Periodic Trends

Issue 01
June 2017

Old Dominion University ~ Department of Chemistry & Biochemistry

Dear Faculty, Students, Alumni, Staff and Friends of the Department of Chemistry and Biochemistry Department at Old Dominion University,

As you can see, we now have a winner for the contest to name the departmental newsletter. Although the contest was quite competitive with many clever entries, the department voted for Stephanie Whitty's entry "Periodic Trends". Stephanie is currently a Ph.D. student working for Professor Pat Hatcher. Congratulations Stephanie!

The big news in the department this year is that the design phase of the NEW CHEMISTRY BUILDING has begun. The 110,000 square foot building will be located on the main campus overlooking the baseball field and Elkhorn Avenue and will include new state of the art teaching and research facilities for the department. The move into the new building is planned for the start of the 2020 academic year.

The latest edition is packed full of new developments in the department. On a bitter-sweet note, we say good-bye to Professor Ken Brown who retired this month and to Research Assistant Professor and former postdoc Andrew Wozniak who has accepted a new tenure-track position at the University of Delaware. At the same time we extend a warm welcome to three new members to the Department. Dr. Erin Purcell joins the department as an Assistant Professor and her husband Dr. David Courson joins the department as a Research Scientist. In addition, Dr. Kalpana Mahadevan joins the faculty as our newest Lecturer. We also extend our congratulations to both Dr. James Lee and to Dr. Alvin Holder for being awarded tenure this year.

This edition includes our 2016-2017 Student Awardee's, our latest Graduates, our scholarship winners, and our travel award winners. As always, we are greatly appreciative of the generous donations of our alumni and our emeritus faculty for helping us provide such a rich experience for our students.

This year our external grant funding reached its highest level in the department's history with new awards being received this year by Dr. Craig Bayse, Dr. Pat Hatcher, Dr. Peter Bernath, Dr. Nancy Xu, Dr. James Lee, Dr. Lesley Greene, Dr. Guijun Wang, Dr. Erin Purcell, Dr. John Donat and Dr. Jingdong Mao. In addition, both Dr. David Courson and Dr. Andrew Wozniak received internal grants from the university for $20,000 to supplement our ever expanding undergraduate research program.

Finally, thank you to Kristi Rehauer for publishing Periodic Trends, and to Alicia Herr and Tammy Subotich for their editing contributions. Congratulations to both Kristi, our Graduate Program Assistant, and Janice Moore, our Office Manager, in celebrating their work anniversaries this month.

There is also a lot more in this issue, so read on and enjoy!

Sincerely,

John Cooper, Chair

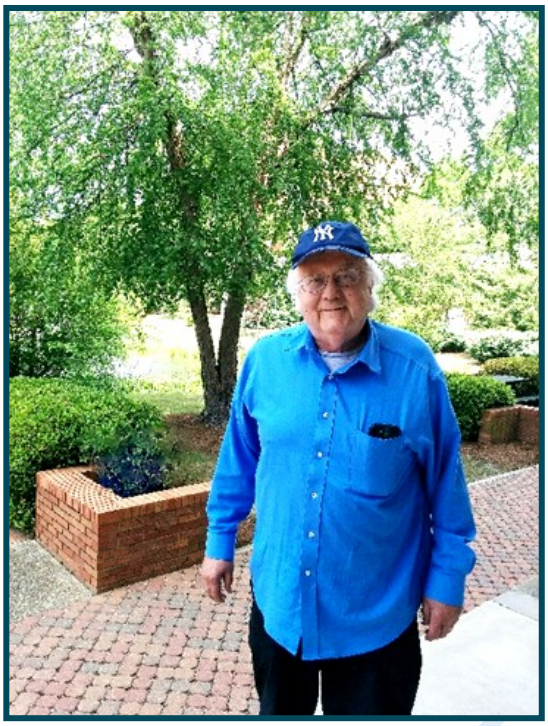
Retirement of Dr. Kenneth Brown

After serving on the Faculty at Old Dominion University for 35 years, Professor Kenneth Brown has announced his retirement effective June 2017.

Dr. Brown received a B.A. in Chemistry from Syracuse University and a Ph.D. in Chemistry from Brown University. He joined Old Dominion as an associate professor of Chemistry in 1982, achieved the rank of professor in 1988. Recognition of his accomplishments in teaching, research and service include the ODU Faculty research award, NASA-Langley Co-Inventor of the year (twice), an Invention of the year award from Popular Science Magazine as well as two technology transfer awards from both the federal laboratory consortium and NASA-Langley.

Dr. Brown has served as a major research advisor for eight masters and doctoral students at ODU. He also served as co-advisor for a doctoral student from the College of William and Mary. Dr. Brown's administrative experience included a stint as Chair of the Dept. of Chemistry and Biochemistry from 1996 –2006. During that period the Ph.D. program in Chemistry was established.

Dr. Brown's research concerned catalyst development for the extension of the lifetime of gas lasers, the catalytic reduction of automotive emission and application of the developed materials as the active element in gas sensors. He has ten patents, 99 published papers and technical reports, received 20 grant and contract awards totaling over $5M, and made 109 presentations at scientific meetings or invited seminars.



Dr. Brown had many colleagues and friends throughout his 35 years. Dr. Bob Ake [chemistry professor retired in 2001 after 32 years with ODU] states:

As for Ken Brown and baseball he has always been a huge fan, mostly of the Yankees, but of baseball in general. He has attended spring training games in Florida with his mother-in-law who by her admission is also a big baseball fan. Ken and his wife and I sneaked away from an ACS meeting in San Francisco to see a ballgame in Oakland. And although the Cardinals are my team and in the National League at that, he has hopped in the car with me and ridden to Philadelphia to see a Cardinals' doubleheader that lasted late into the night prior to a long drive home. Locally we've tried to catch a Tides game most every year. Since I've retired, Ken comes to Panera for lunch to talk baseball with me and Dr. Charlie Bell [chemistry professor retired in 1997 after 35 years with ODU], a die-hard Red Sox fan. All three of us struggle to get through the months between the World Series and Spring Training. Those luncheon discussions and debates help a lot.

New Assistant Professor

Dr. Erin Purcell

Dr. Erin Purcell joined the Department of Chemistry and Biochemistry as an Assistant Professor in July, 2016. Raised in coastal Maine, before attending high school in Charleston, South Carolina, she has a connection to the ocean that gives Norfolk an immediate sense of home. Dr. Purcell received a BS/MS degree in Biophysics from the Johns Hopkins University where she performed undergraduate research in the lab of the preeminent crystallographer Eaton "Ed" Lattman.

She then worked for two years under the guidance of Keith Moffat, the developer of time-resolved x-ray crystallography, at the University of Chicago before enrolling in the graduate program in Biochemistry and Molecular Biology there. Her graduate work was in the lab of Sean Crosson who blends structural biology and biochemical approaches with microbiology to study the intracellular signaling in *Caulobacter crescentus*. Upon completion of her doctoral work, Dr. Purcell joined the laboratory of Rita Tamayo at UNC Chapel Hill applying her skills in dissecting mechanisms of signal transduction in bacteria to a new exciting model system, *Clostridium difficile*. Poorly studied until very recently, *C. difficile* is the most common hospital acquired infection in the US and much of the developed world. It is responsible for more than 30,000 deaths and billions of dollars in health care expenditures annually in the United States alone.

Now, in her first independent position, Dr. Purcell is examining how the stringent response of *C. difficile* functions to protect the bacteria during times of stress, including antibiotic treatment, and how it can be manipulated to make the bacteria more susceptible to existing treatments. The lab has grown rapidly. Joining her in this work are three graduate students, two undergraduates, and a research professional. *C. difficile* is an anaerobic bacteria, and gets its name due to the difficulty of working with it in the laboratory setting, so the laboratory is outfitted with an anaerobic chamber to facilitate this work. The laboratory brings to bear a swath of techniques from traditional biochemistry to novel approaches for electrical impedance and light microscopy to understand how this pathogen responds to its environment and affects its host. Not straying far from her roots, the lab will also study the structure-function relationship in several enzymes critical to the stringent response pathway.

When not working Dr. Purcell can be found spending time with friends and family or immersed in a good book.

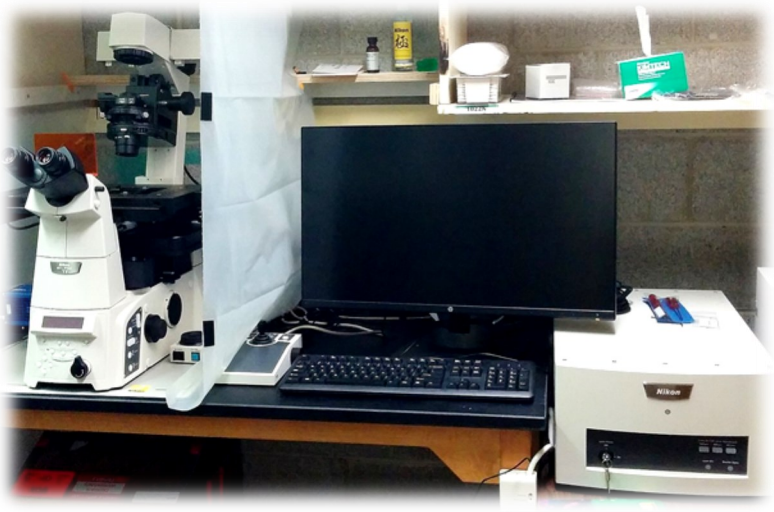
New Research Scientist

Dr. David Courson

Dr. David Courson is a microscopist and molecular biologist who joined the Department of Chemistry and Biochemistry in September of 2017 as a research scientist. Born in Germany, this military brat says wherever his pillow is, that's home. Dr. Courson earned his BA in German and Biophysics from the Johns Hopkins University where he performed undergraduate research under the guidance of Sarah Woodson, studying RNA folding and catalysis.

After undergraduate he moved to Chicago where he spent two years as a technician in the laboratory of Elizabeth Grove in the Department of Neurobiology at the University of Chicago Hospitals. There he focused on cortical map development and glioma development in animal models, while also moonlighting as a personal trainer at a downtown health club. He then undertook graduate studies in the laboratory of Ron Rock at the University of Chicago Department of Biochemistry and Molecular Biology, where he found he could couple his childhood loves of building things and problem solving with academic research. He successfully developed methods and hardware to integrate microfluidics, single molecule imaging, and optical trapping to iteratively assemble from single molecules and image specific, complex structures. Dr. Courson then performed two post-doctoral fellowships, the first was shared between several groups developing novel imaging reagents at Duke University before moving to the lab of Richard Cheney at UNC Chapel Hill studying the role of the actin-based motor protein Myosin-X in epithelial cells development and cancer transformation. While doing this he formed a collaboration with Dr. Erin Purcell studying how epithelial cells are affected by the human gut pathogen *Clostridium difficile*. He is carrying on this work today as a member of the Dr. Purcell's group.

In the past Dr. Courson was an avid endurance athlete, who captained his college running teams, participated in numerous triathlons, and rode a bicycle across the country as part of a fund raising ride for the American Cancer Society. Today, he is easy to spot arriving at work most days on his red LeMond road bike.



Nikon Ti-E Motorized Research-Grade Inverted Microscope

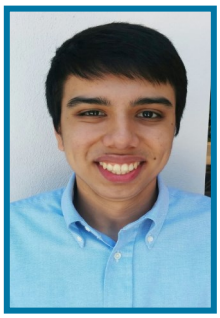
New Lecturer

Dr. Kalpana Mahadevan

Kalpana Mahadevan joined the Department of Chemistry and Biochemistry as a Lecturer in August 2016. She is no stranger to Old Dominion University however, as she has been working as an Adjunct Faculty member in ODU since Fall 2011.

After obtaining both her M.Sc. (Chemistry) and Ph.D. (Organic Chemistry) from Indian Institute of Technology, Madras, India, she carried out post-doctoral research in the Department of Organic Chemistry, Indian Institute of Science, Bangalore, India, in the laboratories of Profs. S. Chandrasekaran and Uday Maitra (1999 – 2001) , and also in the Department of Chemistry, Purdue University, Indiana, under Professor Alexander Wei (2001 – 2003).

2016-2017 Student Award Winners



Noah Evaristo
Outstanding Freshman
Chemistry Student

Abigail Barger
Outstanding Graduating
Senior Chemistry Student

Mike Miller
Outstanding Student
in Inorganic Chemistry

Brandon Hamel
Outstanding
Biochemistry Student

Andrew Benedict
Outstanding Senior Thesis

Brenden Wilkins
Outstanding Student
in Physical Chemistry

Andrew Evans
Outstanding Student
in Organic Chemistry

Congratulations

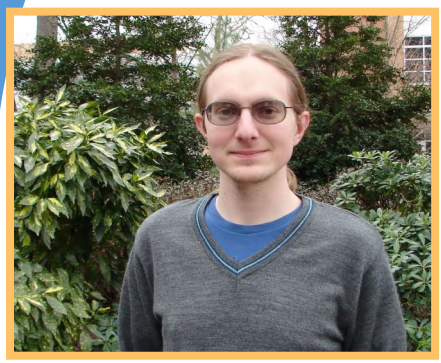
Kristen Bashaw
Outstanding Teaching Assistant

Paul Arcoria
Outstanding Student
in Organic Chemistry

Ashley Pullin
Outstanding
Graduating
Senior
Chemistry

Not Pictured:
Chenxi Luo
Outstanding Freshman
Chemistry Student & Out-
standing Analytical Student

2016-2017 Graduates



Eric Buzan
Ph.D. Chemistry—Summer 2017

Haitham Saeed
Ph.D. Chemistry—Fall 2016

Derek Waggoner
Ph.D. Chemistry—Summer 2017

Nicole DiDonato
Ph.D. Chemistry—Spring 2017

Consuelo Garcia
MS Chemistry—Summer 2017

Matthew Huff
Ph.D. Chemistry—Summer 2017

Pavan Cherukuri
Ph.D. Biomedical Sciences—Fall 2016

May 2017 Undergraduates

Graduate Student News

Dominion Scholars

The Chemistry and Biochemistry Department would like to recognize graduate students Ashley Shoaf and Dan Wang, for being chosen as College of Sciences Dominion Scholars.

The Dominion Scholar Fellowship is designed to provide support for two students in the Chemistry and Biochemistry Ph.D. program to spend full time in pursuit of their research and studies. The fellowship provides students with a stipend of $15,000 a year for two years (four semesters). Ashley and Dan were awarded this fellowship in the Fall 2016; the fellowships will be completed at the end of Spring 2018 .

Those interested in applying for the Fall 2018-Spring 2020 Dominion Scholar Fellowship should contact Kristi Rehrauer, Graduate Program Assistant — krehraue@odu.edu.

Van Norman Graduate Travel Award

The Van Norman Graduate Travel Award provides support for students in the Chemistry Ph.D. program to present their research at a national or international conference. The award is meant to supplement the advisor's contribution to travel expenses. Two awards of $450 are awarded each year. The 2016-2017 recipients were Raj Gurung and Kristen Bashaw. The deadline for the 2017-2018 award is July 31.

The award was set up in memory of Dr. John D. Van Norman who served as the chair for the Department of Chemistry & Biochemistry from 1979 to 1982, and again from 1988 until his death December 31, 1989. He received his bachelor's degree in chemistry from the University of Rochester in 1955, and his PhD in analytical chemistry from Rensselaer Polytechnic Institute in 1960. He was a former chemist in the Nuclear Engineering Department at Brookhaven National Laboratory.

Dr. Van Norman, prior to arriving at ODU, was a professor at Youngstown State University where he received their Distinguished Professorship Award in 1976. He also received the NASA-ASEE Summer Faculty Fellowship in 1987 and 1988 while at ODU.

He was a member and chair-elect of the American Chemical Society, Hampton Roads Section. He was a member of the American Association for the Advancement of Science and the Virginia Academy of Science.

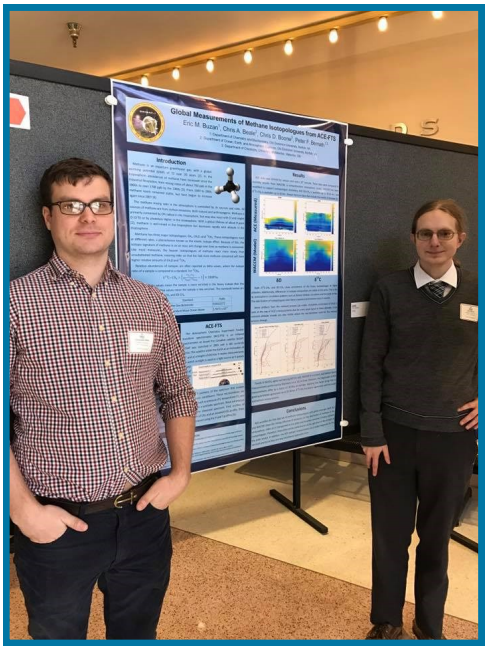
Graduate Student News

External Presentations

Chemistry Ph.D. student Meghan Warden recently gave two presentations. One presentation was at the Virginia Academy of Sciences conference at VCU and the other at the Washington Area NMR Group meeting at NIH. Her presentation is entitled "Structure of the RNA Stem Loop that Circularizes the Picornavirus Genome"

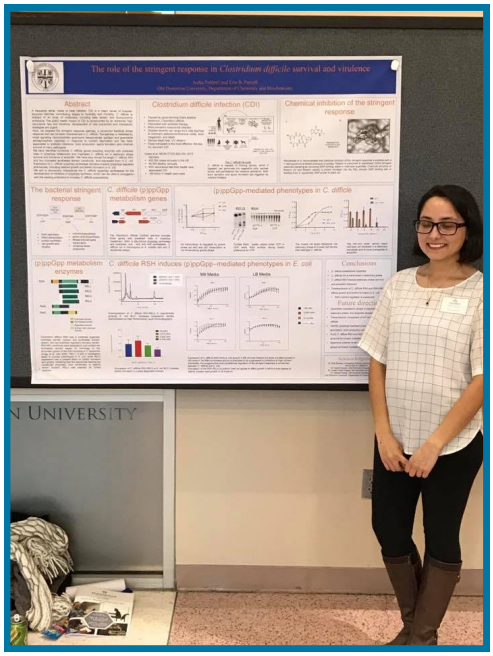
The *Picornaviridae* family are small RNA viruses which are responsible for a diverse number of diseases and conditions ranging from polio to the common cold. Picornaviruses replicate in a highly conserved mechanism centered around the RNA cloverleaf (5'CL) located at the 5'untranslated region in the genome. The 5'CL consists of three stem loops (B, C, D) and one stem (A). The secondary structure of the 5'CL is mostly only presumed, and the tertiary structure is completely undetermined. This presentation will focus on the production and structure determination of the stem loop B (SLB) region of the 5'CL using NMR spectroscopy. The solution structure of SLB provides insight into the process of picornavirus replication and will enable further studies for the determination of the entire cloverleaf structure.

Graduate Student Achievement Day



Thursday, March 23, 2017, the ODU Graduate School hosted its annual Graduate Research Achievement Day. Chemistry Ph.D. students Eric Buzan, Dong Liu, Astha Pokhrel, and Meghan Warden presented posters .

In addition to the poster presentations, Chemistry Ph.D. students Meghan Warden, Asia Poudel, and Andrea Korell gave oral presentations along with Biomedical Ph.D. students Martha Johnson and Preeyaporn Songkiatisak.



Allen K. Clark Endowed Scholarship in Chemistry

The **Allen K. Clark Endowed Scholarship in Chemistry** is given to a full-time chemistry major, preference to an affiliate of the American Chemical Society. The undergraduate student must maintain a GPA of at least 3.0. We'll announce the 2017-2018 winner of the award in the next newsletter issue.

The award was established in memory of Dr. Allen K. Clark, professor emeritus of chemistry and biochemistry at Old Dominion University. He died March 7, 2012. Dr. Clark received an A.B. from Catawba College and won the Whitener Medal, the top award the school presented to students. Immediately after receiving a Ph.D. in organic chemistry from the University of North Carolina in 1960, Clark joined the faculty of Old Dominion as an assistant professor. He was promoted to associate professor in 1962 and full professor in 1966.

He served ODU as acting chair and the chair of the Department of Chemistry from 1968-72. He then moved to the Provost's Office, where he served as assistant provost from 1972-74, associate provost for instruction from 1974-79, and vice provost from 1979-80. From 1980-83 he was the deputy vice president for academic affairs.

Dr. Clark played a pivotal role in the organic chemistry sequence as well as the freshman college chemistry course. He annually received some of the highest ratings from undergraduate students and was active with undergraduate organizations on campus. In 1993, he received the university's Alan Rufus Tonelson Faculty Award.

He enjoyed his association with his students, serving as advisor to the Pre-Med and Pre-Dent clubs, the student affiliates of the American Chemical Society, and the Circle K Club of Kiwanis. He also served as university marshal from 1986-98. He became a professor emeritus in 1998.

Andrew Benedict, a May 2017 graduate, was awarded the Allen K. Clark Endowed Scholarship in Chemistry for the Fall 2016-Spring 2017 academic year. Andrew will start our Ph.D. program in the Fall 2017 semester.

New Grant Funding

In addition to numerous ongoing funded research projects, the Department of Chemistry and Biochemistry received the following new awards during the 2016-2017 academic year. These funds are used to carry out research in the department at both the graduate and undergraduate levels. Congratulations to the following professors for their contributions to an unprecedented year in research activity:

Bayse, Craig A.

Bayse, Craig A (Principal), "Molecular Modeling of the Activity and Inhibition of the Thyroid Enzyme Iodothyronine Deiodinase," Sponsored by National Institutes of Health, Federal, $432,829.00. (January 1, 2017 - December 31, 2019).

Bernath, Peter

"Absorption Cross Sections for the Outer Planets," Sponsored by NASA, Federal, $437,071.00. (July 1, 2016 - June 30, 2019).

"Spectroscopy for Super-Earth Atmospheres," Sponsored by NASA, Federal, $366,742.00. (April 1, 2016 - March 31, 2019).

Donat, John R.

"ODU/VDEQ 16 CBP WATER QUALITY," Sponsored by Virginia Dept. Environmental Quality, State, $616,500.00. (July 1, 2016 - June 30, 2017).

Greene, Lesley H.

Lee, James (Principal), "Designer Algae Biotechnology Risk Assessment," Sponsored by USDA - NIFA, Federal, $917,210.00. (September 1, 2016 - August 31, 2019).

Hatcher, Patrick G.

"The chemistry of lignin's photochemical transformation in the environment: implications for global carbon cycling.," Sponsored by National Science Foundation, Federal, $330,000.00. (August 2016 - September 2019).

Lee, James W.

Lee, James W (Principal), Greene, Lesley H (Co-Principal), "Designer Algae Biotechnology Risk Assessment," Sponsored by USDA/NIFA Grant Award Number: 2016-33522-25624, Federal, $458,605.00. (September 1, 2016 - August 31, 2019).

Mao, Jingdong

"Applications of NMR spectroscopy in agriculture-research for tea and organic matter," Sponsored by Department of Education, Anhui Province, China, Other, $210,000.00. (January 1, 2016 - January 1, 2019).

"Investigations of oil shale using advanced solid-state NMR," Sponsored by USGS, Federal, $10,000.00. (2016 - 2018).

Purcell, Erin B.

Purcell, Erin B (Principal), "The Role of the Stringent Response in Clostridium difficile Survival and Virulence," Sponsored by NIH/NIAID, Federal, $250,000.00. (July 14, 2016 - June 30, 2018).

Wang, Guijun

Wang, Guijun (Principal), "NOVEL LIGANDS FOR NON-PRECIOUS METAL," Sponsored by Boehringer Ingelheim, Private, $35,000.00. (August 31, 2016 - September 30, 2017).

Xu, Nancy

Xu, X. Nancy (Principal), "New Photostable Nanoprobes for Real-time Imaging of Single Live Cells," Sponsored by NIH, Federal, $465,000.00. (April 2016 - April 2019).

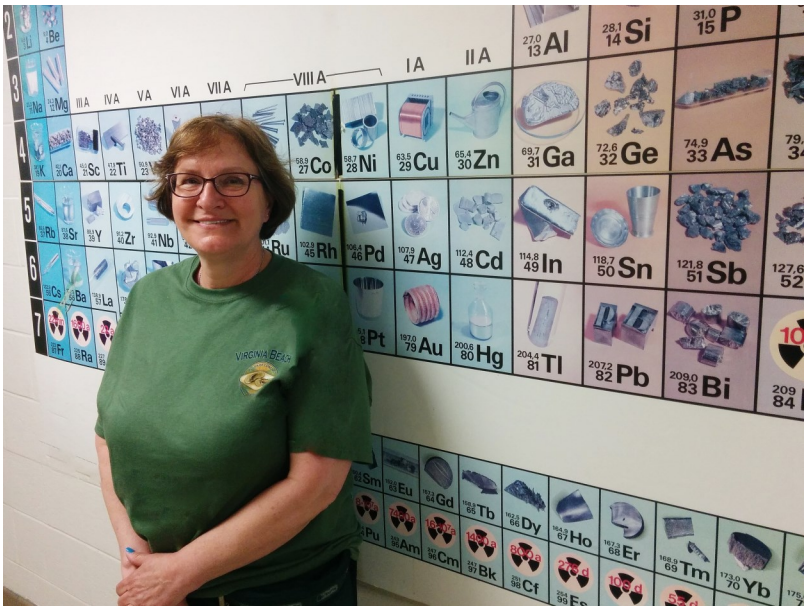
Alumni News

An alumnus, Janice Kiss, from the 1980's, dropped by my office this past month to ask about faculty who were here during her undergraduate career at Old Dominion University. Since I've been here thirty five years I was able to bring her up to date on her former professors. Janice told me she started out in Marine Science at ODU and then switched to Chemistry. She was happy to have the mentorship of Dr. Patricia Pleban, clinical chemistry, because she was "the only woman in a man's world" and "if she could do it, then I could do it". I took Janice's photograph so we could use her story in our first newsletter. It was very timely of her to drop by!

-Alicia Herr, Department Manager

Janice [Kiss] Abdallatif

After graduating I went back up north to work at Bar Pharmaceutical for a few years, and also DuPont, and Merck. I ended up at American Cyanamid, "Lederle" in Pearl River, New York. Stayed there for 17 years until Pfizer took over and sent us on our way. At that time Lederle had changed the name to Wyeth-Aurst, then Wyeth.



After Wyeth, I went into biotechnology and worked at Dendron Inc. for a couple of years. Dendron moved down south to Georgia and I started to look again for another permanent position. I started to do some consulting work at Merck in Summit, New Jersey, and Boehringer-Ingelheim in Connecticut for a couple of years.

Presently, I'm working at a smaller pharmaceutical company in New York. I evaluate old analytical methods and bring these older methods up to USP standards by writing protocols, initiating the analytical work, and then writing the reports.

Personally: I'm a widow with two boys in their early 20s. My older son graduated from Maritime College as an Electrical Engineer and my younger son is currently enrolled at our local community college. We live up in Nanuet, New York, in Rockland County.

Alumni - undergrads and grads - please email your story and a photo to Alicia at aherr@odu.edu

A.C.S. News

This Spring (April 2-4), four Senior Thesis Students: Paul Arcoria, Andrew Benedict, Paige Kozlowski, and Ashley Pullin attended the 253rd American Chemical Society (ACS) National Meeting at the Moscone Convention Center in downtown San Francisco, California. Students selected for a senior thesis research project represent majors who have maintained at least a 3.3 GPA in their major coursework and demonstrate quality laboratory skill which culminates in their final written senior theses and departmental seminar. In addition, the students submitted their research project abstracts to the national meeting and presented their research results in a formal poster presentation at the ACS National Meeting. The students' projects represented the areas of Computational Chemistry, Organic, Inorganic Chemistry, and Environmental Chemistry. For most of the students, this was their first experience across the country and to a national science conference. They took full advantage of attending seminars of their fields of interests, the vendor exposition, including meeting the ACS moles, networking with fellow undergraduates and prospective graduate school mentors, and of course, the exciting city of San Francisco! The trip was graciously funded by the Dr. Robert Picone Undergraduate ACS Conference Travel Award.

ACS Chemistry for Life®

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Safety By Subotich

Safety in both the teaching and research labs has always been a top priority of mine as the departmental safety officer. Faculty, staff, and grad students should all strive to enforce and uphold the safety rules not only set by our department but also what is dictated through our campus Environmental Health and Safety (EH&S) office. EH&S offers a variety of safety courses for those working in research environments. EH&S website is www.odu.edu/ehs which provides valuable safety information. They offer Fact Sheets on compressed gas handling, storage, and disposal; sharps use & disposal; chemical storage & compatibility; OSHA labeling of chemicals; and many more. Chemical safety data sheets (SDS) are available through the EH&S website. MSDSonline is a commercial management system that eliminates the need to retain and manage paper ("hard") copies of SDSs. Make yourself aware of the properties of chemicals you handle – utilize the ODU EH&S site and/or MSDSonline.

If you have any questions regarding the safety in your area, please don't hesitate to contact me.

Science IS fun - however we must stay safe!

Tammy Subotich
Chemical Laboratory/Safety Manager
subotich@odu.edu
757-683-4992

Exciting New Equipment

Sizer Analyzer

Brookhaven's NanoBrook 90Plus Zeta instrument combines NanoBrook 90Plus and NanoBrook ZetaPlus instruments into one versatile package for routine sizing and zeta potential analysis. It employs Dynamic Light Scattering (DLS) for particle sizing and Electrophoretic Light Scattering (ELS) for surface charge evaluation of particles and molecules. The BI-ZTU Autotitrator add-on allows analysis of zeta potential as a function of pH, and automatic determination of the isoelectric point of colloidal materials.

Sample type:

Size analysis: nanoparticle and colloidal-sized materials, in any non-absorbing liquid.

Zeta potential: nanoparticle, polymer and colloidal-sized materials, suspended in any non-absorbing liquid, with relative permittivity (dielectric constant) > 20 and viscosity < 5 cP.

Size analysis: 0.3 nm to 6 µm, depending on refractive index and concentration.

Zeta potential: 1 nm to 100 µm, sample dependent

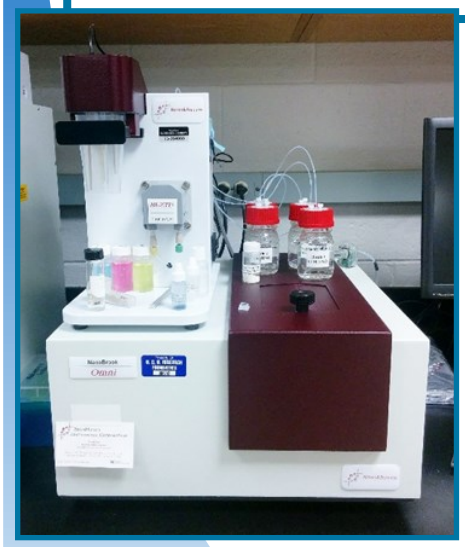
Key features

NanoBrook 90Plus Zeta

- Rapid and accurate particle size distributions for samples with wide ranging sizes (0.3 nm to 6 µm)
- Temperature control, -5 °C to 110 °C
- Multimodal & unimodal size distribution software

Zeta Potential

- Zeta potential in low salt aqueous solutions/suspensions
- No cell alignment or calibration
- Built in automatic procedures and parameters SOP



Gas Chromatograph-Mass Spectrometer (GC-MS)

Shimadzu's GCMS-QP2010SE with an EI ion source is an advanced, easy to use gas chromatograph-mass spectrometer.

Key features

- Column flow up to 4 mL/min
- Enables direct sample injection (DI) and easy expandability without any changes to the GC
- Oven temperature up to 450 ^{o}C
- Injector port temperature up to 450 ^{o}C
- AFC pressure: 0 to 970 kPa
- Mass range: m/z 1.5 – 1000

Additional New Equipment

ALPHA FTIR Spectrometer – Attenuated Total Reflection (ATR) – Bruker Optics

ALPHA's Platinum ATR single reflection diamond ATR module is a compact, easy to use instrument for routine FTIR analysis.

Key features

* Spectral range: 375 – 7500 cm^{-1}
* Spectral resolution: better than 2 cm^{-1}
* Detector: Room temperature DTGS
* Temperature range: 18 – 35 ^{o}C

Potentiostat/Galvanostat

The Stanford Research Systems's Potentiostat (EC301) is a research-grade instrument. The Windows software (SRSLab) has routines for all major electrochemical experiments.

Key features

*The SRSLab software supports all the major electrochemical techniques including voltammetry, pulsed waveforms, step techniques, and EIS.

*The EC301 has an open command set which allows scientists to write their own unique waveforms and even write custom software.

*Built-in temperature measurement.

*Supports scan rates up to 10 kV/s for Fast Cyclic Voltammetry.

Inductively-Coupled Plasma Mass Spectrometer (ICP-MS)

Thermo Scientific ELEMENT XR high-resolution inductively-coupled plasma mass spectrometer (ICP-MS). The instrument is coupled to a dedicated Elemental Scientific SeaFAST SP3 sample introduction system, including an Apex-Q desolvation nebulizer and an ACM membrane desolvation module. This state-of-the-art magnetic sector HR-ICP-MS instrument combines both SEM and Faraday type detectors, thereby allowing the determination of elemental concentrations in solution over a dynamic range of 12 orders of magnitude, with a sensitivity of up to 200 million counts per second/part per billion, with potential limits of detection below one part per quadrillion in solution concentration. Even lower detection limits and a greater capability to deal with complex sample solution matrices are afforded by the addition of the SeaFAST SP3 sample introduction and Apex-Q/ACM desolvation systems, which provide options for direct injection of sample solutions; for in-line preconcentration and separation of elemental analytes from sample matrix (e.g., the ability to determine trace elements in high-solute matrices such as seawater or mineral digest solutions); and for determination of hydride forming elements using the hydride generation system. The instrument is located in COSMIC. There is a fulltime technician.

X-ray diffraction facility now available for both undergraduate teaching and researchers. The facility, located in COSMIC, is shared by Physics and Chemistry.

Norfolk Harborfest - Parade of Sails
Passed by ODU on Elizabeth River - June 9

Marco, new visiting scholar from Spain, Derek, and Sarah wait for the ships to arrive. All are with Dr. Pat Hatcher's research group. Derek Waggoner is graduating with his Ph.D. this August. Sarah Ware is a Masters student.

BAP Union - training ship of the Peruvian Navy

U.S. Coast Guard Cutter Eagle - above - training cutter for future officers of the U.S. Coast Guard

BAE Guayas - below - sail training ship of the Ecuadoran Navy

Lola admiring the passing ships. She also admired, up close and personal, a pile of seaweed at the ODU Sailing Center boat ramp. Lola is a four and a half month old golden retriever puppy belonging to Kristen Bashaw and her fiancé, Robert Burns. Kristen is a Ph.D. grad student in our department with Dr. Guijun Wang. Robert is a Civil Engineering undergraduate working for Tammy in the stockroom this summer.

Our next issue will be published in October 2017.
Let Kristi know what you would like to see in future issues.