

MATHEMATICAL AND PHYSICAL SCIENCES DIVISION



AHO, Alfred Vaino – Department of Computer Science, Columbia University

Computer scientist Alfred Vaino Aho has made fundamental contributions to string searching, databases, formal languages, programming languages, compilation, and pattern matching. His research is used daily in millions of computers worldwide and has been cited thousands of times. He is the author of influential books in the analysis of algorithms and the theory of compilation.



EGERTON, Raymond F. – Department of Physics, University of Alberta

Ray Egerton's pioneering work in Electron Energy Loss Spectroscopy has opened the field of quantitative electron microscopy and chemical analysis to probe the structure and chemistry of materials. His studies on electron inelastic scattering, quantitative analysis of spectra, electron-beam irradiation damage and spectrometers have contributed to the successful development of this technique widely used today. He is also the author of the classical reference book on this technique.



HUDLICKY, Tomas – Department of Chemistry, Brock University

Tomas Hudlicky, an early proponent of “green” chemistry, pioneered the use of biological methods in manufacturing medicinally important compounds. He developed efficient asymmetric syntheses of many pharmaceutically relevant targets (pancratistatin, morphine, Tamiflu, among others). He developed chemoenzymatic processes for recycling aromatic waste into useful materials, designed new processes for commercial analgesics, generated a family of new compounds with antiviral and anti-cancer properties, and won the prestigious Alfred Bader Award (2010).



JESSOP, Philip G. – Department of Chemistry, Queen's University

Philip Jessop, internationally-recognized chemistry professor at Queen's University, pioneered the field of homogeneous catalysis in supercritical fluids and invented “switchable solvents” – now fields of research being actively investigated around the world. His revolutionary contributions in the areas of catalysis, CO₂ chemistry, and green solvents have resulted in technologies that address human needs while reducing environmental impact. Jessop has furthered the adoption of green technologies through his role at GreenCentre Canada.



MOONEY, Patricia M. – Department of Physics, Simon Fraser University

Patricia Mooney is a leader in the fields of materials physics and semiconductor characterization. Through the innovative use of forefront experimental methods, her groundbreaking studies of semiconductor defects have provided new insight into their fundamental properties, and lead to advances which have aided in the perfection and commercialization of important new information technologies. She has been a highly visible role model in international conference organization, and in professional society governance.



PANANGADEN, Prakash – Department of Computer Science, McGill University

Prakash Panangaden's research career has spanned computer science, mathematics and physics. He has worked on programming languages, probabilistic systems, quantum computation and relativity. He is particularly known for deep connections between domain theory and continuous state Markov processes where he and his colleagues proved a striking logical characterization theorem. He and Keye Martin discovered a remarkable way to reconstruct spacetime topology from causal structure using mathematical ideas from programming languages.



PINFOLD, James L. – Physics Department, University of Alberta

James Pinfold is an internationally renowned particle physicist who was a leader in the discovery of the first hard evidence for Electroweak Unification and a founder of the ATLAS-LHC Experiment that has potentially discovered the Higgs boson. In the search for new physics beyond the Standard Model he was spokesman for an international collider experiment MODAL, co-spokesman for the SLIM astroparticle experiment, and now leads the newest LHC experiment, MoEDAL.