Western Faculty Profile: Dr. John de Bruyn

Jennifer Wang¹

¹Schulich School of Medicine & Dentistry
Western University

No conflicts of interest declared.

About WURJHNS: <http://ir.lib.uwo.ca/wurjhns/>

Tell us about yourself and your career path.

I grew up in Vancouver and completed my bachelor's degree in physics and astronomy at the University of British Columbia. After my second year, I had my first experience with research while working in a plasma physics lab. I generated plasmas by applying large voltages to gas which caused it to ionize and I recorded their properties. After my fourth year, I wrote programs at a radio telescope site. I completed my masters in physics at Queen's University, during which I experimented in low temperature physics.

I returned to the University of British Columbia to complete my PhD. After a false start with one research group, I eventually settled on studying phase transitions, particularly with hydrogen. During my time as a PhD student, I recognized that I enjoyed working on a variety of projects, including theoretical work on liquid crystals. Because I published several papers on these side projects, I finished my PhD with a strong publication record.

The work I did in fluid dynamics during my post-doc at the University of California in Santa Barbara was related to my work as a PhD student in phase transitions. I found it interesting that the same theoretical model could be used to describe two different types of phenomena.

I worked as an assistant professor at Memorial University of Newfoundland in St. Johns for 16 years. Afterward, I transferred to Western University to work as a professor and department chair. I was drawn here partly because of Western's good research facilities and graduate students.

Tell us about your research.

Nothing in research is easy. Many phenomena fascinate me and I can't help but be interested in a variety of subjects. Though my main focus is on the behaviour of complex fluids (i.e., polymer solutions, gels), I also collaborate with colleagues from other departments on other projects. I currently work with individuals from Schulich in studying the

diffusion of proteins in cell membranes and the effects of different proteins on biomineralization (i.e., how bones are formed). I also collaborate with chemists to characterize the viscoelastic properties of new materials.

Physics has always been my passion. In the future, I hope to visit other labs, work on new projects with colleagues and continue my research in complex fluids. I seek to apply my findings to other systems and continue my work within the field of biology. Never underestimate the valuable insight a physicist can provide.

One of the reasons I came to Western was to work with bright, enthusiastic students. I supervise graduate students who are developing new instruments to measure elasticity and viscosity of complex fluids. Another student is studying the onset of flow in gels. Yet another is studying the electrical properties of new materials made of polymers and carbon nanotubes. I also work with people in engineering and kinesiology, including students who are doing research on the strength of anchors sedimentation and on rowing performance.

What qualities do you look for in a potential research assistant, volunteer or graduate student?

Given that conducting research is never easy, intelligence and creativity are essential. It's important that we are compatible as we work together on the research. I look for someone who's genuinely enthusiastic and self-motivated in their particular subject.

What advice would you give for students looking to get into research?

If you are just starting out and looking to gain lab and research experience, self-motivation is essential. All of my graduate students set their own hours and make their own decisions. Take the initiative and just do it. Pick your favourite professor

and ask him or her directly; just go out and try. Motivate yourself and work hard; you can tell which ones will be more successful.

If you get a job, learn as much as you can and work hard in it. There is a vast amount of uncovered material out there. Keep learning!

To read more on Dr. de Bruyn, please visit his website:

<http://www.physics.uwo.ca/~debruyn/overview.shtml>