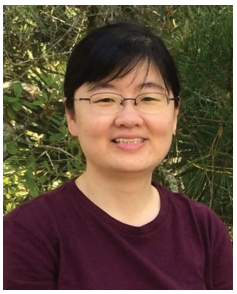
I enjoy the freedom of researching problems that captivate me and working with young and well-educated students that bring fresh ideas. I also enjoy the mentorship aspect of teaching. So, being a professor is the best outcome I have hoped for. Studying at UMass has shaped me to be self-confident, independent, and persistent in a way that I will forever be grateful for. I believe the cultivation of these essential traits helped prepare me for being a professor.

S. Gokhan Elci, PhD 2016 (Vachet group)
Assistant Professor (2018-present), Department of Biomedical Engineering
Pamukkale University, Turkey

It seemed like a long journey from the beginning to the end of my PhD with many challenges and happy memories along the way, but eventually, I got what I have always dreamt of, and I have started as an assistant professor in Biomedical Engineering Department at Pamukkale University, Turkey. Since high school, my dream was always to become an academic. My father, a retired chemistry professor, was my inspiration, and he is a great example to me on this journey. Like my father, my sister is also a chemist and academic, which made me think of continuing the family tradition as well. I have always liked science since high school, and it is the driving force for me to seek new things and learn what is new in science. The best career to keep up with that knowledge is to become an academic. So far, with two great and insightful academic fathers (both my dad and Prof. Richard W. Vachet), I know that I made the best choice to be a professor. The idea of passing knowledge to younger science enthusiasts is fulfilling and it's a great feeling to be in this job.

Bach Pham, PhD 2020 (Min Chen group)
Assistant Professor (2021-present), Department of Chemistry
University of Science, Vietnam National University

Since the pandemic, life science has grabbed much attention, yet it is still an undeveloped research field in Vietnam. Meanwhile, chemistry students at my university focus on classical chemistry and do not have access to biochemistry knowledge, which limits them from studying life science. Thus, I would like to contribute what I have learned about biochemistry and life science at UMass, equip students with fundamental knowledge, and introduce them to advanced research directions in this field.



Yi-Cheun, PhD 2014 (Rotello group)
Assistant Professor (2018-present), Institute of Polymer Science and Engineering
National Taiwan University

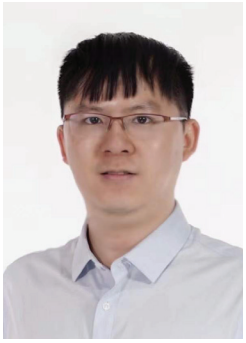
I became a professor because I enjoy active discussions with people about science, especially brainstorming for problem-solving and making new molecules/materials. Doing research is a lifestyle for me, and I love it! The pleasant working environment and the diverse international student community at UMass helped me to pursue my passion for science and to achieve the goal of becoming a professor.

Alyssa Marsico, PhD 2016 (Vachet group)
Assistant Professor (2017-present), Dept. of Forensic Science
University of New Haven

I became a professor because I love sharing my passion of science to both developing scientists and experienced scholars, and because I always enjoy coming up with innovative ways to explain complicated scientific material. I had the opportunity to do these at the University of Massachusetts at Amherst. One of the largest influences on my decision to become a professor was the welcoming environment at UMass Amherst that fostered scientific discussions between graduate students in other disciplines of chemistry, and even the faculty who were always open for a conversation. Other influences were the experiences I had both mentoring new research students, and all the opportunities provided to present my own research. Both allowed me to share the knowledge I was gaining while at UMass Amherst. These experiences made me realize that I enjoyed just talking about chemistry in general and sharing my own expertise and passion in the field to both new and established scientists, which I continue to do now as a professor.

Satamita Samanta, PhD 2013 (Martin group)
Lecturer (2021-present), Dept. of Chemistry
University at Buffalo

I find teaching incredibly rewarding. I get to talk to students about my favorite subject, connect the pages on their books to everyday life, introduce young minds to research, and see their interest in chemistry grow. UMass gave me the first opportunity to experience teaching and made me realize my love for teaching and mentoring!



Longyu Li, PhD 2015 (Thayumanavan group)
Professor (2020-present), College of Polymer Science and Engineering
Sichuan University

My time at UMass was a great experience. I met many great professors, including my advisor Thai, and my committee, Kevin and Min. I also remember that I took many useful classes from Richard, Scott, Vincent, Nathan, DV, and others in the first year. I came to the US for my PhD with the goal to be a professor. At that time, I thought being a professor was a great job, as one can arrange their schedule independently. Now, I believe that it is a pleasure to work with young students and post-docs, developing interesting projects from a seed to a tree. My experience at UMass helped me realize this point. I saw many professors who genuinely cared about their students. I could not achieve my current position without help from Thai.

The editorial staff thanks those who sent in accomplishments and story ideas. Please email comments, achievements, and ideas for our next issue to reaction-times@chem.umass.edu.

Editorial staff: Amanda Bennett and Richard Vachet. Design and editing: Brigette McKenna