What can I do with my Chemistry degree?
You shouldn’t feel like you have to take careers as traditional chemists. Your training and experience make you great candidates for other jobs too, ones that rely on logical thinking, project management, and science communications, among other things.

Dr. Alyson Kenward

More than you think.

Hear it from our alumni, the voices of experience.

Chemistry is the science of atoms, ions and molecules, the building blocks of all matter around us, including ourselves and all materials that we use on a daily basis. Students with a major in Chemistry gain a deep understanding of how atoms bind together and form molecules, how molecules interact to form compounds with certain properties, and how those compounds can be characterized and analyzed. Chemistry students also get extensive laboratory skills, learn how to think like a scientist, analyze data, interpret their observations, and write accurate reports about their experiments.

There are many career opportunities open for a chemist, depending on their level of education. To show the diversity of career paths available, we turned to our own alumni and asked how their training in chemistry prepared them for their careers.

So, let’s hear the “voices of experience”.
Deanna Kocins

1. What is your educational background?
   BSc in Chemistry, University of Calgary, 2015

2. What type of work do you currently do?
   I am a Chemical Lab Technician at NOVA Chemicals (the polyethylene plant site) in Joffre, Alberta, testing environmental, drinking and waste waters to meet government specifications. I also test the site co-product hydrocarbon samples for composition before selling to external customers. Alongside hands-on lab work, a large part of my day-to-day activities involve instrument troubleshooting, method development and project management.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) How analytical instruments function, b) working effectively in a group setting, and c) how to effectively communicate through writing.

Donny M. Mayder

1. What is your educational background?
   BSc (Honors) in Chemistry, University of Calgary, 2016

2. What type of work do you currently do?
   I was a reader/demonstrator for CHEM 201/ 203 for one year, and in the fall of 2017 I will start my PhD studies in Organic Materials at the University of British Columbia.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) Effective communication skills (written and verbal), b) time management and perseverance, and c) problem-solving, critical and analytical thinking skills.

Irene Schnell

1. What is your educational background?
   BSc in Applied Chemistry, University of Calgary, 2001
   MSc in Fragrance and Cosmetics, University of Versailles Saint-Quentin (France), 2010

2. What type of work do you currently do?
   I worked in the oil and gas industry for a few years after graduating from the University of Calgary. Currently I have my own company as a cosmetics chemist consultant developing fragrance and cosmetics for clients.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) Organization of data, b) distillation processes, and c) analytical methods

Behzad Mirfakhraei

1. What is your educational background?
   BSc in Materials Engineering, Iran University of Science and Technology (Iran), 2002
   MSc in Materials Engineering, Materials and Energy Research Centre (Iran), 2005
   PhD in Chemistry, University of Calgary, 2015

2. What type of work do you currently do?
   I am working as a research and technology advisor for the Scientific Research and Experimental Development program of the federal government administrated by Canada Revenue Agency.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) To look for facts and make conclusions based on them, b) that everybody has valuable capabilities and can contribute to the society and these contributions will occur more often by encouragement from the peers and managers, and c) that hard working, collaboration, respect in the work environment and enjoying the job while being focused on the goals are the key points for success.
Heather Phillips

1. What is your educational background?
   BSc in Chemistry, University of Calgary, 2003
   PhD in Inorganic Chemistry, Dalhousie University, 2007

2. What type of work do you currently do?
   I am an intellectual property (IP) manager at Cenovus Energy Inc., working with colleagues in R&D and legal to assess, prioritize, and patent protect in-house technologies for enhancing oil recovery. I also oversee the compilation of technical reports under the federal Scientific Research & Experimental Development (SR&ED) program, which offers tax incentives to Canadian companies performing eligible R&D activities.
   Day-to-day, I interface with technical and patent professionals to quickly understand new technologies in relation to the state-of-the-art, review technology business cases, prepare strategic technical reports, search patents, advise leaders, and manage the company’s growing patent portfolio.
   After completing my PhD, I transitioned from the bench to business and am passionate about applying my physical sciences background to achieve technology commercialization, technical communication, and IP business objectives.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) There is a need for those who can readily understand scientific concepts and communicate them to a variety of audiences, from children and students to the public and business leaders, b) productivity results from aligning your skills and your interests, and c) scientific literacy provides the foundation for life-long learning, problem solving, and catalyzing positive change.

Dave Horton

1. What is your educational background?
   BSc in Chemistry, University of Calgary, 1989

2. What type of work do you currently do?
   Chief Technology Officer at Canada Energy Services

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) A well-rounded and thorough understanding of all disciplines in chemistry was critical to advancement in industry. Organic chemistry was definitely the most applicable discipline to oilfield chemicals; however physical, analytical and inorganic chemistry are frequently used.
   b) The ability to look at a chemical and predict properties, methods to synthesize (specifically organic chemistry mechanisms) and similar alternate chemistries has been an invaluable tool.
   c) I can’t emphasize enough the need to comprehend, rather than memorize, the chemistry presented in each discipline.

Alyson Kenward

1. What is your educational background?
   BSc in Chemistry, University of Calgary, 2003
   PhD in Inorganic Chemistry, University of Calgary, 2009
   MA in Science Journalism, New York University, 2010

2. What type of work do you currently do?
   For several years, I worked in science communications as a scientist and journalist, research manager and vice president at Climate Central Inc., a research and journalism non-profit organization in the US. I returned to the University of Calgary in June 2017 to join the development team, directing their donor stewardship operations. In this role, I’ll also be drawing on my time at the university, particularly as I intimately understand how research at large institutions gets done, what kind of budgets are required, and how valuable donors are to opening opportunities for faculty and students.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) How to think through research problems, b) how to frame our research questions, and c) how to give presentations and write about my chemistry research.
Gerardo Vitale

1. What is your educational background?
   BSc (Honors) in Chemistry, Universidad Central de Venezuela, 1992
   MSc in Material Science, University of California (Santa Barbara), 1995
   PhD in Chemistry, University of Calgary, 2013

2. What type of work do you currently do?
   Catalysts Manufacturing Specialist at PC-CUPS Ltd, working on the development and characterization of heterogeneous catalysts from their concept up to their implementation for upgrading hydrocarbons feedstock.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) Importance of teamwork and communication to achieve the desired goals, b) innovative thinking to look for practical approaches to produce and characterize novel inorganic materials for adsorption and catalysis, and c) the beautiful answers that chemistry can give to the world to solve many of its actual problems.

Xiaoliang Gao

1. What is your educational background?
   BSc in Chemistry, Central South University (China), 1982
   PhD in Chemistry, University of Calgary, 1991

2. What type of work do you currently do?
   Senior research scientist at NOVA Chemicals - Catalyst R&D for polyolefins and petrochemicals

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   Besides inorganic/organometallic chemistry of transition metal compounds, and main group chemistry, I learned about: a) various methods for chemical characterization, b) safety, and c) interpersonal skills.
Rebecca Goyan

1. What is your educational background?
   - BSc in Chemistry, University of Calgary, 1996
   - PhD in Physical Chemistry, University of Calgary, 2002

2. What type of work do you currently do?
   - I am a senior lecturer in Chemistry at Simon Fraser University, teaching freshman, analytical, physical, and environmental chemistry from first to fourth year. I am also deeply involved in outreach to the wider community and working with elementary teachers to enrich their science classes.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) I developed a love of outreach from participating in Chemistry Week demos,
   b) I developed a love of working with students, and
   c) I learned that it is important to keep up interests outside of chemistry.

Georg Schreckenbach

1. What is your educational background?
   - BSc in Physics, Technische Universität Dresden (Germany), 1990
   - PhD in Computational Chemistry, University of Calgary, 1996

2. What type of work do you currently do?
   - I am a professor of chemistry at the University of Manitoba.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) I learned a lot about chemistry, and about doing excellent research; b) I also find myself frequently thinking back to my supervisor with regards to the management style and c) other aspects of running a research group.

Eva Zurek

1. What is your educational background?
   - BSc in Chemistry and BSc in Physics, University of Calgary, 2000
   - MSc in Chemistry, University of Calgary, 2002
   - PhD in Chemistry, University of Stuttgart (Germany), 2006

2. What type of work do you currently do?
   - I am a professor of chemistry at the State University of New York at Buffalo. I carry out theoretical chemistry research and teach physical/computational chemistry.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   a) How to do research, b) how to think independently, and c) theoretical/computational chemistry. The undergraduate education at the University of Calgary in inorganic and physical chemistry was extremely beneficial to my future research.

Yosadara Ruiz-Morales

1. What is your educational background?
   - BSc (Honors) in Chemistry, National Autonomous University of Mexico (UNAM), 1992
   - MSc in Chemistry, UNAM, 1993
   - PhD in Theoretical Chemistry, University of Calgary, 1998

2. What type of work do you currently do?
   - I am a researcher at the Instituto Mexicano del Petróleo. I specialize in applications of theoretical chemistry to problems in the oil industry. The central topic of my research is to develop fundamental understanding and prediction of macroscopic properties of oil, by studying the underlying atomic, microscopic, and mesoscopic properties with theoretical chemistry simulations.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
   Besides learning chemistry and theoretical chemistry, I also learned: a) perseverance and discipline, b) to think out of the box, and c) not to be intimidated by other scientists.
Royale Underhill

1. **What is your educational background?**
   
   BSc in Chemistry, University of Calgary, 1995
   
   PhD in Chemistry, University of Calgary, 2000

2. **What type of work do you currently do?**
   
   I work as a defence scientist for Defence Research and Development Canada, which is an agency within the Department of National Defence. I am a group leader for the Materials Identification and Analysis division, and my research focuses on materials science for the Canadian Armed Forces. I have looked at carbon nanotubes in polymer nanocomposites for supercapacitor technologies, as well as embedding shape memory alloys in polymers for energy harvesting applications. Most recently I have explored polymers for creating negative Poisson’s ratio materials for novel armour applications.

3. **What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?**
   
   a) The ability to learn: my work can change every three to five years. The key is that I bring a physical polymer chemistry perspective, but I also have to keep learning new technologies, and new applications.
   
   b) The ability to write scientific documents: a big part of my current job is conveying our research to peers, or management in a clear and concise way.
   
   c) The breadth of my education at the University of Calgary has provided me with a good foundation for understanding a wide number of areas. I am a group leader, and am responsible for analytical chemists who deal with environmental testing, or fuels and lubricants chemists, or even looking at electrochemistry for batteries and supercapacitors. I have a basic knowledge in all these areas thanks to my education at the University of Calgary.

Chris Swyngedouw

1. **What is your educational background?**
   
   Bioscience Engineering, Ghent University (Belgium), 1977
   
   PhD in Organic Chemistry, University of Calgary, 1985
   
   Certificate in Management Consulting, 1998

2. **What type of work do you currently do?**
   
   Group technology leader at Exova

3. **What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?**
   
   a) Instrumental analysis, b) data review and interpretation, and c) that here in Alberta, you will eventually be drawn in to oil and gas type activities.

Alice Vrielink

1. **What is your educational background?**
   
   BSc in Chemistry, University of Calgary, 1982
   
   MSc in Physical Chemistry, University of Calgary, 1985
   
   PhD in Physics, University of London, 1989
   
   Diploma in Biophysics and Protein Crystallography, Imperial College of Science and Technology (London), 1989

2. **What type of work do you currently do?**
   
   I am a professor of structural biology at the University of Western Australia. My main focus is in the area of membrane proteins and proteins that are targets for drug design. Our work in the area of antibiotic resistance received extensive media coverage including the BBC website.

3. **What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?**
   
   a) Important aspects of chemistry, especially organic chemistry, which I use still today both in my teaching and in my research, and b) the basics of crystallography.
Bill Cumming

1. What is your educational background?
BSc in Chemistry, University of Calgary, 1978
BEd, University of Calgary, 1982

2. What type of work do you currently do?
I have been teaching high school chemistry for 38 years — mostly in the US. I am a consultant with the College Board conducting workshops for AP chemistry teachers in the US.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
a) While at the University of Calgary, I ran the Bio Sciences society, which helped me with organization, b) chemistry knowledge and understanding, as well as lab techniques, and c) I also had great role models as teachers.

Sheila Dubey

1. What is your educational background?
BSc in Chemistry/ Physics, University of Bombay at St. Xavier’s College, 1967
MSc in Chemistry, Memorial University of Newfoundland, 1970
PhD in Physical Organic Chemistry, University of Calgary, 1975
MSc in Chemical Engineering, University of Tulsa, 1979

2. What type of work do you currently do?
Currently retired; I worked in Shell Oil Technology for 35 years.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
a) Lab work is important, b) good note-taking is important, and c) good instruction given both in class time and also in laboratories; good advice provided during a summer research project. My career work in Environmental, Health and Safety had its basis in strong science.

Ed Kustan

1. What is your educational background?
BSc in Chemistry, University of Calgary, 1967
MSc in Chemistry, University of Western Ontario, 1970
PhD. in Chemistry, University of London, 1973

2. What type of work do you currently do?
Semi-retired, doing some volunteer work such as member of the NSERC Council, and possible future volunteer work with Canadian Executive Service Organization (CESO).

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
a) Lab work is important, b) good note-taking is important, and c) good instruction given both in class time and also in laboratories; good advice provided during a summer research project. My career work in Environmental, Health and Safety had its basis in strong science.

Amit Jhas

1. What is your educational background?
BSc in Biochemistry (minor in Chemistry), University of Calgary, 2003
MSc in Electrochemistry, University of Calgary, 2007

2. What type of work do you currently do?
I am the president and CEO of Lucova Inc., which is a high-tech company creating and selling the next generation of commerce software.

3. What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?
a) Application of the scientific/experimental method in building products/business, b) communication/debating/defending hypothesis, and c) abstract/vision thinking
Chris Eagle

1. **What is your educational background?**
   - BSc in Chemistry (Honors), University of Calgary, 1973
   - MBA, University of Western Ontario, 2001

2. **What type of work do you currently do?**
   - I am the president and CEO of Calgary Health Trust, formerly president and CEO of Alberta Health Services. Adjunct Professor (Cumming School of Medicine, departments of Community Health Sciences and Anesthesia), University of Calgary

3. **What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?**
   - a) The power of focus,
   - b) how to manage my time effectively, and
   - c) how to balance big-picture goals while attending to small details.

Richard (Rick) Schulz

1. **What is your educational background?**
   - BSc in Chemistry, University of Calgary, 1983
   - PhD in Pharmacology, University of Alberta, 1989

2. **What type of work do you currently do?**
   - I am a professor in the departments of Pediatrics and Pharmacology, University of Alberta, and direct a cardiovascular research laboratory in the Mazankowski Alberta Heart Institute. My research program is directed at understanding and curing heart disease.

3. **What three things did you learn during your time studying chemistry at the University of Calgary that have prepared you for the role that you currently hold?**
   - a) My analytical chemistry course prepared me the best practically for a career in medical research, as these basic principles were directly applicable to analytical biochemistry/pharmacology procedures that I learned and applied.
   - b) After my third year in my BSc program, I decided to take one year out to study/work abroad. With the help of the University of Calgary international office, I got a six-months paid placement in the organic chemistry institute in Wuerzburg (Germany), supported through the German DAAD program. At the time, I had just taken one year of university German at UCalgary. What I learned in Germany over nine months helped me immeasurably in my career.
     - It was not just what I learned and did in the lab (for which I got credit at UCalgary), but also from understanding a new language, and learning about the politics and culture of another country.
     - So challenge yourself to learn another language and live and work for at least one year in that country.
   - c) What I liked also about my UCalgary program was that I had just the right amount of room for non-science options to make my BSc degree. I took classes in philosophy, political science, history, art, Latin American studies, etc. This broader base of knowledge really expanded my mind, helped me become a better writer, and gave me a better understanding about the world around me.
     - So take the options that you are interested in and challenge you!
Concluding Remarks:
A degree in Chemistry provides global career opportunities that may lead to employment as:

- Quality assurance analyst
- Nanotechnology scientist
- Lab technician
- Auditor
- Educator
- Defence scientist
- Patent agent
- Cosmetic scientist
- Technical writer
- Forensics chemist
- Instrumentation technician
- Toxicologist
- Safety officer
- Medicinal chemist
- Sales representative/ marketing
- Research & development scientist
- Facility manager
- Analytical chemist
- Entrepreneur
- Synthetic chemist
- Quality control chemist
- Atmospheric chemist
- Art conservator
- Environmental chemist
- Environmental policy maker
- Materials scientist
- Geochemist
- Crystallographer

Or employment in fields and industries such as:

- Oil and gas
- Agriculture/pesticides
- Hazardous and waste management
- Cosmetics and fragrance
- Manufacturing
- Water quality
- Standards and policies
- Product validation
- Pharmaceutical/drug design
- Food and flavour/packaging
- Patent law/Intellectual property
- Minerals
- Polymers and plastics
- Clean energy
- Nutrition
- Scientific communications, journalism and publications

If you are curious and interested in chemistry, and any of the above career paths appeals to you, then a degree in Chemistry may be the right choice for you.

To find out more about our undergraduate and graduate programs check out ucalgary.ca/chem