Media Release

Fifty-four new Fellows elected into the Canadian Academy of Engineering

Ottawa – (6 May 2024) – President Soheil Asgarpour announced the election of forty-nine new Fellows and four new International Fellows into the Canadian Academy of Engineering on May 6, 2024. The announcement is made in conjunction with the Academy's 2024 Annual General Meeting which was held by video conference. The Induction Ceremony is scheduled for May 28, 2024, in London, Ontario.

Dr. Asgarpour commented: "Over the past 37 years, Fellows of the Academy have provided engineering leadership in the fields of education, infrastructure, innovation, energy, transportation, and many more. New Fellows have been selected for their outstanding contributions to engineering in Canada and around the world and for their service as role models in their fields and to their communities." Citations and photographs for each of the new inductees follow.

The Canadian Academy of Engineering (CAE) is the national institution through which individuals, who have made outstanding contributions to engineering in Canada, provide strategic advice on matters of critical importance to Canada and to Canadians. The CAE is an independent, self-governing, and non-profit organization established in 1987. Fellows of the CAE are nominated and elected by their peers, in view of their distinguished achievements and career-long service. Fellows of the Canadian Academy of Engineering are committed to ensuring that Canada's engineering expertise and experience are applied to the benefit of all Canadians.

The Canadian Academy of Engineering works in close cooperation with other senior academies in Canada and internationally. The CAE is a founding member of the Council of Canadian Academies (CCA), and a member of the International Council of Academies of Engineering and Technological Sciences (CAETS), which includes 31 national engineering academies around the world. The CAE is also a member of the Partnership Group for Science and Engineering (PAGSE), an association of more than 20 Canadian organizations in science and engineering, whose mandate is to educate and inform federal Parliamentarians, decision makers and other leaders of the importance and significance of Canadian research and innovation to economic development, and society as a whole.

For additional information or interviews, please contact:

Robert Crawhall, PhD, FCAE, P.Eng, PMP, ICD.D
Executive Director
Tel: (613) 235-9056

NEW FELLOWS 2024

Tal Arbel, Professor, Dept. of Electrical & Computer Engineering, McGill University

A tireless advocate for women in STEM, Prof. Arbel's research lies at the intersection of machine learning, computer vision and medical image analysis. She has built an internationally renowned, multidisciplinary research program where probabilistic machine learning models are developed to address a wide range of medical imaging problems. Her research has led to concrete improvements in patient care, including image analysis services that support multiple sclerosis clinical trials analysis for therapies being developed worldwide. Her work has been recognized through many awards and prizes, including her being named as a Canada CIFAR AI Chair at Mila - Quebec AI Institute.

Tayfun Babadagli, Professor, University of Alberta

Dr. Tayfun Babadagli is a highly respected researcher with >12,500 citations and h-index of 60 from over 550 publications on aspects of petroleum engineering. He has supervised over 85 Highly Qualified Personnel and has held two consecutive NSERC Industrial Research Chairs in Unconventional Oil Recovery. He has given more than 100 talks at workshops, forums, symposia, and lectures. In 2019 alone, he completed three trips around the globe to deliver his research. Beyond a number of prestigious awards in Canada and worldwide, technologies he developed through his research have been applied at the field scale nationally and internationally.

Noureddine Bénichou, Principal Research Officer, National Research Council of Canada

Dr. Noureddine Bénichou is an international expert in fire resistance, fire risk assessment and wildfires. His groundbreaking research has provided new solutions, tools and processes to keep buildings and people safe, avoid economic losses, and advance construction and engineering practices. His lead in developing Canada's first National Guide for Wildland-Urban Interface Fires and associated implementation tools, is a major contribution to help mitigate damages and losses from wildfire risks. His influential work has contributed to standards and codes in Canada and internationally. In 2021, Dr. Bénichou's global reputation and lifetime contributions to fire-safety engineering earned him the prestigious Sjölin Award.

Niharendu Biswas, Distinguished Professor, University of Windsor

Professor Nihar Biswas, University of Windsor, is a world-renowned expert on wastewater treatment. As a prolific author of high-impact publications, his experimental and numerical research focuses on wastewater treatment with a significant impact on the development of national and international technical standards through WHO/UNDP. Dr. Biswas's contributions to his field extends well beyond academia, having led design teams in wastewater treatment engineering locally and globally. He is an academic leader with appointments as Head of Department, Associate Dean, Senior Associate Dean, Acting Dean of Graduate Studies. and Vice President, Research at the University of Windsor.

NEW FELLOWS 2024

Benoit Boulet, Associate Vice-President (Innovation and Partnerships), McGill University

Professor Benoit Boulet is a research and innovation leader at McGill where he is Associate Vice-President (Innovation and Partnerships) and founding Director of the McGill Engine, a thriving technological innovation centre. His pioneering work to develop an artificial pancreas promises to revolutionize diabetes care and enhance the lives of thousands. In the realm of engineering for sustainability, his research on electric vehicles has helped shape the industry and nurture a skilled workforce. Dr. Boulet's work has garnered international recognition. As a collaborative academic leader, innovator, and entrepreneur, he successfully bridges academia and industry to enhance engineering training, research, and innovation.

James Chen, Senior Research Scientist, Natural Resources Canada

Dr. James Chen, a senior research scientist at Natural Resources Canada, is recognized for spearheading groundbreaking laser additive manufacturing repairs to extend the life of Royal Canadian Navy submarines, and for his innovations in laser materials processing and advanced welding technologies, which have led to commercial success and global leadership.

Frank Cheng, Professor and Canada Research Chair, University of Calgary
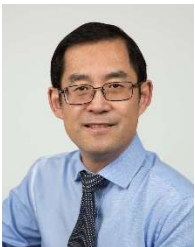
Dr. Cheng is an internationally recognized expert in energy pipeline technology. He pioneered the exploration of hydrogen-steel interactions at an atomic scale in high-pressure gaseous environments and has revolutionized gaseous hydrogen embrittlement research. His technical assessment technique for the suitability of existing pipelines for hydrogen transport has accelerated the realization of a full-scale hydrogen economy. Dr. Cheng integrates multidisciplinary knowledge and expertise to enable a deep understanding of the microscopic world of pipeline corrosion and cracking phenomena. His defect assessment technique provides accurate diagnosis of pipeline performance conditions. It has been adopted across the industry to enhance pipeline integrity.

Susan Doniz, Chief Information and Data Analytics Officer, The Boeing Company

She leads all aspects of information technology, enterprise security, data and analytics, and has been instrumental in digitally enabling the company. Before joining Boeing in 2020, she was Group CIO of Qantas Airways, and spent 17 years at Procter & Gamble leading IT and analytics programs. Doniz is a champion of several networks for women in STEM and for Hispanics in business leadership. In 2022, she was named to Forbes' CIO Next List and as one of the most influential women in aerospace by Business Insider. Susan Doniz is Chief Information and Data Analytics Officer at The Boeing Company.

NEW FELLOWS 2024

Wenli Duo, Principal Scientist, FPInnovations

Dr. WenLi Duo, Principal Scientist at FPInnovations, has research-developed and implemented innovative technologies to improve industrial practices including facility operations. He is a distinguished expert in high temperature engineering chemistry that has allowed breakthrough achievements in control of pollutants NOx, SO2, HCl, etc., power/recovery boiler optimization, and process debottlenecking. His work in biomass energy has positively impacted Canadian and international pulp-paper industries with $60M benefits and 180kt CO2 reduction per year and lowered 68% emissions of toxic dioxins/furans in British Columbia. He received I.W. Weldon Award and Douglas Jones Environmental Award from PAPTAC, and CSChE Award in Design and Industrial Practice.

Ehab El-Salakawy, Professor of Structural Engineering, University of Manitoba

Dr. El-Salakawy is an internationally renowned researcher and world-class leader in the field of structural engineering. His research expertise includes the development of new technologies and systems using Fiber-Reinforced Polymers in new and existing concrete structures, where he has more than 350 publications and supervised over 90 graduate students. He is an active member of several Canadian Standards Association (CSA) and American Concrete Institute (ACI) Code Committees, International Journal Editorial Boards, Conference Committees, and Professional Societies. He is a Fellow of ACI, CSCE, EIC, and IIFC and recipient of ACI 2020 Mete A. Sozen Award for Excellence in Structural Research.

Natalie Enright Jerger, Professor, Edward S. Rogers Sr. Department of Electrical and Computer Engineering, University of Toronto

Natalie Enright Jerger, the Canada Research Chair in Computer Architecture at the University of Toronto, designs new ways of arranging the components of computer processors to optimize performance. Her work helps manufacturers like Intel, AMD and Qualcomm build better devices. Professor Enright Jerger has led efforts to improve diversity and advance women in the computer architecture field; she chairs the Women in Computer Architecture networking group and was co-chair of the Association for Computing Machinery (ACM) Council on Diversity and Inclusion. She is a Distinguished Member of ACM and a Fellow of IEEE and the Engineering Institute of Canada.

David Filipchuk, President and Chief Executive Officer, PCL Constructors Inc.

For 40 years, Dave has made an indelible mark on Canada's construction community. Informed by his engineering background, he led impactful projects - bridges, towers, hospitals and more - shaping the fabric of communities. That experience propelled him to lead the 100% employee-owned PCL Family of Companies. The University of Alberta honoured Dave as Canadian Business Leader of the Year in 2023. Active in influential groups - including Business Councils of Alberta and Canada, Business + Higher Education Roundtable and Young Presidents' Organization - Dave advocates tirelessly for the construction industry and guides PCL's exceptional philanthropy for community groups such as United Way.

NEW FELLOWS 2024

Graham Gagnon, Professor, Dalhousie University

Dr. Graham Gagnon, P.Eng. is Dean of the Faculty of Architecture and Planning, Professor in the Faculty of Engineering, and Director of the Centre for Water Resources Studies at Dalhousie University. Over his 25-year career, Graham's research program has trained 200+ students and secured over $50M to address drinking water safety with a focus on distribution system water quality and adaptation strategies to advance treatment processes to counteract the impacts of climate change. Beyond his service on NSERC, Canadian Water Network, and AWWA committees, Graham's contribution to the establishment of the Atlantic First Nations Water Authority is his proudest achievement.

Yang Gao, Professor, University of Calgary

Dr. Gao is a world-renowned researcher and educator in geomatics engineering whose pioneering work has made a worldwide impact on the successful development, wide range use and commercialization of high-precision global navigation satellite systems. He has disseminated his knowledge through hundreds of technical publications and mentorship of scores of graduate students. His contributions have been recognized by major national and international awards and election to fellowships of the Engineering Institute of Canada, US Institute of Navigation, UK Royal Institute of Navigation. He has provided leadership in Canadian and international communities and is President-Elect of the Canadian Institute of Geomatics.

Roch Glitho, Professor, Concordia University

Prof. Roch H. Glitho of Concordia University holds currently a senior Ericsson Industrial Research Chair, has held a Canada Research Chair and has worked as Principal Engineer/Expert at Ericsson Research. He has made truly exceptional technical contributions to the networking and service/application engineering aspects of mobile systems, spanning from the second generation (2G) to the fifth generation and beyond (5GB). These contributions include concrete systems engineering/deployment, international standards setting, patents, and publications. His work has had a tremendous and lasting impact on the signaling system of 2G, the multimedia infrastructure of 3G/4G, and network softwarization (a pillar of 5GB).

Bhushan Gopaluni, Professor, Vice-Provost & Associate Vice-President, University of British Columbia

Prof. Bhushan Gopaluni is an internationally renowned expert in process data analytics. He pioneered the development and application of computational algorithms that characterize and optimize complex industrial processes. These algorithms transform vast industrial data into actionable knowledge. His research enables industries to maintain global competitiveness amidst escalating energy, environment and quality demands. His work resulted in hundreds of research articles and generated several patents. He has played a key role in educating engineering students and championed diversity and inclusion. His exceptional leadership and mentorship have inspired many students and produced leaders in both academia and industry.

NEW FELLOWS 2024

Bo Gu, Founder and President, BOS Photonics

Dr. Bo Gu is a pioneer and global leader in fiber lasers, and laser micro- and nano-engineering and fabrication that transformed the global industrial manufacturing with an economic impact of hundreds of billions of dollars and facilitated the advancement of scientific research and knowledge; a business leader in photonics industry with great commercial successes; and a champion in the photonics community with his three-decade-long services. He won 2023 SPIE Maiman Laser Award and 2022 Laser Institute of America Arthur L. Schawlow Award for his outstanding, career-long contributions to laser technology and applications at the highest level.

Jocelyn Hayley, Professor, University of Calgary

Dr. Jocelyn Hayley's research has deepened our understanding of how to mitigate and adapt to the impact of climate change in permafrost and offshore sediments; she is recognized nationally and internationally as a leader in this critical area of research. She received the Engineering Institute of Canada's Canadian Pacific Railway Engineering Medal, APEGA Women in Engineering and Geoscience Champion Award, Canadian Geotechnical Society's Hardy Address and Cross Canada Lecture Tour. An early and strong proponent of equity in engineering, she is committed to sustainable approaches that foster integration, innovation, and inclusion. She served in leadership positions, including Head of Civil Engineering.

Douglas Ivey, Professor of Materials Engineering, University of Alberta

Douglas Ivey is a professor at the University of Alberta and is recognized for his innovative and comprehensive microstructural characterization of all classes of materials. His research has been applied to numerous technologies of benefit to Canada. His creativity has impacted the electronics, steelmaking and battery industries, and has been recognized with numerous national and international awards. As an award-winning educator, he has impacted thousands of students, and is a proven and a superb leader in the profession while fostering an atmosphere of inclusion with his students.

Jidong Kang, Principal Research Scientist, CanmetMATERIALS, Natural Resources Canada

Dr. Jidong Kang, the Principal Research Scientist at CanmetMATERIALS, Natural Resources Canada, is an internationally recognized leader in the mechanical behavior of materials. His expertise lies in multi-scale material characterization and non-standard test development. He pioneered the development of microstructure-based digital image correlation for microscopic strain mapping, used worldwide to enhance understanding of the fundamentals of material deformation and fracture. His research influences high-level governmental decision-making and successfully facilitates the implementation of lightweight materials and their joints in automotive structural lightweighting. He has made significant contributions to the development of international standards as an exemplary member of standard development organizations.

NEW FELLOWS 2024

## Andy Knight, Professor, University of Calgary

Dr. Andy Knight is globally recognized as an outstanding researcher in the field of electrical engineering. His work on energy efficiency in electrical equipment and systems has been implemented by industry in the transportation, power generation and power systems sectors. His educational leadership has transformed the Department of Electrical and Software Engineering at the University of Calgary. As President of IEEE Industry Applications Society, he has a long record of professional volunteering with impact, including as general chair and steering committee chair of multiple global conferences, and launching the open access journal IEEE Open Journal of Industry Applications.

Kenneth Lee, Director, Kenneth Lee Research Inc.
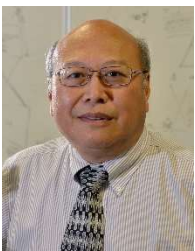
Dr. Kenneth Lee is an international leader in the field of oil spill response with 35+ years of research and science management experience. He has led numerous national and international multi-disciplinary research programs for addressing emerging environmental issues. The outcomes have well supported the development and revision of national policies, international standards and governance for the protection of the marine environment. Lee is well recognized for his leadership in the establishment of national and international science agendas. Lee is a highly respected educator. Influenced by his mentorship, many of Lee's students have also dedicated their lives to combating oil spills.

Henry Leung, Professor, University of Calgary
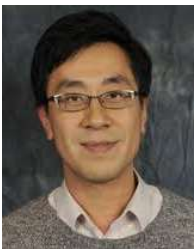
Dr. Leung is a leading expert in nonlinear signal processing and information fusion. For over 20 years, he been developing innovative approaches towards integrated decision-support systems and subsequently transferred these technologies to a variety of defense and industrial applications in smart city and surveillance. Currently an Industrial Research Chair Professor at the University of Calgary, he was previously a defence scientist on radar signal processing and data fusion with Department of National Defence. Recognized as a Fellow in IEEE and Fellow SPIE, Fellow EIC, he has published over 350 journal papers, 20 patents, and supervised over 100 highly qualified personnel.

Yunwei Li, Professor, Senior Engineering Research Chair, University of Alberta

Professor Li is an internationally renowned expert whose pioneering research is contributing vital knowledge and technological solutions to enable Canada's transition to a net-zero electricity grid and usher in a new age of sustainability. He has solved key challenges in smart electrical grids and power electronics. He has made significant contributions to the advancement of microgrids, integration of renewable energy, electrical vehicles and energy storage systems into electrical grids, and high-efficiency high-power industrial drives. He is the inaugural University of Alberta Senior Engineering Research Chair, a Fellow of IEEE, and a Highly Cited Researcher by Clarivate Analytics.

NEW FELLOWS 2024

Marilyn Lightstone, Professor, Mechanical Engineering, McMaster University

Dr. Lightstone is a distinguished and influential Canadian mechanical engineer, educator, researcher, and academic administrator. In 2013 she became the first woman Department Chair in the history of the Faculty of Engineering at McMaster University, with reappointment for a second five-year term in 2018. As Chair, she championed gender diversity and significantly increased the representation of women in Mechanical Engineering. Dr. Lightstone is also an award-winning teacher, consistently ranking as one of the top teachers in Mechanical Engineering. As an authority in CFD, heat transfer, and turbulent flows, Dr. Lightstone led ground-breaking research initiatives, influencing researchers and engineers worldwide.

Zoubir Lounis, Principal Research Officer, National Research Council Canada

Dr. Zoubir Lounis has made outstanding and lasting contributions in the fields of structural engineering and infrastructure management and revolutionized risk-based climate-resilient infrastructure by bridging sustainability, resilience, and civil engineering. He is the recipient of ASCE T.Y. Lin Award and ASCE Ernest Howard Award. His research has shifted the paradigm of life cycle performance modeling from statistical approaches to mechanistic models, ensuring safe and durable infrastructure. He made significant contributions to Canadian standards and codes. Dr. Lounis' innovation and leadership has transformed the Canadian construction industry by reducing life cycle costs, extending service life, and minimizing failure risks of structures.

Zhe Lu, Chief Executive Officer, Falcon Vision Inc.

Dr. Lu is an internationally recognized Canadian entrepreneur and technical innovator. He played a leading role in developing innovative 3D vision inpection systems and standardized industrial vision software and in growing Falcon Vision Technology Inc. to a global company in 3D vision-based metrology. These made-in-Canada products have been adopted by over 30 Fortune 500 companies and over 50 major vision integrators globally, having significantly enhanced Canada's leading role in providing inovative industrial automation solutions.

Maike Luiken, Managing Director R&D, Carbovate Development Corp.

"Dr. Luiken, FEIC, SMIEEE, 'builder' and passionate leader, is best known for her commitment to science and engineering, with technological solutions and education enabling long-term sustainability for planet and people, the Earth's biosphere. She was Dean of Technology and later Applied Research, Lambton College (2005-2013), and President, IEEE Canada (2018–2019).

Throughout her career she has assumed leadership roles, served on Boards of Directors and led 'new' initiatives, including the Bluewater Sustainability Initiative (2006-2013), Sarnia, and the global IEEE Planet Positive 2030 Initiative since 2022. She is Managing Director, R&D, CARBOVATE Development Corp. and an Adjunct Research Professor, Western University."

NEW FELLOWS 2024

Kathryn (Kate) Moran, President and CEO, Ocean Networks Canada

Kate Moran is the President & CEO of Ocean Networks Canada (ONC), a University of Victoria initiative. Under Moran's leadership, ONC has expanded to operating world-leading observatories on the Pacific, Atlantic and Arctic coasts of Canada and in the Antarctic, to deliver globally accessible data that advances scientific discovery, climate solutions, maritime safety and coastal resiliency. Formerly, she was Associate Dean at the University of Rhode Island and served in the White House Office of Science and Technology Policy, focusing on the Arctic, oceans, Deepwater Horizon oil spill, and climate issues. Moran co-led the Integrated Ocean Drilling Program's Arctic Coring Expedition. Additionally, she is a professional engineer and an Officer of the Order of Canada.

Christian Moreau, Professor, Concordia University

Christian Moreau est un scientifique engagé de portée internationale. Titulaire de la chaire de recherche du Canada en projection thermique et en ingénierie des surfaces à l'Université Concordia, ses contributions ont révolutionné la manière dont la recherche sur la projection thermique est menée au niveau mondial et ont considérablement amélioré l'efficacité et la reproductibilité des processus de projection thermique dans l'industrie. Il a eu un impact majeur dans l'industrie aérospatiale canadienne entre autres par ses transferts technologiques vers l'industrie, son leadership au sein du CNRC et de Concordia et son engagement au sein d'organismes de collaboration tel que le CRIAQ.

Arun Mujumdar, Professor, McGill University

Arun Mujumdar is recognized internationally for his contributions to the field of industrial drying. For decades he led a global collaboration between academia and industry to create and disseminate drying technology knowledge and apply it industrially. He published over700 journal articles, chaired more than 60 international conferences, gave over 300 invited talks, wrote 3 books and edited more than 70 books, including the Handbook of Industrial Drying which serves as the consultative reference for academia and industry. He trained talent globally with more than 100 PhDs graduated. He has received many awards, including Doctor Honoris Causa from three universities.

Phalguni Mukhopadhyaya, Professor, University of Victoria

Professor Phalguni Mukhopadhyaya's research activities in the areas of novel construction materials, material testing, and innovative design for building envelopes and structures are ground-breaking and transformative for the stakeholders of the construction industry. He has produced seminal research outputs and applied them to solve many practical engineering problems. Throughout his career, he has demonstrated an exceptional ability to identify and find solutions for the infrastructure challenges faced by society and transfer his knowledge to stakeholders in a thoughtful style through the development of construction standards/codes/guidelines, organization of seminars/conferences, and collaboration with industry partners.

NEW FELLOWS 2024

David Murrin, Director General, National Research Council

Dr. David Murrin is an ocean and naval architectural engineer leading research and development at the National Research Council Canada in his role as Director General of Ocean, Coastal and River Engineering, where he was appointed in 2016. He previously spent more than 10 years in leadership roles in private industry and academia, and has a reputation for excelling in the development of strong collaborations across these sectors. He has been recognized for his expertise and leadership in ocean, coastal and riverine engineering in Canada and continues to drive innovation in these increasingly important areas.

Christopher Ober, Professor of Materials Science & Engineering, Cornell University

For the invention of new families of photoresists enabling advanced, next generation high-resolution lithography in microelectronics manufacture.

Stavroula Pantazopoulou, Professor of Civil Engineering, Department of Civil Engineering, Lassonde School of Engineering, York University

Dr. Voula Pantazopoulou is a Professor of Civil Engineering at York University. She specializes in reinforced concrete structures, performance-based earthquake engineering, structural retrofit, and novel structural materials. She has served as faculty in several universities and has held numerous leadership positions. She has supervised 20 PhD and over 50 Master of Science students, with more than 50% being women. Her research has yielded more than 150 journal papers with over 6000 citations, in the top 1.2% of highly-cited researchers globally (Stanford–Elsevier). She is a member of several technical and code-writing committees and of many national and international expert panels.

Joshua Pearce, John M. Thompson Chair and Professor, Western University

Dr. Pearce is a world-leading expert in three fields that are critical to sustainability. In solar photovoltaic (PV) technologies, he has demonstrated lower-cost source of power and dual-use benefits in agriculture (agrivoltaics), floatovoltaics, and solar in the built environment. He founded the field of free and open source hardware for science and engineering, which radically accelerates innovation while reducing research costs. He also founded the field of distributed recycling and additive manufacturing, which solves waste issues while enabling individuals to make products for themselves at lower costs. He has more than 400 peer-reviewed publications with more than 27,000 citations.

NEW FELLOWS 2024

Veena Rawat, CEO, Expert Strategies International, LLC

Dr. Veena Rawat has been a trailblazer for women in telecommunications. An engineer at Industry Canada in the 1970s, she rose through the ranks to become president of Communications Research Centre, Canada. She led national and international committees related to the management of radio frequency spectrum setting worldwide regulations and standards. In 2014 she was awarded 'Officer of the Order of Canada' "…for contributions to telecommunications engineering and leadership in establishing the global regulatory framework for radio spectrum management". Throughout her career she sought to increase opportunities for women in science and technology and encourage women to study STEM.

Anthony Straatman, Professor and Chair, Mechanical & Materials Engineering, Western University

Dr. Straatman is recognized for his innovative research, his outstanding contributions to engineering education, his development of unique programs, and his dedication to leadership in engineering. He has conducted fundamental and collaborative research that has led to patenting of novel technologies that save water and energy. He has created unique programs to enrich engineering education and has been recognized at the highest level for his excellence in university instruction. He is past president of the Computational Fluid Dynamics Society of Canada, Fellow, Canadian Society for Mechanical Engineering and is currently Chair of Mechanical & Materials Engineering at Western University.

Srikanta Swamy, Research Professor, Department of Electrical and Computer Engineering, Concordia University

Dr. M.N. Srikanta Swamy, Fellow IEEE, has had a long and illustrious career in research and education. In nearly six decades of dedicated service to his profession, he has established himself in the world-wide circuits, systems and signal processing community as an outstanding researcher, a pioneering educator and a brilliant, dynamic academic administrator. He is the recipient of a large number of awards for his contributions to research and engineering education. An attribute that sets him apart from several leading researchers is that he continues to be active in research, education and professional service, despite his already long academic career.

Maryam Tabrizian, Full professor, McGill University

Maryam Tabrizian has pioneered many engineering concepts in the field of biomaterials and biointerfaces to promote the interactions and crosstalk between living and artificial systems. Of great significance are her approaches to layer-by-layer self-assembly of biopolymers on living cells and tissues and multifunctional nanosystems along with inventive microfluidic platforms to investigate this phenomenon at the single cell level. Her research has resulted in paradigm shifts in many aspects of regenerative and nanomedicine, acclaimed publications and research translation. Her impactful contributions to the advancement of the field of biomedical sciences and engineering have been recognized by many international and national awards.

NEW FELLOWS 2024

Ladan Tahvildari, Professor, University of Waterloo

Ladan Tahvildari is a global expert in software quality addressing challenging problems related to the architecture, security, and testing of dependable systems. She pioneers techniques and tools that aid with the construction, analysis, and maintenance of large-scale software systems, leading the way to outsmarting cybersecurity threats. By creating strategic linkages between academia and industry, she is cultivating and strengthening Canada's talent in the field. Elected twice, for two consecutive terms, Tahvildari is the first woman and second Canadian, to serve as Chair of the IEEE CS Technical Community on Software Engineering – the world's largest professional organization devoted to computer science.

Demetri Terzopoulos, Distinguished Professor of Computer Science, University of California, Los Angeles, Computer Science Department

Demetri Terzopoulos is an Academy Award winning Canadian computer scientist, distinguished university professor, author, and entrepreneur. He is best known for pioneering the influential physics-based approach to computer graphics and computer vision that has helped unify these two fields, and for introducing to graphics, vision, medical imaging, and other fields, the concept of Deformable Models, among them the seminal Active Contour Models. He is also internationally recognized for his multidisciplinary artificial life research, spanning from biomechanics to artificial intelligence, yielding remarkably realistic simulated humans and other animals. His innovations and entrepreneurship have helped establish AI technologies within the healthcare industry.

Ehsan Toyserkani, Professor, Canada Research Chair, University of Waterloo

Ehsan Toyserkani, Canada Research Chair in Additive Manufacturing (AM), is world renowned for his pioneering contributions to the modeling, simulation, in-situ monitoring, and quality assurance of metal AM. He is founding director of the NSERC Holistic Innovation in AM Network, a pan-Canadian initiative connecting seven universities and >24 private companies. He has published >175 scholarly articles, authored the seminal textbook "Metal Additive Manufacturing" (Wiley, 2021), filed/received 18 patents, and has disclosed or transferred >35 technologies and recipes to industry. His group's research has spun out three start-ups and is the basis for a global standard draft (ISO/ASTM52958) currently on ballot.

John Tsotsos, Distinguished Research Professor, York University, Dept. of Electrical Engineering and Computer Science

John Tsotsos is an international leader in computational vision and visual attention. Canada's leading interdisciplinary vision scientist, he has made contributions spanning computer, robotic and human vision. In engineering, he pioneered the design and development of robotic binocular camera systems, autonomous wheelchairs and vision-guided robotic platforms. Specifically, he and his students developed the first active object recognition robot and first robot to perform active visual search. His leadership in Canada is exemplary, having built world-class vision groups and networks, and leading major scientific activities internationally in the engineering of computer vision systems and human vision studies.

NEW FELLOWS 2024

Costas Tzoganakis, Professor, Chemical Engineering, University of Waterloo

The innovative work of Professor Costas Tzoganakis, educator and researcher in Chemical Engineering, University of Waterloo, on rubber devulcanization has resulted in the commercialization of a technology which offers a sustainable, financially viable, environmentally friendly and socially responsible solution to the end-of-life tires (ELT) problem. It also enables tire manufacturers to reduce carbon footprint while promoting a truly circular economy in rubber tire manufacturing. Research and innovation have been very successful thus far and the efforts are continuing to meet future challenges, as improving the technology of devulcanization of EPDM rubber (used in door seals and other automotive parts).

Gaozhi Xiao, Principal Research Officer, National Research Council

"Dr. Xiao is a Principal Research Officer at National Research Council, an IEEE fellow and an EIC fellow. He is an internationally renowned expert in optic fiber sensing and flexible electronics. Dr. Xiao published in Nature Communications. He received the 2014 Technical Award and the 2018 Distinguished Service Award from the IEEE Instrumentation and Measurement society, 2013 and 2021 "Technology to Market Award" and 2022 "Research and Technology Breakthrough Award" from NRC-AEP, 2022 Gold Edison Award and 2022 R&D 100 Award."

Viviane Yargeau, Professor & Dean of the Faculty of Engineering, McGill University

Over her academic career spanning two decades, Viviane Yargeau, Dean of Engineering at McGill University, has demonstrated remarkable expertise, innovation, and leadership. She has been a driving force behind the protection of water resources, the training of the next generation of engineers, and equitable access to the profession, greatly impacting the engineering community. As a contributor to her profession and prolific researcher and academic leader, Yargeau exemplifies the highest standards of excellence in engineering, consistently pushing the boundaries of knowledge and practice. Her dedication and vision have not only advanced her field but have inspired countless students, collaborators and colleagues.

## Christopher Yip, Professor, University of Toronto

Christopher Yip is Dean of the University of Toronto's Faculty of Applied Science and Engineering, having previously served as Director of the Institute of Biomedical Engineering and Associate Vice-President, International Partnerships. He has made extensive leadership contributions to CIHR and NSERC and was instrumental in helping to restructure the NSERC-CIHR Collaborative Health Research Projects program. A leading scholar in the field of single-molecule biophysics, Professor Yip is developing innovative new tools and techniques for characterizing molecular dynamics and structures. He is a Fellow of the American Association for the Advancement of Science and the Engineering Institute of Canada.

Alfred Yu, Professor and Assistant Vice-President (Research and International), University of Waterloo
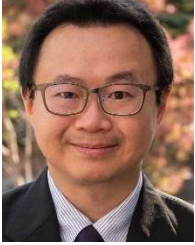
Alfred Yu is internationally renowned as an outstanding innovator and leader in next-generation ultrasonics. He is a pioneer of high-frame-rate ultrasound imaging technology that has transformed clinical ultrasound scanners and cardiovascular diagnostics. His seminal discoveries in therapeutic ultrasound have established the mechanistic basis of ultrasound-mediated drug delivery. Dr. Yu's achievements and impact have been recognized by many prestigious prizes, including NSERC Steacie Memorial Fellowship, IEEE Ultrasonics Early Career Investigator Award, Frederic Lizzi Award, and Ontario Early Researcher Award. He is a Fellow of IEEE, EIC, and AIUM. He is the Editor-in-Chief of IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

NEW INTERNATIONAL FELLOWS 2024

Sandra (Sandy) Stash, NonExecutive Director, Trans Mountain Company

From drilling engineer to Board Director, Sandra (Sandy) Stash has over 40 years of international executive and Board experience, currently on the Boards of Diversified Energy Company, Trans Mountain (Canadian), Chaarat Gold, and Medallion Midstream. She has held executive leadership positions in engineering and operations, mega capital projects, supply chain management, ESG, and government and public affairs in the energy, manufacturing, and hard rock mining sectors. Sandy is recognized for her unique capabilities in bridging the extractive sector to external stakeholders - in government, civil society and at the community level. She is a leader in the advancement of women.

Jingdong Wang, Chief Scientist for Computer Vision, Baidu

Dr. Jingdong Wang is a world-renowned scientist in computer vision, deep learning and multimedia. A Fellow of IEEE and IAPR, he is widely recognized for his scientific contributions to visual recognition, large scale vector search, and multimedia search. A Chief Scientist for Computer Vision at Baidu and a former Senior Principal Research Manager at Microsoft Research Asia, he is a technology leader and has shipped commercial products used by hundreds of millions of users around the world through his groundbreaking technology innovations. His industrial contributions range from multimedia search, web search, AI cloud to autonomous driving.

Wenjun Zeng, Vice President, Chair Professor, Eastern Institute of Technology

Wenjun Zeng is internationally recognized as a pioneer and leader in multimedia computing and deep learning, in both scientific research and engineering development. This is demonstrated by his many widely-used commercial products shipped at Microsoft and PacketVideo, significant contributions to industrial standards (MPEG/JPEG/OMA), and 270+ publications. His entire career has been vision and impact driven, with a long history of collaborating with Canadian engineers and researchers. He is best known for his instrumental contributions to "perceptually-based" watermarking and "human-centric" video analytic. Elected to IEEE Fellowship in 2012, he has 25000+ citations and an h-index of 71 per Google Scholar.

Suojiang Zhang, Professor, Institute of Process Engineering, Chinese Academy of Sciences

Dr. Zhang is a world-renowned scientist and pioneer in fundamental research and industrial applications of ionic liquids (ILs). His discovery of the intrinsic nature of Z-bonds and thus formed ionic clusters in ILs, revealing essential differences from conventional molten salts, significantly enhanced IL-based separation and reaction processes (600+ papers) and thereby innovated 10+ green industrial applications (350+ patents) with significant economic and environmental benefits. He has played a leadership role in collaborations with Canada, the UK and other countries with global impact. He is a Member of the Chinese Academy of Sciences and has won numerous national and international awards.