An internationally recognized researcher renowned for his leading-edge work in molecular and materials chemistry is the University of Victoria’s first Canada 150 Research Chair.

Ian Manners is currently a professor at the University of Bristol in Britain, where he’s the chair of inorganic, macromolecular and materials chemistry. His research area has generated much interest around the world for its potential applications in electronics, medicine and displays.

Manners is a dual British-Canadian citizen who was on faculty at the University of Toronto from 1990-2006 before returning to Britain and his alma mater at Bristol. He joins UVic as the Canada 150 Research Chair in Materials Science.

Among most-cited

His many patents, awards and research papers—pioneering, for example, a method of creating tiny polymer particles up to 10,000 times smaller than a human hair—have made him one of the most cited chemistry researchers in the world, with more than 37,000 citations to date.

David Castle, UVic vice-president research, praised the Canada 150 program for providing a unique opportunity to attract “a true international leader” in materials science to the university. Manners will be working with science and engineering researchers, and with UVic’s Centre for Advanced Materials and Related Technology (CAMTEC).

“We’re tremendously excited about having Ian join our university, where he’s going to accelerate UVic’s research discoveries in materials science,” says Castle. “Ian is also recognized for his commitment to inclusive and equitable training. We look forward to his expertise in providing a dynamic environment for the training of future scientists.”

Nano-scale materials

Manners will establish and lead the Laboratory for Synthetic Self-Assembled Materials, where he’ll continue his work with nano-scale synthetic materials. A coming generation of scientists studying with Manners and his research team will learn how to create and manipulate the properties of miniscule synthetic particles—work that will shape future technological advances on a number of fronts.

“The generous and flexible C150 research funding provided will allow us to perform the most creative and high impact research that we are capable of,” says Manners, who was awarded the Royal Society of Chemistry’s De Gennes Prize last year for outstanding and exceptional work in materials chemistry.

“Overall, our work aims to lead to fundamental scientific advances that will ultimately enable applications in fields such as electronics, magnetics, displays and biomedicine.”

Manners joins a thriving chemistry department at UVic that has more than doubled its students and number of major research grants in the last 15 years.

The Canada 150 Research Chairs Program is a national initiative established in 2017 to celebrate Canada’s 150th anniversary. The federal government is investing $118 million in one-time grants of up to seven years to attract top-tier international scholars and researchers to the country. The program aims to enhance Canada’s reputation as a global centre for science, research and innovation excellence.

ABOVE: This image captures some of Ian Manners’ research on complex nanosized particles, which have potential applications in fields such as medicine and electronics, and as sensors and nanoscopic wires.
DEAN’S MESSAGE

Although 2018 has just begun, it’s already been a busy few months for UVic Science. I’m enormously pleased with the number of funding announcements that will help fortify Science’s position as a leader in a wide-array of research specialities. Biology’s Francis Juanes, Liber Ero Chair, led an initiative with SEOS Director Stan Dosso and Rosaline Canessa that will bring in nearly one million dollars in federal funding to study the impact of underwater noise on endangered southern resident killer whales.

At the UVic-Genome BC Proteomics Centre, two pan-Canadian platforms will be co-led by the director, Christoph Borchers. The initiatives will receive more than $18 million in funding, which will be used to strengthen connections between academia, industry and clinicians across the country. And I have the great pleasure of announcing that world renowned materials chemist Ian Manners will be joining us as the Canada 150 Research Chair for Materials Chemistry. Only twenty-five of these elite chairs are being announced throughout Canada—Ian Manners is UVic’s sole appointment.

But funding announcements aren’t the only big development. If you’ve visited campus recently, you’ll have noticed several buildings under construction. Classrooms and labs in the Elliott and Petch buildings are being built and upgraded. These improvements will support faculty and provide state-of-the-art classrooms and labs for students. These many developments, along with the incredible contributions of our students, alumni, donors, faculty and staff, continue to build our reputation at home and abroad. I look forward to seeing what the rest of 2018 brings!

Sincerely,
Rob Lipson

UVic Women in Science

Chemistry undergraduate Hannah Charnock and microbiology doctoral student Karen Lithgow founded UVic Women in Science (UVic WiS) in March of 2017. “We built UVic WiS to improve the visibility and retention of women in STEM fields. This involves providing resources, workshops, and networking opportunities to enhance the education and community of supporters at UVic and beyond,” says Charnock. “Our mission statement is to create a collaborative, supportive, and engaging environment for all those who want to support women in science.”

Since a successful launch event last March, UVic WiS has gained momentum and increased membership both at UVic and in the Victoria community, hosting monthly networking events, guest lectures, and professional development workshops.

Late last November, UVic WiS finished their inaugural year with their first STEM Research Symposium. The one-day event delivered presentations from women at UVic and throughout the Victoria community, ranging in topics from the physics behind nuclear star clusters to creating microfluidic devices for health applications. Panel discussions and an Equity and Human Rights seminar explored the challenges currently faced by women in STEM.

“The WiS Symposium was a culmination of the community’s efforts to create a network for women in STEM here in Victoria,” says Lithgow. “This year, we’re going to build on this momentum to develop tools and resources to ensure the success of women in STEM in Victoria, including the establishment of the first UVic WiS Outstanding Woman Scientist Awards.”

Distinguished alum sees advantages of both sides of co-op

By Vimala Jeewanandam

Daryll Harrison, the 2018 Faculty of Science Distinguished Alumni Award recipient, was one of the first students at UVic to graduate from UVic’s Chemistry Co-op program in 1982. “The experiences not only validated my interests, but really helped me financially,” he says about his co-ops. Harrison completed terms with an island pulp and paper mill working as an environmental lab technician as well as the Institute of Ocean Science, doing early research on carbon loading in the atmosphere.

After completing a PhD at UVic, Harrison began a career with NOVA Chemicals, beginning as a research scientist and is now the Vice President, INOVA Program Management. As a leader at NOVA, he’s participated with co-ops from the other side—as an employer. Harrison has been a strong proponent of bringing in co-op students, partnering with Canadian universities, such as UVic. “The enthusiasm and positivities of students helps to drive the culture at NOVA” he says. “We do our best to provide meaningful research work to our students. They get the chance to work alongside permanent employees and contribute in our technological developments.”

On being awarding the Distinguished Alumni Award, Harrison says, “It’s been meaningful to receive the recognition. It’s provided me with a great opportunity to look back and reconnect to faculty, and at the same time look ahead to see the impressive developments that the chemistry department is undergoing.”

ABOVE: Daryll Harrison at the 2018 Distinguished Alumni Awards. Photo: UVic Photo Services
New research yields berry interesting results

By Valerie Shore

Move aside blueberries, cranberries and strawberries, there’s a new contender for the title of healthiest berry for us to eat. And you won’t find it in the grocery store. Recently published research led by University of Victoria plant biologist Peter Constabel shows that salal—a wild berry common to coastal areas of western North America—is an antioxidant superstar, packed with higher levels of health-promoting plant chemicals than most other berries out there.

“Salal berries may not be widely known or consumed today, but they were a staple traditional food for northwest coastal peoples,” says Constabel, who studies how and why plants produce biologically active compounds.

Five years ago, Constabel became the first in the world to reveal, at the molecular level, how blueberries ripen and produce a group of antioxidant compounds known as flavonoids. He then turned his attention to salal.

His research team measured more than 50 phytochemical compounds and antioxidant capacity over the course of salal fruit development. They found that salal flavonoid concentrations are the highest among common berries except highbush cranberry (a wild honeysuckle relative). Two compounds stand out for special mention: tannins (up to five times higher than in blueberries) and anthocyanins (roughly 1.5 times higher than in blueberries).

Why do berries possess this extraordinary chemical cocktail? It certainly didn’t evolve for our benefit.

“It’s undoubtedly for the plant’s protection,” says Constabel, noting that salal berries are unusual in that they stay on the plant all winter without getting mouldy. "Tannins are known to have antimicrobial effects, so my hypotheses—which I’d love to study further—is that the exceptionally high concentrations in salal berries protect them against fungal attacks.

The study was funded by the Natural Sciences and Engineering Research Council.

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2018 Honours Fest

By Vimala Jeevanandam

In February, forty-two Honours students throughout the Faculty of Science presented their research at the seventh annual Honours Fest, a conference-style poster session. Honours Fest is the culmination of two semesters of grueling research, and an opportunity for students to show what has been occupying their time and brainpower.

Students, staff, faculty and other lovers of science from across the campus and Victoria gathered to learn more about remarkable student projects, ranging in topic from the effect of stroke on synaptic morphology to wave dispersion in sea ice in Antarctica.

Thanks to the generosity of Dr. Fritz Boehm, students who place in the top three, as well as the top presenter in each department and school, win generous cash prizes. Students are judged in three areas: scientific thought and creativity, their communication skills in presenting the research, and the quality of the poster and its ability to explain complex research in a logical way.

The top three winners and recipients of the 2018 Boehm Family Award for Excellence in Science are Shawn Shorthill (Biochemistry & Microbiology), Nicolas Planidin (Biology) and Lauren Caters (Chemistry).

Teaching excellence recognized by national math award

By Vimala Jeevanandam

UVic math professor and researcher Gary MacGillivray is the winner of the Canadian Mathematical Society’s 2018 (CMS) Excellence in Teaching Award for his “sustained and distinguished contributions in mathematics education at the post-secondary level at a Canadian institution.”

This is the first time a UVic professor has received this commendation. "Dr. MacGillivray has an ability to positively impact people’s lives all around him. His love and passion for Mathematics and Mathematical education is clearly contagious, influencing many students and colleagues alike,” says CMS Education Committee Chair Joseph Khoury in their media release.

MacGillivray was previously awarded the Faculty of Science Teaching award in 2010 and the Harry Hickman Alumni Award for Excellence in Teaching in 2011.
New program builds partnerships between astronomy researchers and tech sector

By Jody Paterson

Lung cancer scans and astronomy may not seem like they’ve got much in common. But a new research and training program at the University of Victoria is demonstrating that you just never know where astronomy studies may lead.

UVic’s Astronomy Research Centre (ARC) is the principal investigator for the cross-Canada collaborative, New Technologies for Canadian Observatories (NTCO). It’s a new program at UVic and three other Canadian universities aiming to build partnerships between researchers and the private sector to facilitate the introduction of technologies incubated in astronomy research centres to potential industry partners.

Cancer diagnosis tool

How does that relate to lung cancer scans? Astronomy instrumentation is the main focus for NTCO’s $1.65 million, six-year CREATE grant from the Natural Sciences and Engineering Research Council, says Venn. But the machine-learning that is also part of the program holds promise for virtually any sector working with large volumes of data.

An NTCO student interning with Victoria-based tech firm Limbic Media applied machine-learning techniques he had developed for analyzing large volumes of stellar spectroscopy to the challenge of examining a million scans of potentially cancerous lungs. Starting with the few hundred scans that had already been analyzed, the student “taught” a computer how to diagnose probable cancer in the unread scans.

The student is completing his undergraduate degree in physics and astronomy but is newly interested in working with hospitals. “That would not have come up if not for this program,” says Venn, adding that the student also brought back invaluable understanding of how the private sector functions that has benefited everyone involved in NTCO.

Internship opportunities

A dozen students are already enrolled in NTCO, and a formal application process is now in place. The program will select students who can best integrate an industrial internship with their thesis research.

Internships for up to six months for enriched graduates create new research opportunities for everyone involved in NTCO, and new job opportunities for students. A summer school and professional skills courses also help to prepare students for employment in both the private sector and at international observatories.

Pathway to commercialization

The primary goal is to boost the relationship between industry, Canadian universities and government facilities like the NRC-Herzberg Institute of Astrophysics in Saanich, says ARC director Kim Venn. Universities and government research labs are producing world-class astronomy instrumentation, but a tech industry able to commercialize such work is underdeveloped in much of Canada.

“We want to help develop that flow between industry and the researchers and students in academic and government labs, both for astronomical instrumentation and some computer technology,” she says. “An enriched graduate program with significant internships with industry opens up opportunities for students to be exposed to research in industry, where significant breakthroughs in astronomical instrumentation can also occur.”

Planning a reunion?

The UVic Alumni Association can help by promoting your event to classmates, arranging speakers or providing door prizes. Network and keep involved by exploring the list of groups and upcoming events to find something that’s right for you. uvic.ca/alumni/connect

Alumni Newsletter

Science Matters is published twice yearly by the Faculty of Science to communicate the faculty’s goals, strategic direction and activities in order to connect alumni with each other and the university. Send your story ideas and feedback to Julia Keenan at alumscie@uvic.ca

GET CONNECTED: Reconnect with classmates, share stories, and learn about upcoming special events by joining a group today.

@uvicscience  University of Victoria Science Alumni  uvicscience

MOVING? Let us know and we’ll make sure your record is updated.