

The Canadian
Academy of
Engineering



L'Académie
canadienne
du génie

CAE Annual Conference

2024

Conference annuelle de l'ACG

London, Ontario

Participant Package

Guide du participant

Table of Contents // Table des matières

President’s Welcome	3
Executive Director’s Welcome	3
Bienvenue de la présidente	4
Bienvenue du directeur général.....	4
Local Organizers’ Committee’s Welcome	5
Western University’s Dean of Engineering’s Welcome	5
Bienvenue du Comité des organisateurs locaux	6
Bienvenue du Doyen du génie de l’Université Western	6
Program Summary // Résumé du programme	7
Detailed Program // Programme détaillé	8
Fellows’ Showcase // Vitrine des Fellows	16
Sponsors // Commanditaires	18
Venue Information // Infos sur les emplacements.....	19
Accommodations & Transportation // Hébergement & transport	21
Contact Information // Coordonnées	24
Visiting London, Ontario // Visiter London, en Ontario	25

President's Welcome



It is my great pleasure to welcome Fellows and guests to our Annual Conference and Gala Induction Dinner produced this year in partnership with Western University. As co-Chair of the conference, I am extremely proud of the work done by the program committee and many volunteers, with a special shout-out to my co-Chair, Professor Jesse Zhu.

2024 marks the 37th anniversary of the founding of the Canadian Academy of Engineering and this conference, as you will discover in reading the program, is our most ambitious yet. It features Nobel Laureate and Honorary CAE Fellow Dr. Donna Strickland, a Fellow's Showcase Workshop a program that features engineering perspectives on many of the leading and emerging technologies of our time as well as site visits to a sustainable community and one of the world's top wind research facilities; topics that will shape engineering for decades to come.

I would also like to welcome our new Fellows, many of whom will be presented with their CAE Fellowship certificates at the Gala Induction Dinner. I would like to encourage you all to learn more about the Academy and how your engagement can help people understand the important role that engineering plays in meeting many of our societal challenges and unlocking economic opportunities.

I look forward to meeting many of you over the course of the conference and wish you all safe travels.

Catherine Karakatsanis, President and Chair of the Board

Executive Director's Welcome

On behalf of myself and the CAE staff we are pleased to welcome you to the main event in the CAE calendar, the Annual Conference and Induction Dinner. Last year, in Victoria, we decided to expand the format from one day to two. We received a lot of positive feedback and some new ideas for this year. The organizing committee has built on these ideas to bring you our most ambitious conference to date. We look forward to your feedback on this year's event.



Unlike a specialized research or industry conference, this event is aimed at the unique community that is the Fellows of the Academy of Engineering. Engineering leaders from across a broad range of disciplines and sectors who can exchange ideas, concepts and perspectives that are technically advanced and broadly applicable.

By combining the Annual Conference with the Induction Dinner, we are able to provide new Fellows with a concentrated introduction to their new colleagues and to the activities of the Academy. The Academy runs because of the tireless volunteer work of many of our Fellows. Feedback is always welcome.

Robert Crawhall, Executive Director

Bienvenue de la présidente



J'ai le grand plaisir d'accueillir les Fellows et leurs invités à notre conférence annuelle et au gala d'intronisation organisés cette année en partenariat avec l'université Western. En tant que coprésidente de la conférence, je suis extrêmement fière du travail accompli par le comité de programme et les nombreux bénévoles, et je tiens à féliciter tout particulièrement mon coprésident, le professeur Jesse Zhu.

2024 marque le 37^e anniversaire de la fondation de l'Académie canadienne du génie et cette conférence, comme vous le découvrirez en lisant le programme, est la plus ambitieuse que nous ayons jamais organisée. Elle met en vedette la lauréate du prix Nobel et Fellow honoraire de l'ACG, Donna Strickland, un atelier de présentation des Fellows, un programme qui présente les perspectives de l'ingénierie sur de nombreuses technologies de pointe et émergentes de notre époque, ainsi que des visites d'une communauté durable et de l'une des meilleures installations de recherche sur l'énergie éolienne au monde; des sujets qui façonneront l'ingénierie au cours des décennies à venir.

J'aimerais également souhaiter la bienvenue à nos nouveaux Fellows, dont plusieurs recevront leur certificat de Fellow de l'ACG lors du gala d'intronisation. J'aimerais vous encourager tous à en apprendre davantage sur l'Académie et sur la façon dont votre engagement peut aider les gens à comprendre le rôle important que joue l'ingénierie pour relever bon nombre de nos défis sociétaux et débloquer des possibilités économiques.

Je me réjouis de rencontrer beaucoup d'entre vous au cours de la conférence et vous souhaite à tous un bon voyage.

Catherine Karakatsanis, Présidente du Conseil

Bienvenue du directeur général

En mon nom et au nom du personnel de l'ACG, nous sommes heureux de vous accueillir à l'événement principal du calendrier de l'ACG, la conférence annuelle et le dîner d'intronisation. L'année dernière, à Victoria, nous avons décidé d'étendre le format d'une journée à deux jours. Nous avons reçu de nombreux commentaires positifs et de nouvelles idées pour cette année. Le comité d'organisation s'est appuyé sur ces idées pour vous proposer notre conférence la plus ambitieuse à ce jour. Nous attendons avec impatience vos commentaires sur l'événement de cette année.



Contrairement à une conférence spécialisée sur la recherche ou l'industrie, cet événement s'adresse à la communauté unique que constituent les membres d'une Académie de génie. Il s'agit de leaders en ingénierie issus d'un large éventail de disciplines et de secteurs qui peuvent échanger des idées, des concepts et des points de vue techniquement avancés et largement applicables.

En combinant la conférence annuelle et le dîner d'intronisation, nous sommes en mesure de fournir aux nouveaux Fellows une introduction concentrée à leurs nouveaux collègues et aux activités de l'Académie. L'Académie fonctionne grâce au travail bénévole inlassable d'un grand nombre de nos Fellows. Les commentaires sont toujours les bienvenus.

Robert Crawhall, Directeur général

Local Organizers' Committee's Welcome

On behalf of the London Organization Committee, we extend a warm welcome to all participants in the 2024 Conference and New Fellows Induction Ceremony of the Canadian Academy of Engineering. As we gather in London, the vibrant “Forest City” of Canada, we are excited to host this prestigious event on a university campus for the very first time. Our university has some historic buildings dating back to the 1920s, nestled along the picturesque Thames River. We encourage you to explore these architectural gems during your leisure time.

We are also very excited to have Dr. Donna Strickland, the Nobel Laureate (2018, Physics), as a keynote speaker, along with Dr. Mark Daley, Western's Chief AI Officer.

For this year, along with seven panel discussions on important issues organized by our local fellows, we have also prepared two special programs for our delegates:

- (1) **The Fellows' Showcase:** 25 fellows will present their groundbreaking research and innovations, while interacting with representatives from local industries.
- (2) **Panel Discussion “CAE – The Past, The Present and The Future”:** Several past CAE presidents and seasoned fellows are invited to review the history and discuss the future of CAE.

We offer sincere congratulations to all newly elected fellows and we are honoured to witness this historical moment.

Lastly, we express our gratitude to all delegates for their unwavering support. Without you, this conference would not have been possible.

Thank you and let us make this conference a memorable and enriching experience for all.

Co-Chairs: Jesse Zhu, Andy Hrymak and Ying Zheng

Western University's Dean of Engineering's Welcome

As the Dean of Western University's Faculty of Engineering, it is my great pleasure to welcome you to the 2024 CAE Annual Conference and New Fellows Induction Ceremony.

I am excited to see the program that Jesse Zhu and the organizing committee have prepared for us. It is a unique opportunity for us to come together, share knowledge and inspire one another as we continue to tackle the challenges of our time.

To our 54 newly inducted Fellows, congratulations on this well-deserved recognition. Your outstanding work has not only moved the boundaries of engineering but also made a profound impact on society. We are proud to celebrate your accomplishments and look forward to the continued excellence you will undoubtedly bring to our community.

I extend my heartfelt thanks to all attendees, speakers and organizers who have made this conference possible. Your participation enriches this event and underscores the collaborative spirit that is the hallmark of our profession.

I look forward to many fruitful discussions, opportunities for inspiration and the chance to catch up with old friends. Once again, I would like to take this moment to welcome you all to our campus and, on behalf of Western Engineering, thank you for being here this week.

Ken Coley



Bienvenue du Comité des organisateurs locaux

Au nom du Comité d'organisation de Londres, nous souhaitons la bienvenue à tous les participants à la Conférence 2024 et à la Cérémonie d'intronisation des nouveaux membres de l'Académie canadienne du génie. Alors que nous nous réunissons à London, la vibrante « ville forestière » du Canada, nous sommes ravis d'accueillir cet événement prestigieux sur un campus universitaire pour la toute première fois. Notre université possède des bâtiments historiques datant des années 1920, nichés le long de la pittoresque rivière Thames. Nous vous encourageons à explorer ces joyaux architecturaux pendant votre temps libre.

Nous sommes également très heureux d'accueillir Donna Strickland, lauréate du prix Nobel (2018, physique), en tant qu'oratrice principale, ainsi que Mark Daley, Chief AI Officer de Western.

Cette année, outre les sept tables rondes sur des questions importantes organisées par nos Fellows locaux, nous avons également préparé deux programmes spéciaux pour nos délégués :

- (1) La vitrine des Fellows : 25 Fellows présenteront leurs recherches et innovations révolutionnaires, tout en interagissant avec des représentants des industries locales.
- (2) Panel de discussion « ACG - Le passé, le présent et l'avenir » : Plusieurs anciens présidents de l'ACG et des Fellows chevronnés sont invités à passer en revue l'histoire et à discuter de l'avenir de l'ACG.

Nous adressons nos sincères félicitations à tous les nouveaux élus et nous sommes honorés d'être les témoins de ce moment historique.

Enfin, nous exprimons notre gratitude à tous les délégués pour leur soutien indéfectible. Sans vous, cette conférence n'aurait pas été possible.

Merci et faisons de cette conférence une expérience mémorable et enrichissante pour tous.

Coprésidents : Jesse Zhu, Andy Hrymak et Ying Zheng

Bienvenue du Doyen du génie de l'Université Western

En tant que doyen de la Faculté de génie de l'Université Western, j'ai le grand plaisir de vous souhaiter la bienvenue à la Conférence annuelle de l'ACG 2024 et à la Cérémonie d'intronisation des nouveaux Fellows.

J'ai hâte de voir le programme que Jesse Zhu et le comité organisateur ont préparé pour nous. C'est une occasion unique pour nous de nous réunir, de partager nos connaissances et de nous inspirer les uns les autres alors que nous continuons à relever les défis de notre époque.

À nos 54 nouveaux Fellows, nous adressons nos félicitations pour cette reconnaissance bien méritée. Votre travail exceptionnel a non seulement repoussé les limites de l'ingénierie, mais il a également eu un impact profond sur la société. Nous sommes fiers de célébrer vos réalisations et nous nous réjouissons de l'excellence continue que vous apporterez sans aucun doute à notre communauté.

Je remercie chaleureusement tous les participants, les orateurs et les organisateurs qui ont rendu cette conférence possible. Votre participation enrichit cet événement et souligne l'esprit de collaboration qui caractérise notre profession.

Je me réjouis des nombreuses discussions fructueuses, des opportunités d'inspiration et de la possibilité de retrouver de vieux amis. Une fois de plus, je voudrais profiter de ce moment pour vous souhaiter la bienvenue sur notre campus et, au nom de Western Engineering, vous remercier d'être présents cette semaine.

Ken Coley



Program Summary // Résumé du programme

Monday, May 27th

Time	Description	Location*
12:30-1:30pm	Networking Luncheon	Western, ACEB 1410
1:30-4:00pm	Fellows' Showcase Workshop	Western, ACEB 1415, 1420
4:00-5:00pm	Ontario Section	Western, ACEB 1415
5:00pm	Buses to Ivey Spencer Leadership Center	From Delta and Park From Western
5:30-8:00pm	Welcome Reception	Ivey Spencer Leadership Center
8:30pm	Buses back to hotels	To Delta and Park

Tuesday, May 28th

Time	Description	Location*
7:45am	Buses to Western	From Delta and Park From IS Leadership Center
8:20am-12:00pm	Morning sessions	Western, ACEB 1450
12:00-1:00pm	Networking Luncheon	Western, ACEB Atrium
1:00-5:00pm	Afternoon sessions	Western, ACEB 1450
5:00pm	Buses to Western	From Delta, Park, ISLC
5:15-6:30pm	Reception	Lobby, Richard Ivey Building
6:30-10:00pm	Gala Dinner and Induction Ceremony	Brock Pavilion Dining Hall, Richard Ivey Building
9:00/10:00pm	Buses back to hotels	

Wednesday, May 29th

Time	Description	Location*
7:50am	Buses to Ivey Spencer Leadership Center	From Delta and Park
8:30am-12:00pm	Morning sessions	Ivey Spencer Leadership Center, Maple Leaf Foods Room
12:00-1:00pm	Networking Luncheon	Ivey Spencer Leadership Center, Asher's Dining Room
1:00pm	Buses to hotels and tours	
1:30-3:30pm	Tour of WindEEE/Fraunhauser Tour of West5 and EVE	See Venue Information page
3:30pm	Buses back to hotels	

*Please see detailed location information on the [Venue Information](#) page.

Detailed Program // Programme détaillé

Monday, May 27th

Time	Description	Location*
12:30-1:30pm	Networking Luncheon	Western, ACEB 1410
Sponsored by Western Engineering; Complimentary but please register prior		
1:30-4:00pm	Fellows' Showcase Workshop	Western, ACEB 1415
Session 1	Clean Energy & Materials Technologies	
Chair	Sarah Shortreed, FCAE, ICD.D	
Welcome Message	Ying Zheng, Program Co-Chair, FCAE, FEIC, Western University	
Presenters		
Yun Hang Hu	Super-Structured Materials for Energy Devices	
Bruce Taylor	Credible Affordable Decarbonization	
Kamiel Gabriel	Scalable Low-Carbon Hydrogen Production Technology Utilizing Waste/Process Heat	
James Chen	Recent Progress in Laser Materials Processing: From Welding, and Additive Manufacturing to Battery Recycling	
Shuhui Sun	Next Generation Battery and Hydrogen Technologies for a Carbon-Neutral Future	
Elizabeth Gillies	New Approaches Towards Controlling Polymer Degradation	
Hesham El Naggar	Innovative Foundation for Wind Turbines	
Jun Long	Responsibly Developing the Oil Sands Resource through Technological Innovations	
Franco Berruti	Biocarbon: The Most Effective Solution for Carbon Sequestration	
Marilyn Spink	Accelerating Canada's Critical Material Supply Chains	
Wenli Duo	Control of Air Pollutants and Reduction of Carbon Emissions for Pulp and Paper Industry	
Fenglou Zou	On the Way to Circular Carbon-Based Energy	

*Please see detailed location information on the [Venue Information](#) page.

Monday, May 27th (continued)

Time	Description	Location*
1:30-4:00pm	Fellows' Showcase Workshop	Western, ACEB 1420
Session 2	Artificial Intelligence (AI), Hardware & Computing Science	
Chair	Miriam Capretz, Associate Dean-Research, Western University	
Welcome Message	Jesse Zhu, Conference Co-Chair, FCAE, FRSC, FEIC, Western University	
Presenters		
Baochun Li	Generative AI and Distributed Machine Learning	
Hugh Liu	Autonomous Drone Flight: Where are We?	
Frederic Coulombe	Creating a New Paradigm in Open-Source Hardware	
Jie Liang	Privacy-Preserving Activity Sensor for Senior Care and Remote Patient Monitoring	
Steve Hranilovic	Optical Wireless Communications: Bridging Canada's Digital Divide	
Joshua Pearce	Systems Engineering with the Free Appropriate Sustainability Technologies (FAST) Lab	
Slobodan P. Simonovic	Rainfall Intensity Duration Frequency Curves for Future Climate Scenarios: A Publicly Accessible Computer Tool IDF_CC	
Ajay Ray	Innovative Design of Simulated Moving Bed Systems for Purification of Pharmaceutical Drugs	
Claude Lague	Controlled-Traffic Farming (CTF) in Production Agriculture	
Liang Song	Online Evolutive Learning towards a Networked AGI	
Phalguni Mukhopadhyaya	A Novel Approach to Quantify Infrared Thermography Images for Energy Audit of Exterior Building Envelopes	
Wenjun Zeng	Interpretable and Controllable AI Generated Content	
Qiao Sun	Towards Building Digital Twins for Prognostics and Health Management (PHM) of Industrial Assets	

See Schedule and Details in the Fellows' Showcase section on page 16.

4:00-5:00pm	Ontario Section	Western, ACEB 1415
Organizers		
	Jesse Zhu, FCAE, FRSC, Western University	
	Catherine Karakatsanis, FCAE, LL.D, Morrison Hershfield Now Stantec	

5:00pm [Buses to Ivey Spencer Leadership Center](#)

*Please see detailed location information on the [Venue Information](#) page.

Monday, May 27th (continued)

Time	Description	Location*
5:30-8:00pm	Welcome Reception	Ivey Spencer Leadership Center
	<p>Official Welcome - Robert Crawhall, CAE Executive Director</p> <p>Catherine Karakatsanis, CAE President and Conference Co-Chair</p> <p>Ken Coley, Dean of Engineering, Western University</p> <p>Sarah Shortreed, Vice Chair, Board of Governors, Western University</p> <p>Jesse Zhu, Conference Co-Chair, Director on CAE Board</p>	
8:30pm	Buses back to hotels	To Delta, Park

*Please see detailed location information on the [Venue Information](#) page.

Tuesday, May 28th

Time	Description	Location*
7:45am	Buses to Western from hotels	From Delta, Park, Ivey Spencer Leadership Center
8:20am-12:00pm	Morning sessions	Western, ACEB Atrium & 1450
8:20am – 8:40am	<p>Conference Opening: Welcome and Introduction - Jesse Zhu, Conference Co-Chair</p> <p>Catherine Karakatsanis, CAE President and Conference Co-Chair</p> <p>Alan Shepard, President, Western University</p> <p>Robert Crawhall, CAE Executive Director</p>	
8:40am – 8:45am	Group photo, on-site	
8:45am – 9:40am	<p>Keynote Session 1</p> <p>Keynote Speaker</p> <p>Dr. Donna Strickland, Nobel Prize Laureate (2018, Physics): <i>Nonlinear Optics to High-Intensity Laser Physics</i></p> <p>Session Chairs</p> <p>Catherine Karakatsanis, CAE President and Conference Co-Chair</p> <p>Bryan Neff, Associate Vice President-Research, Western University</p>	
9:40am – 10:00am	Break – ACEB Atrium	
10:00am – 11:00pm	<p>Panel Discussion on CAE – the Past, the Present and the Future</p> <p>Moderators</p> <p>Catherine Karakatsanis, CAE President and Conference Co-Chair</p> <p>Jesse Zhu, FACE, FRSC, CAE Board Member and Conference Co-Chair</p> <p>Mini Report on the Timeline of CAE’s History - Jesse Zhu, Western U</p> <p>Panelists</p> <p>Ravi Ravindran, FCAE, CAE Past President, Toronto Metropolitan University</p> <p>Ron Crotogino, FCAE, CAE Board Member, Past President & CEO of ArboraNano</p> <p>Soheil Asgarpour, FCAE, CAE Past President, President & CEO at PTAC</p> <p>Axel Meisen, FCAE, CAE Past President, Professor Emeritus, UBC, and President, Fusion Energy Council of Canada (with video presentation)</p>	

*Please see detailed location information on the [Venue Information](#) page.

Tuesday, May 28th (continued)

Time	Description	Location*
8:20am-12:00pm	Morning sessions	Western, ACEB 1450
11:00am – 12:00pm	<p>Panel Discussion on From Lab to Market: Transforming Cleantech Innovations into Practical Applications</p> <p>Moderator</p> <p>Ted Mao, FCAE, Chief Technology Officer, Evercloak</p> <p>Panelists</p> <p>Mr. Marv DeVries, Past President, Trojan Technologies</p> <p>Mr. Michael Soligo, FCAE, President & CEO, RWDI</p> <p>Leo Lau, FCAE, Linyi Univ, and Univ of Science and Technology Beijing</p>	
12:00-1:00pm	Networking Luncheon	Western, ACEB Atrium
1:00-5:00pm	Afternoon sessions	Western, ACEB 1450
1:00pm – 1:40pm	<p>Keynote Session 2</p> <p>Keynote Speaker</p> <p>Dr. Mark Daley, Chief AI Officer, Western University: Specialization is for insects: being a human engineer in an AI-soaked world</p> <p>Session Chairs</p> <p>Miriam Capretz, Associate Dean-Research, Engineering, Western University</p> <p>Ying Zheng, FCAE, FEIC, Western University</p>	
1:40pm – 2:40pm	<p>Panel Discussion on AI/ML: The Disruptive Force Reshaping Engineering Disciplines</p> <p>Moderator</p> <p>Abdallah Shami, FCAE, Electrical and Computer Engineering, Western University</p> <p>Panelists</p> <p>Mark Daley, Chief AI Officer, Western University</p> <p>Raouf Boutaba, FRSC, FIEEE, FIEC, FCAE, University of Waterloo</p> <p>Baochun Li, FCAE, University of Toronto</p> <p>Moncef Nehdi, FCAE, McMaster University</p>	

*Please see detailed location information on the [Venue Information](#) page.

Tuesday, May 28th (continued)

Time	Description	Location*
1:00-5:00pm	Afternoon sessions	Western, ACEB 1450
2:40pm – 3:00pm	Break – ACEB Atrium	
3:00pm – 4:00pm	Panel Discussion on Quantum Computing: Unleashing New Potentials and Challenges in Engineering Moderator Abdallah Shami, FCAE, Western University Panelists Julien Chosson, IBM Canada Hemavathi Santhanam, IBM Quantum Ambassador, IBM Alexandre Cooper-Roy, Institute for Quantum Computing (IQC), University of Waterloo	
4:00pm – 5:00pm	Panel Discussion on Next-Generation Batteries for EVs Moderator Andy Sun, FCAE, FRSC, Western University Panelists Karim Zaghbi, FRSC, Chemical and Materials Engineering, Concordia University Shuhui Sun, FCAE, INRS Andy Sun, FCAE, FRSC, Western University	
5:00pm	Buses to Western from hotels	From Delta, Park, Ivey Spencer Leadership Center
5:15-6:30pm	Reception	Lobby, Richard Ivey Building
6:30-10:00pm	Gala Dinner and Induction Ceremony Robert Crawhall, Executive Director Catherine Karakatsanis, CAE President and Conference Co-Chair Penny Pexman, Vice President Research, Western University	Brock Pavilion Dining Hall, Richard Ivey Building
9:00pm/10:00pm	Buses back to hotels	To Delta, Park, Ivey Spencer Leadership Center

*Please see detailed location information on the [Venue Information](#) page.

Wednesday, May 29th

Time	Description	Location*
7:50am	Buses to Ivey Spencer Leadership Center	From Delta, Park
8:30am-12:00pm	Morning sessions	Ivey Spencer Leadership Center, Maple Leaf Foods Room
8:30am – 9:30am	Panel Discussion on Infrastructure: Energy and Carbon Emissions Reduction	
	Moderator	
	Andrew Hrymak, FCAE, Western University; Project Leader, Carbon Solutions	
	Panelists	
	Girma Bitsuamlak, Director, WinDEEE Research Institute, Western University	
	Ursula Eicker, CERC in Smart, Sustainable and Resilient Cities and Communities, Concordia University	
	Steven Pepper, CFO, S2E Technologies	
9:30am – 10:30am	Panel Discussion on Roadmap for Resilient Building	
	Moderator	
	Robert Crawhall, FCAE, Executive Director, Canadian Academy of Engineering	
	Panelists	
	Andreas Athienitis, FCAE, Chair, Concordia Research Chair & Hydro-Quebec Chair, Director, Concordia Centre for Zero Energy Building Studies, Concordia University	
	Ursula Eicker, Canada Excellence Research Chair (CERC) in Smart, Sustainable and Resilient Cities and Communities, Concordia University	
	Caroline Hachem-Vermette, Building, Civil & Environmental Engineering, Concordia University	
	Vinay Sharma, FCAE, CEO, London Hydro	
	Milfred Hammerbacher, CEO S2E Technologies	
	Christina Ismailos, Sr. Science and Technology Advisor, Natural Resources Canada	
10:30am – 10:45am	Break	

*Please see detailed location information on the [Venue Information](#) page.

Wednesday, May 29th (continued)

Time	Description	Location*
8:30am-12:00pm	Morning sessions	Ivey Spencer Leadership Center, Maple Leaf Foods Room
10:45am – 11:45am	Panel Discussion on the Changing Nature of Severe Summer Storms and the Impact on Engineering Design	
	Moderator	
	Greg Kopp, FCAE, Civil Engineering, Western University	
	Panelists	
	David Sills, Executive Director of Northern Tornadoes Project	
	Keith Porter, Chief Engineer, Institute for Catastrophic Loss Reduction	
11:45am – 12:00pm	Closing Remarks – Jesse Zhu, Conference Co-Chair	
	Catherine Karakatsanis, CAE President and Conference Co-Chair	
	Robert Crawhall, CAE Executive Director	
12:00-1:00pm	Networking Luncheon	Ivey Spencer Leadership Center, Asher's Dining Room
1:00pm	Buses to hotels and tours	To Delta, Park, Tours
1:30-3:30pm	Tour of WindEEE/Fraunhauser Tour of West5 and EVE	See Venue Information page
3:30pm	Buses back to hotels	To Delta, Park, Ivey Spencer Leadership Center

*Please see detailed location information on the [Venue Information](#) page.

Fellows' Showcase // Vitrine des Fellows

Schedule

No.	Time	Name	Institutions	Title
Session 1: Clean Energy & Materials Technologies Location: ACEB 1415, Western University, London, Ontario, Canada				
	13:30-13:40	Session Chair: Sarah Shortreed, FCAE, ICD.D, Welcome Message: Ying Zheng, FCAE, FEIC, Western University		
1	13:40-13:50	Yun Hang Hu	Michigan Technological University	Super-structured Materials for Energy Devices
2	13:50-14:00	Bruce Taylor	Enviro-Stewards Inc.	Credible Affordable Decarbonization
3	14:00-14:10	Kamiel Gabriel	Ontario Tech University	Scalable Low-Carbon Hydrogen Production Technology Utilizing Waste/Process Heat
4	14:10-14:20	James Chen	Natural Resources Canada	Recent Progress in Laser Materials Processing: From Welding, and Additive Manufacturing to Battery Recycling
5	14:20-14:30	Shuhui Sun	INRS	Next Generation Battery and Hydrogen Technologies for a Carbon-Neutral Future
6	14:30-14:40	Elizabeth Gillies	Western University	New Approaches Towards Controlling Polymer Degradation
7	14:40-14:50	Hesham El Nagggar	Western University	Innovative Foundation for Wind Turbines
8	14:50-15:00	Jun Long	Suncor Energy (Syncrude) Operating Inc.	Responsibly Developing the Oil Sands Resource through Technological Innovations
9	15:00-15:10	Franco Berruti	Western University	Biocarbon: The Most Effective Solution for Carbon Sequestration
10	15:10-15:20	Marilyn Spink	GS Group	Accelerating Canada's Critical Material Supply Chains
11	15:20-15:30	Wenli Duo	FPIInnovations	Control of Air Pollutants and Reduction of Carbon Emissions for Pulp and Paper Industry
12	15:30-15:40	Fenglou Zou	Volta Energy	On the Way to Circular Carbon-Based Energy

Session 2: Artificial Intelligence (AI), Hardware & Computing Science				
Location: ACEB 1420, Western University, London, Ontario, Canada				
	13:30-13:40	Session Chair: Miriam Capretz, Associate Dean-Research, Western University Welcome Message: Jesse Zhu, FCAE, FRSC, FEIC, Western University		
1	13:40-13:50	Baochun Li	University of Toronto	Generative AI and Distributed Machine Learning
2	13:50-14:00	Hugh Liu	University of Toronto	Autonomous Drone Flight: Where are We?
3	14:00-14:10	Frederic Coulombe	Jericho Lab	Creating a New Paradigm in Open-Source Hardware
4	14:10-14:20	Jie Liang	Simon Fraser University, AltumView Systems Inc.	Privacy-Preserving Activity Sensor for Senior Care and Remote Patient Monitoring
5	14:20-14:30	Steve Hranilovic	McMaster University	Optical Wireless Communications: Bridging Canada's Digital Divide
6	14:30-14:40	Joshua Pearce	Western University	Systems Engineering with the Free Appropriate Sustainability Technologies (FAST) Lab
7	14:40-14:50	Slobodan P. Simonovic	Western University	Rainfall Intensity Duration Frequency Curves for Future Climate Scenarios: A Publicly Accessible Computer Tool IDF_CC
8	14:50-15:00	Ajay Ray	Western University	Innovative Design of Simulated Moving Bed Systems for Purification of Pharmaceutical Drugs
9	15:00-15:10	Claude Lague	University of Ottawa	Controlled-Traffic Farming (CTF) in Production Agriculture
10	15:10-15:20	Liang Song	Fudan University	Online Evolutive Learning towards a Networked AGI
11	15:20-15:30	Phalguni Mukhopadhyaya	University of Victoria	A Novel Approach to Quantify Infrared Thermography Images for Energy Audit of Exterior Building Envelopes
12	15:30-15:40	Wenjun (Kevin) Zeng	Eastern Institute of Technology	Interpretable and Controllable AI Generated Content
13	15:40-15:50	Qiao Sun	University of Calgary	Towards building digital twins for prognostics and health management (PHM) of industrial assets



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**THE UNIVERSITY
OF BRITISH COLUMBIA**

Faculty of Applied Science



UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Venue Information // Infos sur les emplacements

The 2024 CAE Annual Conference will take place in two locations, the gala at a third, and the Wednesday afternoon guided tours at two more. There are similarities in names between the venues so please ensure that you know where you are going.

A map is provided on the next page.

Ivey Spencer Leadership Centre (ISLC)

551 Windermere Rd, London, ON N5X 2T1

519.679.4546

- Business meetings (afternoon of Monday, May 27th)
- Welcome Reception (evening of Monday, May 27th) - Pavilion (the “Tent”)
- Morning sessions (Wednesday, May 29th) - Maple Leaf Foods Room
- Lunch (Wednesday, May 29th) - Asher's Dining Room

Western’s Ivey School of Business, Richard Ivey Building

1255 Western Rd, London, ON N6G 0N1

519.661.3206

- Gala Dinner and Induction Ceremony (evening of Tuesday, May 28th)
 - Reception - Lobby
 - Dinner - Brock Pavilion Dining Hall

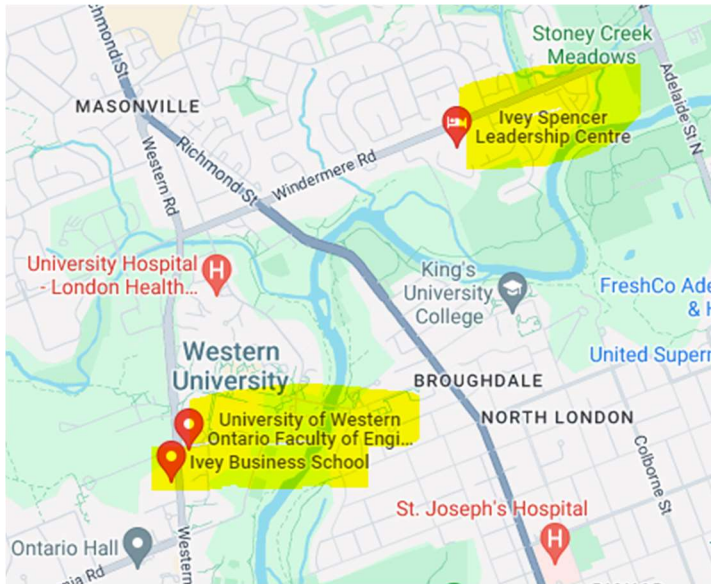
Western University’s Engineering Campus

1151 Richmond St, London, ON N6A 3K7

519.661.2128

Amit Chakma Engineering Building (ACEB)

- Networking Luncheon (Monday, May 27th) - ACEB 1410
- Fellows’ Showcase (afternoon of Monday, May 27th) - ACEB1415, 1420
- Morning & afternoon sessions (Tuesday, May 28th) - ACEB 1450
- Networking Luncheon (Tuesday, May 28th) - ACEB Atrium



Western WindEEE Research Institute and Fraunhofer Innovation Platform for Composites Research

WindEEE: 2535 Advanced Ave, London, ON N6M 0E2

Fraunhofer: 2520 Advanced Ave, London, ON N6M 0E1

- Guided tour option (afternoon of Wednesday, May 29th) – bussing provided

West 5 and EVE, London Sustainable Living

West 5: 1295 Riverbend Rd #300, London, ON N6K 0G2

EVE: 2100 Lumen Dr, London, ON N6K 0L3

- Guided tour option (afternoon of Wednesday, May 29th) – bussing provided
- Plenty of free covered parking on the north side of the address for West5

Accommodations & Transportation //

Hébergement & transport

A shuttle bus service will be available from the Ivey Spencer Leadership Centre, the Park Hotel, and the Delta Hotel to and from the various conference locations (see the Program for details and times). Transportation between venues and between hotels can also be done using personal vehicles. Parking passes are available for those who arrange them in advance.

Maps are provided on the next pages. The bus schedule is on the next page.

Accommodations

Room blocks with special rates have been negotiated at the following venues. Please note that if you arrive earlier than your check-in time, you can ask the front desk of each hotel to leave your bags with them. If you arrive at Western, you can store your bags in ACEB 1450.

Ivey Spencer Leadership Centre

551 Windermere Road, London, ON N5X 2T1, (519) 679-4546

Nightly Rate at \$194 (includes breakfast) plus applicable taxes and fees.

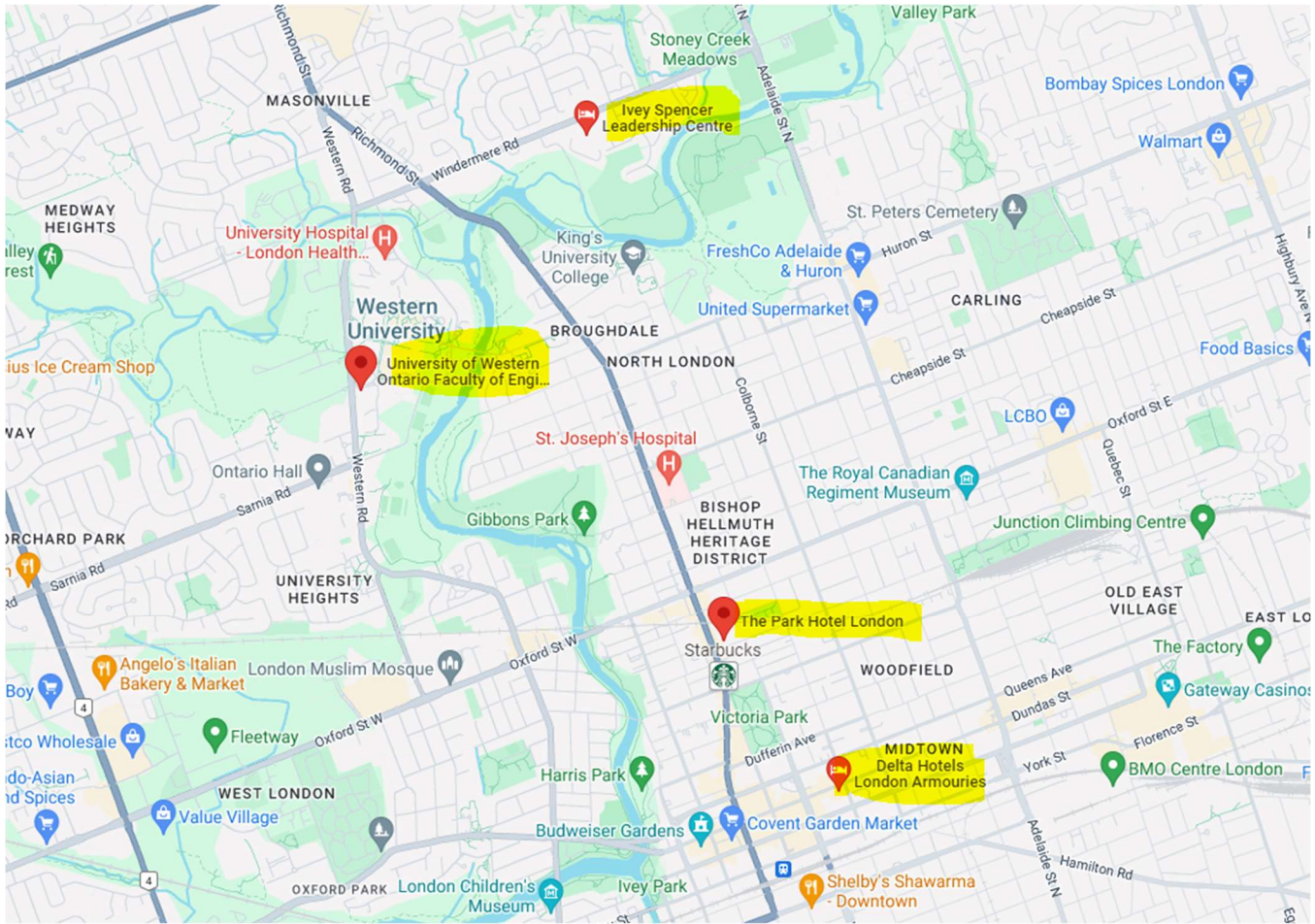
Reservation can be made by calling (519) 679-4546 and asking for the “Canadian Academy of Engineers Conference” block or online at [this link](#).

The Park Hotel-London

242 Pall Mall Street, London, ON N6A 5P6, (519) 642-4444

Delta Hotels London Armouries

325 Dundas Street, London, Ontario N6B 1T9, (519) 679-6111



Transportation

Bus Schedule (times may vary by 15 minutes)

Monday, May 27th

Time	Description	Location
5:00pm	Buses to Ivey Spencer Leadership Center	From Delta and Park
5:15pm		From Western
8:30pm	Buses back to hotels	To Delta and Park

Tuesday, May 28th

7:45am	Buses to Western	From Delta and Park
8:00am		From IS Leadership Center
5:00pm/5:15pm	Buses to Western	From Delta, Park / ISLC
9:00/10:00pm	Buses back to hotels	

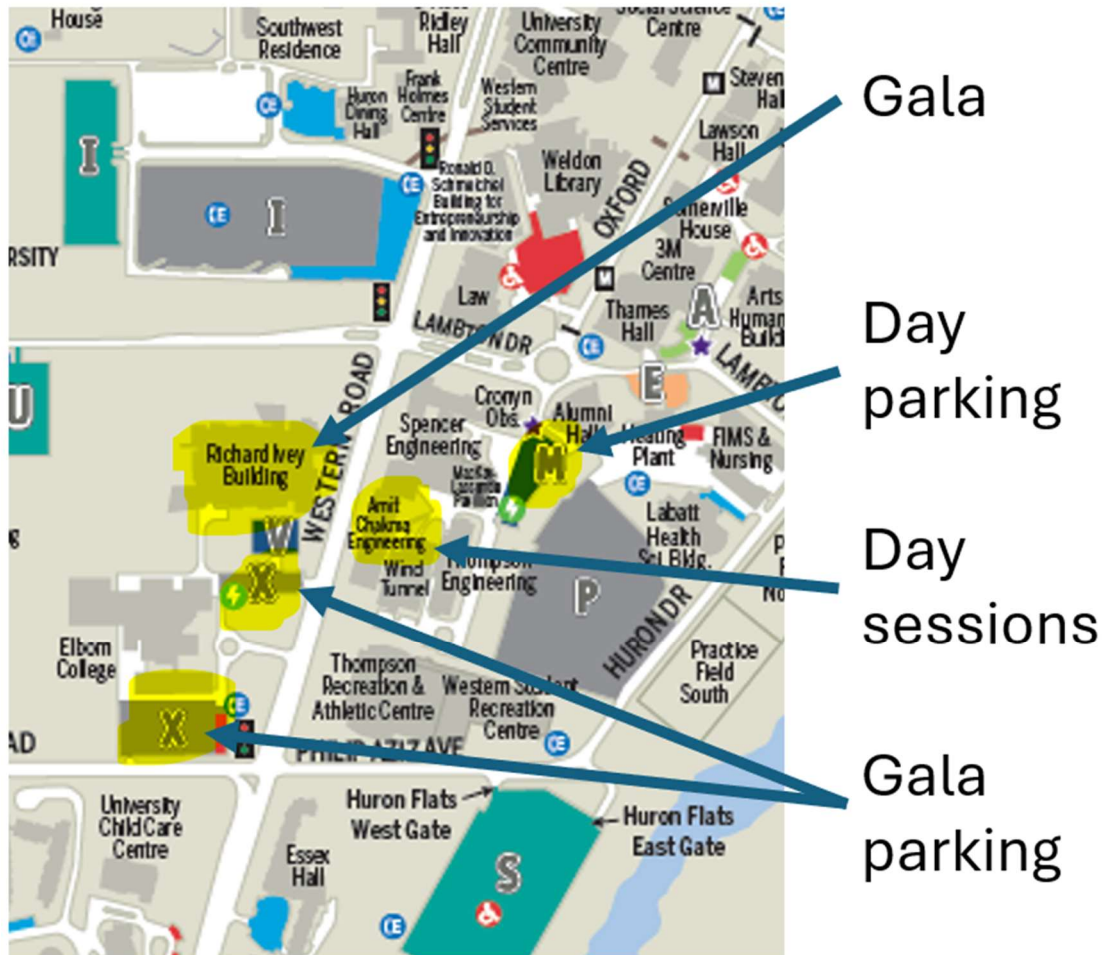
Wednesday, May 29th

7:50am	Buses to Ivey Spencer Leadership Center	From Delta and Park
1:00pm	Buses to hotels and tours	
3:30pm	Buses back to hotels	

Parking Passes & Locations

As many of you will be driving, we will provide complimentary parking passes at the lot at Western University. Please note that passes will not be needed to park at the Spencer Leadership Centre nor the Richard Ivey Building for the Gala Dinner, as they are complimentary.

For the Gala dinner, you will be able to park at lot X. For the sessions at Western, you will be able to park at lot M; please take the ticket when entering the parking lot and then pick up your validation at the registration desk prior to leaving.



Contact Information // Coordonnées

General information, pre-conference	613.235.9056	ncardin@cae-acg.ca
General information, at conference	613.235.9056 (call) 613.302.1185 (text)	ncardin@cae-acg.ca
Conference programming		Ying.Zheng@uwo.ca jzhu@uwo.ca

CAE Annual Conference Organizing Team

The Canadian Academy of Engineering

Robert Crawhall	Executive Director
Chris Frantz	Project Manager
Nancy Cardin	Administrative Coordinator

Conference Committee

Co-Chairs

Jesse Zhu	Western University
Catherine Karakatsanis	Morrison Hershfield Now Stantec

Program/Local Logistics Committee

Jesse Zhu	Co-Chair
Andy Hrymak	Co-Chair
Ying Zheng	Co-Chair
Abdallah Shami	Member
Greg Kopp	Member
Ted Mao	Member
Andy Sun	Member
Tony Straatman	Member
Ken Coley	Member
Sarah Shortreed	Member
Miriam Capretz	Member
Susan Chapman	Member

Visiting London, Ontario // Visiter London, en Ontario

London Tourism

Please visit www.londontourism.ca to find things to do in London! Please visit www.ShowYourBadge.ca for discounts at various places in London. You just need to show you CAE Conference badge!



Ultimate Ontario

A Brief Intro to London, Ontario

London is often considered to be the hub of southwestern Ontario. They currently have a population of around 400,000 people, which makes London the fifth most populous city in the province. In fact, it's Canada's 11th largest metropolitan area.

London, Ontario is roughly equal distance from both Toronto and Detroit (about 200kms away from each). The city lies right where highway 401 and 402 meet each other, which makes it an easy drive as well from Windsor, Sarnia, and other population centres.

It's known for a number of things, but education, healthcare, arts, music, and sports probably top the list. Notably, it's the home to both Western University and Fanshawe College.

Visit Covent Garden Market

Located in downtown London, Ontario, Covent Garden Market bills itself as “London’s Original Market.” That seems only fair considering Covent Garden first opened its doors in 1845. You know, 20 or so years before Confederation – no big deal.

Stroll Around Springbank Park

Springbank Park is the largest park in London, and it covers roughly 300 acres. It’s an ideal place to go for a walk and get some reprieve from the hustle and bustle of the city.

Appreciate London’s Restaurant Scene

To get your day started, we’d recommend Plant Matter Cafe on Richmond, and in particular, their Tofu Scramble Bagel. It’s all vegan, and it’s all delicious.

You’d also be remiss to leave London without eating at Hunter & Co, a tapas restaurant done very, very right. The other restaurant that comes to mind is Dimi’s Greek House, which serves a flaming saganaki that will steal your heart, and perhaps also Abruzzi, which serves authentic Italian right across the street from the Covent Garden Market.

Set Eyes on St. Peter’s Cathedral Basilica London

Everyone visiting this city should add a nice big walk up and down Dufferin Avenue to their list of things to do in London, Ontario. But, don’t forget to stop when you get to 196 Dufferin and take in this magnificent cathedral.

Bring the Family to Storybook Gardens

Storybook Gardens is a staple of London, Ontario tourism. It’s well known throughout southwestern Ontario as one of the premier places for family fun.

Check Out Fanshawe Pioneer Village

Fanshawe Pioneer Village is a captivating open-air heritage museum spanning over 30 acres. The goal? To meticulously recreate rural life in 19th-century Ontario, and it boasts more than 30 historic buildings including homes, barns, and workshops to do just that.

See What’s On at Budweiser Gardens

Welcome to the largest sports-entertainment centre in southwestern Ontario – Budweiser Gardens!

A visit to Budweiser Gardens is no doubt one of the most fun things to do in London, Ontario. It’s perhaps best known the downtown home of the London Knights, which many would say is the most famous team in the Ontario Hockey League.

Take a Deep Breath at Westminster Ponds

Westminster Ponds is a true natural oasis located not all that far from the city's urban core. Covering approximately 200 hectares, it's comprised of a series of interconnected ponds, wetlands, and woodlands. This diverse ecosystem makes it a very popular destination for birdwatchers and nature enthusiasts.

Pop by the Jet Aircraft Museum

Founded in 2009, this museum has become a hub for aviation enthusiasts and history buffs alike. It houses an impressive collection of operational jet aircraft, providing visitors with a rare opportunity to see these powerful machines up close. Among the notable exhibits is the Canadair CT-133 Silver Star, a versatile training jet that played a crucial role in the Royal Canadian Air Force. That's a place we were able to sit in, in fact!

Play a Little Golf Near London

We'd personally recommend FireRock Golf Club, which is only about a 15-20 minute drive from downtown. It's a challenging yet enjoyable par 72 championship design, which ranges from 5672 yards to 7183 yards depending on which tees you're playing from.

Helicopter ride in London, Ontario

The nickname of London, Ontario is "The Forest City" for a reason. And that reason becomes very clear when you get aerial views.

You can cruise straight down Oxford Street and get a view of downtown London that you could have never imagined. Actually, you can get whatever views you want with GL Heli, as they're all about catering to your needs.

Walk Around Wortley Village

We walked up from the Idlewyld, and kicked things off with a cup of joe from Locomotive Espresso South (on 350 Ridout St. South), and then walked through the neighbourhood from there towards the Westland Gallery. In their words, they "showcase emerging and established artists from London and area with new exhibitions every three weeks and an inventory of hundreds of original works of art."

Take a Tour of Labatt Park

Labatt Park in London, Ontario, is a historic gem and the oldest continuously operating baseball grounds in the world.