Congratulations to
Paul Barclay
recipient of the
2019 CAP Herzberg Medal

“It is a tremendous honour to be recognized by the Canadian physics community with this award. Since my undergraduate studies I have been fortunate to work with supportive colleagues and mentors, and more recently with extremely talented graduate students and postdocs, without whom our work in nanophotonics would not have been possible.”

The Canadian Association of Physicists (CAP) is pleased to announce that the 2019 CAP Herzberg Medal is awarded to Paul Barclay, University of Calgary, for his demonstrated leadership in nanophotonics and optomechanical devices that is building new bridges between pure and applied quantum science.

Prof. Paul Barclay is a physicist harnessing the quantum behaviour of photonic technology that manipulates light on-chip “nanophotonic devices” for experiments and applications in computing, communications, and sensing. Using nanophotonic devices that he designed, fabricated and studied, Prof. Barclay has made many influential discoveries of new quantum and nonlinear optical effects.

Most recently, he led the development of photonic optomechanical devices created from diamond. These devices simultaneously couple light to the motion of mesoscopic mechanical resonators and to diamond electron spin qubits, providing a pathway for connecting quantum networking and computing technologies. Realizing these devices involved invention of a diamond nanofabrication technique that is being rapidly adopted by other researchers. These devices, and others that he invented based on silicon photonics technology, also enable exquisite measurement and control of mechanical motion at the nanoscale, leading to his discovery, together with collaborators, of new magnetic phenomena via optomechanical torque magnetometry.

Dr. Barclay also pioneered diamond quantum nanophotonic technology that lead to the first observation of Purcell enhanced emission from a single diamond quantum emitter. This is a key requirement for realizing practical quantum networks based on diamond spin qubits. Prior to this work, he created one of the first two high quality factor photonic crystal cavities, and discovered and explained the crucial role of nonlinear optical processes in the operation of silicon photonics technology that is becoming increasingly important for today’s computing and communication systems.

The CAP Herzberg medal recognizes outstanding achievement in any field of research by an early-career Canadian physicist (i.e. successfully defended their doctoral thesis within the 12 years prior to the award). The annual CAP Herzberg Medal was introduced in 1970. Prior to 2011, the medal was awarded for outstanding achievement by a Canadian physicist under the age of 40.

Dr. Barclay will be presented with his medal at a Medallists’ Recognition Dinner in Vancouver on Wednesday, June 5, 2019. The Awards Dinner is one of the featured events of the CAP Congress hosted by Simon Fraser University in Burnaby, BC, from June 2-7. Please refer to the Congress outline (https://www.cap.ca/congress-conference/congress-2019/2019-congress-glance/) for the schedule of plenary talks by the CAP medal winners.

ABOUT the Canadian Association of Physicists (CAP)

The Canadian Association of Physicists, founded in 1945, is a professional association representing over 1600 individual physicists and physics students in Canada, the U.S. and overseas, as well as a number of Corporate, Institutional, and Departmental Members. In addition to its learned activities, the CAP, through its charitable arm, the CAP Foundation, also undertakes a number of activities intended to encourage students to pursue a career in physics.