

Elements

FALL 2009



Photo by P. Codding

Visit us! But don't worry about making travel plans...

...UVic Chemistry has maintained a website for over 15 years. Since its inception the site has evolved continually and has become a valuable resource for students, scientists, and the general public – and it's getting even better! Dr. Scott McIndoe is revamping the site, and the rebuild will be completed this Fall. There will be many new features, such as:

- new ways to search research areas so that interdisciplinary projects are not lost in the mix;
- a Twitter feed to provide snippets of news such as recent publications, awards, and fun “everyday” things that are happening in the Department;
- and, a new alumni page where you can get “linked-in”, find out

about upcoming alumni events, and keep in touch with the Department and fellow alumni.

So take a(nother) look at <http://www.chemistry.uvic.ca> - fill-in the Keep In Touch form; get LinkedIn with UVic Chemistry faculty and alumni to build your network; re-view what's new in teaching and research; and most importantly - send us your feedback!

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Students from 4 local high schools visited April 21 and April 23, 2009 to take part in a pilot High School Outreach program offered by the Faculty of Science. Visiting Students from grades 11 and 12 were given the opportunity to tackle university-level experiments in Biology, Biochemistry, and Chemistry. They met the challenge with ease, and had a wonderful time in the process. Feedback from both teachers and students was very positive so plans for continuing this program into the future are already underway. Thank you to all who helped develop and deliver this excellent program!



The third annual Experience UVic was held on May 23, 2009. The Faculty of Science used the Wright Centre as home base this year, providing a range of displays, hand-on activities and lectures for invited

high school students and their parents to get an idea of what UVic Science has to offer. Once again, Chemistry staged a “Chemistry Pentathlon” - a popular and fun choice for the crowds. Thank you to everyone who helped out with this important recruiting event!

Spring convocation took place June 15 – 18, 2009 with a large number of students receiving chemistry degrees at all levels, as follows:

- Bachelor of Science in Chemistry (Honours Program with Co-op option):** Kevin Gar Ming Kou and Eric William Price.
- Bachelor of Science in Chemistry (Honours Program):** Hannah May Burton, Gregory Laird Gibson, Gisella Jill Ramon-Brown, and Logan Douglas Smith.
- Bachelor of Science in Chemistry (Majors Program with Co-op option):** Ryan Keith Glendinning, Janet Elizabeth Lee, Sara Michelle Mooi, Hang Thanh Thi Nguyen, and Kris Hansen Thesen.

Bachelor of Science in Chemistry and Biochemistry (Double Major): Kylie Liebre Young Baerg.

Bachelor of Science in Biochemistry and Chemistry (combined degree): Chelsea Wilson.

Bachelor of Science in Chemistry and Earth and Ocean Science (combined degree): Michael Stanley Turner

Bachelor of Science in Chemistry (Major) and Mathematics (Minor): Carly Ann Morris.

Bachelor of Science in Chemistry (Major) and Russian (Minor): Kevan Benjamin Ward.

Bachelor of Science in Chemistry (Major) and Business (Minor): Laura Shell Wells.

Bachelor of Science in Chemistry (Major): Daniel Augusto Biagi, Michael Glenn Brant, Christopher Rodney Lwon Chapman, Anthony Andrew Costantino, Carline Joy Côté, Shaun Patrick Frias Craveiro, Amarpaal Singh Dhaliwal, Christopher Chase Fisher,

“where progress is made by collaboration and debate...”

Research News

Professor Frank van Veggel, the Canada Research Chair for Supramolecular Photonic Materials, has been with UVic Chemistry since 2002. Within a short seven years, Frank has established an outstanding research program focused on the synthesis, characterization, and application of nanoparticles, specifically quantum dots and lanthanide based ions. Applications range from quantum computing and telecommunication, to bio-imaging and therapy. (See <http://www.chemistry.uvic.ca/fvv.html>)

Frank took some time to explain why he enjoys being a scientist and how he feels about scientific research in a university environment...

What do I like about science?

“There are many aspects of science that are very appealing to me. First, it is intellectually very challenging. Nature doesn’t easily give up its secrets, and when it does, our greater knowledge simply opens doors to more mysteries to unravel. Our understanding is never complete. Sometimes, new and better instruments give us new parts of the puzzle and we have to revise our testable models; sometimes someone will see the challenge from a different angle, opening our eyes to new possibilities. Another exciting aspect of science is that results are often not what are pre-

dicted, so we’re always ready for serendipitous clues – sometimes the most useful of all. Yet another is that it can be, at least for me, a combination of intuition and “hard” knowledge. My “intuition” is based on chemical, physical, and mathematical principles, I think. Last but not least, science is a collective enterprise where progress is made by collaboration and debate. I love to debate, as you may have noticed.”

What do I like about scientific research in a university environment?

“Probably foremost the fact that I can decide to change my research without too much hassle. It is basically just a matter of convincing financiers (and reviewers). So, I can follow my nose, a thing I could not do when I worked for a chemical company in the Netherlands after my PhD. I also very much like that I can work with people in my lab who know, after just a couple of years, more about the topic than I. So, they teach me! (Don’t get me wrong here there are still things I have to teach them.) In addition, I can decide with whom to collaborate, which is very rewarding because there are many very smart people out there. I also enjoy being able to travel to conferences and meetings, seeing many parts of the world and getting to know many very nice people in the process.”

Is all well here?



“Actually, no. One thing I would like to see is more undergraduates in the research labs in their second or third year. They get excellent lab skills through our undergrad lab program, but have not yet had the chance to apply them in a research laboratory. I have witnessed many undergraduates really getting a kick from real research. Often things do not work as planned, but when they persist and finally get things to work, it is a major achievement. It’s also a great way to discover who has the stamina for research, because frustration is part of the job, and in the context of research “frustration” is a good thing.”

Welc

Shubha Hosalli joined the June 22, 2009 as our new Shubha, an Electronics Engineered Professional, comes with a background in electronics and most recently employed as an Engineer with Car



Special Events, continued...

Nicholas James Forrester, Mason Kyle Gary, Caitlin Wren Caledonia Groves, Ahwon Han, Ashley Elizabeth Kereszti, Arah Keshavarz-Rahbar, Robert Mark Lavoie, GyuChun Lee, Brandin Justin Lilgert, Yuri Lisavin, Patricia Carmen Mayang, Kyle Andrew McMorrin, Connor Louis Neilly, Vu Xuan Nguyen, Rajinder Singh Nirwan, Ryan William Orr, Colin Michael Patrick, Kristina Jane Sequeira, Jennifer Aili Miller, Brent Robert Lloyd Shillito, Camille Rose Tamboline, Christine Carolyn Tardif, Kiren Devina Elizabeth Vohora, Laura Shell Wells, Felix Yiu Hang Wong, Xinnan Zhao.

Master of Science in Chemistry: Simon Birnie-Lefcovitch. “In Situ Spectroscopic Studies of Cysteine Adsorbed on Silver Electrodes.”

Master of Science in Chemistry: Marie-Pascale Manseau. “Lanthanides-based Upconverting Biolabels in the Near-infrared.”

Doctor of Philosophy in Chemistry: Eric Der...
denyl Complexes in P-C Bond Forming R

Doctor of Philosophy in Chemistry: Yunyon...
philicity-Driven Self-assembly of Quantu

Congratulations to all of our new alumni! B



There was a “Cake...
to celebrate the pr...
Sandy Briggs was a...
and Scott McIndoe...
tions to both!

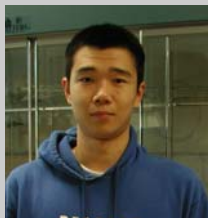
**On Sunday, July 2...
Beckwith Park for**

Awards

Service:

Jonathan Chui, a PhD student with Dr. Tom Fyles, received a 2009 Blue and Gold Award in April.

“These awards are presented annually to students who make significant contributions to promoting and improving the quality of life on the UVic campus and in our community.” Jonathan was recognized for devoting



“hundreds of volunteer hours to UVic’s peer-helping program, providing one-on-one peer counseling to students on personal and academic issues. He also helps run the program’s weekly coffeehouse and maintains the peer helpers’ newsletter. In addition he is a volunteer with the NEED Crisis and Information Line.” (The Ring, May 2009) Jonathan has also participated in the UVic Speakers Bureau, has been the Chemistry rep with the UVic Graduate Student’s Society, and numerous other volunteer activities. Thank you for everything Jonathan and congratulations on this well deserved recognition!

Teaching:

Dr. Penelope Codding received the 2009 Faculty of Science Award for Teaching Excellence on September 15, 2009.

An outstanding teacher and educational innovator,

Penny has taught chemistry at all levels since becoming a regular member of the Department in 2003. Students and colleagues alike describe her as “inspiring”, “caring”, “innovative”, “intelligent”, and “charismatic” – just a few of the glowing words used. Her renewal of the first year curriculum has led to higher than

ever before student success rates, her teaching skills in upper level courses inspire students to pursue graduate studies, and her innovative teaching ideas have been adopted by and have become standard practice with many of her Chemistry colleagues. A perfect description of “teaching excellence” to be sure! Congratulations on this much deserved recognition Penny, and thank you for your amazing contributions to learning and teaching at UVic!

Research ;

Three faculty in the Chemistry Department – Alexandre Brolo, Robin Hicks, and Scott McIndoe – have each been awarded an NSERC Discovery Accelerator Supplement.

The Discovery Accelerator Supplement (DAS) Program provides substantial and timely resources to a small group of outstanding researchers who have a well-established research program, and who show strong potential to become international leaders in their respective area of research. Each supplement is valued at \$120,000 over three years and allows recipients to compete with the best in the world.



DAS awards are allocated based on the results of NSERC’s annual Discovery Grants competition. Out of over 2,200 researchers who received funding in the 2009 Discovery Grants competition, 100 received DAS awards. Of the 100, only 7 were given to chemistry faculty across the country! The three chemistry recipients this year also doubles the total num-

ber of DAS supplements received at UVic over the lifetime of the DAS program (2007 – present). Congratulations to Alex, Robin, Scott and their research teams for this fantastic recognition of their potential! (Text by Robin Hicks; Photo by Cathy Rzeplinski)

Dr. Alexandre Brolo has been awarded an NSERC Inter-American Collaboration in Materials Research (CIAM) grant in the amount of \$60,000 per year for 3 years.

His project, titled “An Inter-American Collaboration for the Development of Plasmonic Substrates” will involve collaborations with researchers from Brazil (University of Sao Paulo) and Argentina (University of Buenos Aires). They will be investigating the fabrication of metallic nanostructures and their application in enhanced spectroscopy for the possible development of new types of highly sensitive chemical sensors.

Dr. Alexandre Brolo along with co-applicants Dr. David Sinton, Dr. Geoff Steeves, Dr. David Steuerman, and Dr. Frank van Veggel have been awarded an NSERC equipment grant in the amount of \$150,000 for a Materials Deposition System.

This instrumentation will be used to integrate new materials and nanostructures within the areas of biosensing, microfluidics, molecular electronics, and photonics.

Dr. Robin Hicks received a \$100,000(US) grant from the Petroleum Research Foundation to pursue his project, “Nindigo: indigo diimines as a new functional bridging ligand family”. The organic molecule indigo has been used as a dye for thousands of years (it’s the chemical that makes your blue jeans blue!) but the use of indigo as a ligand for inorganic complexes has not been explored. The Hicks group has discovered a way to

Continued pg 4...

ome!

Chemistry Department on
w Electronics Technician.
ngineer and Microsoft Certi-
s to us with an impressive
s and computers. She was
s a Quality Assurance Test
manah Technologies

trah. “Probing the Reactivity of Ruthenium In-
reactions.”
g Guo. “Synthesis, Characterization and Amphi-
m Dots with Mixed Polymer Brush Layers.”
Be sure to stay in touch.

e in the Corridor” event on Friday, July 10th
omotions of two of our faculty members -
awarded continuing status as a Senior Instructor
promoted to Associate Professor. Congratula-

6, 2009 close to 90 people got together at
the annual Chemistry Barbecue. Even

though it was one of the hottest days of the year, the little ones had a great time running races while many of the big kids competed in the “Softball Challenge” (won this year by the “student” team!). Everyone had a wonderful time! Thank you to all who contributed food, barbecues, time, muscle, and good cheer to bring it all together.

We started off the 2009/2010 school year with a Welcome Back lunch on September 9.

Chemistry personnel took a short break from the “first day craziness” for a delicious lunch and a chance to welcome our new personnel – graduate students: Zohrab Ahmadi, Nilgun Akkus, Chris Chapman, Jordan Cramen, Cerize Da Silva Santos, Kevin Daze, Cooper Johnston, Jingwei Luo, Paria Parvizi, Jennifer Pape, Thomas Pinter, Kourosch Purdavaie, Chiara Valsecchi, Milton Wang, Yu Wang, and Xiaoqiang Zhang; and staff: Shubha Hosalli (electronics technician) and Rhy Henderson (teaching assistant). Welcome and best wishes to all new recruits!



Awards continued

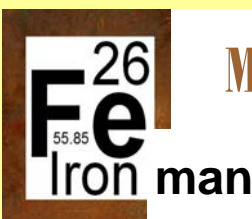
change the structure of the indigo core into a dimine (the "Nindigo") which permits metal complexes to be made. Further pursuits will open up a number of new avenues in which the colour and electron transfer chemistry of the Nindigo ligands can be utilized in electronic, catalytic, or textile applications.

Dr. Scott McIndoe received a \$100,000(US) grant from the Petroleum Research Foundation to pursue his project, "Prising Open the

Black Box: Probing the Nature of Methylaluminumoxane Using Mass Spectrometry". The McIndoe group will be trying to solve a 30-year old mystery in organometallic chemistry: the identity of the compound that is responsible for activating the catalysts used to make polyethylene and polypropylene. Currently, a huge excess of material – 100 to 10,000 times – is used, which means that these plastics often have significant aluminum content. They're looking to find ways of reducing this excess, thereby saving money,

cutting down on waste and minimizing contamination.

Dr. Frank van Veggel has been awarded an NSERC I2I grant in the amount of \$64,500 to study gallium and indium nitride nanoparticles for blue polymer-based light-emitting diodes. He plans to make nanoparticles that show "true" blue electroluminescence, and to test them in prototype commercial devices.



Matt Henderson finishes the Subaru Ironman Canada!

Matt Henderson somehow found time to train for the Subaru Ironman Canada while writing up his PhD thesis this summer. The event was held on August 29th in Penticton, BC. In 33 degree heat he swam 3.8 km, cycled 180 km, and ran a marathon! Finishing in just over 12 hours and placing in the top half of the field, he crossed the finish line with a smile on his face.

Congratulations on this outstanding achievement Matt!

A graduate student with Dr. Scott McIndoe, Matt will be defending his PhD dissertation in November.



Beautiful Babies!

Adams: Sean and Anita are pleased to announce the arrival of their third child, Shaye, born September 22, 2009. A little sister for Aja and Gabe, Shaye entered the world at 8lb 1oz.

Paci: Irina and Jeff are delighted to announce the birth of their daughter, Anna Julia, born August 22, 2008.



Anna Paci

Sacci: Robert and Danielle welcomed their beautiful little daughter, Antonia Maureen, on August 20, 2009. Antonia was 8 lb, 9 oz at birth.

Wulff/ Sirk: Marian arrived December 20, 2008, a daughter for thrilled parents Jeremy and Aislinn. Now 10 months old, Marian enjoys crawling up the stairs in pursuit of their (very gentle) cat!

Zhang/ Zou: Jin and Pengrong are pleased to announce the birth of their son Brandon. Brandon was born June 6, 2009, weighing 8 lb 1oz.



Photo by P. Codding

An Introduction to Quantum Mechanics

It can be so hard to measure an eigenstate. But with an eigenfunction - calculate! Try to Hamiltonian operate: With Dirac's Bra-Ket notation, Sandwiched total energy determination, Just use the Schrodinger equation: (And the Born Oppenheimer Approximation)

H-bars, mass, and partial derivatives; Corresponding states, multiplicative! Conjugate waves give probabilities; Do the math by hand, they're so simple these Particles in boxes that seem to fly; At the nodes there's... nothing by and by.

And capital letters have carat hats - The German physicist finds that Heisenburg Uncertainty Principle; Discrete values the utmost pinnacle. Bohr quantized energy levels, Random motion throughout the orbitals, Yet "God does not play dice." Science must know its place.

But one cannot make sense of it - so sad, Or Feynmann says we'll know you're mad!

Christopher K. Rowan

Keep in Touch!

Go to www.chemistry.uvic.ca. Look for the Alumni tab where you can complete the "keep-in touch" form—or—send email to: rpulez@uvic.ca—or mail to: University of Victoria, Department of Chemistry P0 Box 3065, Victoria, BC V8W 3V6