

WiE RISE Symposium

Women in Engineering: Research with Impact at Smith Engineering Symposium

Queen's University, Mitchell Hall | May 5, 2026

Rooms 215, 225, 235 & Bartlett Gymnasium

At a Glance – Full Day Schedule

8:00	Check-in & Coffee Rooms 215 / 225 / 235
8:30	Welcome Addresses & Keynote Rooms 215 / 225 / 235
9:30	Technical Sessions Rm 215 Natural Resources & Environment Rm 225 Intelligent Systems, Information & Communication Technology Rm 235 Power, Energy, & Fluid Systems
10:45	Coffee Break Rooms 215 / 225 / 235
11:15	Technical Sessions Rm 215 Multidisciplinary Engineering Rm 225 Natural Resources & Environment Rm 235 Biomedical, Biomechanical & Bioengineering
12:30	Lunch & Poster Presentations Bartlett Gymnasium
13:30	Celebration of CERCs, CRCs Bartlett Gymnasium
13:45	Technical Sessions Rm 215 Multidisciplinary Engineering Rm 225 Advanced Materials, Structures & Manufacturing Rm 235 Biomedical, Biomechanical & Bioengineering
15:00	Coffee Break & Poster Viewing Bartlett Gymnasium
15:30	Concurrent Panel Sessions Rm 215 Work-Life Balance: Cultivating Wellbeing in a Complex World Rm 225 Careers: Finding Opportunities and Communicating Your Value Rm 235 Successful Research Proposals: Sex & Gender Integration
16:30	Poster Awards & Closing Remarks Bartlett Gymnasium
17:00	Reception Bartlett Gymnasium

Complete Programme

8:00 –
8:30

Check-in & Coffee | Rooms 215 / 225 / 235

Welcome Addresses & Keynote | Rooms 215 / 225 / 235

Welcome: Dr. Heidi Ploeg & Dr. Amir Fam, WiE-RISE Co-Chairs

Deans Address: Dr. Kevin Deluzio PhD, P.Eng, FCAE, FEIC [Dean and Professor, Queen's University]

Provost Address: Dr. Matthew Evans [Provost and Vice-Principal (Academic), Queen's University]

Government Address: Dr. Mona Nemner Ph.D., C.M., C.Q., FRSC [Chief Science Advisor of Canada]

Keynote: Dr. Susan Tighe PhD, PEng, FCAE, FCSCE, FEIC, C.Dir. [President and Vice-Chancellor, McMaster University]

8:30 –
9:30



Dr. Susan Tighe is McMaster University's ninth President and Vice-Chancellor, appointed July 1, 2025. A professor of civil engineering and professional engineer since 1995, she is internationally renowned for her contributions to sustainable concrete and asphalt transportation infrastructure, pioneering a "cradle-to-grave" research program spanning materials science through to real-world implementation on roads and airfields in Canada and abroad.

Drawing on deep experience in the public and private sectors, Dr. Tighe champions transformative research, high-quality teaching, and outstanding student experience. She has advanced innovation, entrepreneurship, inclusion, and the responsible use of generative AI to enhance teaching and prepare students for the future of work.

Her leadership experience includes serving as McMaster's Provost and Vice-President (Academic) and holding a Canada Research Chair at the University of Waterloo. She is a Fellow of the Canadian Academy of Engineering, the Engineering Institute of Canada, and the Canadian Society for Civil Engineering.

Technical Sessions

Room 215 | Natural Resources & Environment

Chairs: Farzaneh Sadri, Stephanie Wright, Asli Sari

9:30 –
10:45

9:30 **Farzaneh Sadri** [CRC Tier 2, Faculty, MINE]
Critical Metals Recovery: Balancing Resource Demand with Environmental Responsibility

9:42 **Stephanie Wright** [Faculty, CIVIL]
Assessing northern groundwater vulnerability to permafrost thaw

- 9:54 **Sukhjot Kaur** [PDF, CHEE]
Electrochemical C-N coupling to value added fuels via co-reduction of nitrate and carbon dioxide
- 10:02 **Asal Shoaie** [PhD, MINE]
Sustainable Neodymium Recovery from End-of-Life Permanent Magnets Via Molten Salt Electrolysis
- 10:10 **Varsha Sharma** [MAsc, CHEE]
Integrated Bioconversion of Wood Waste into Methane and Lignin
- 10:18 **Romina Shirazi** [PhD, CHEE]
Engineering Biomaterials to Improve Wastewater Treatment Efficiency
- 10:26 **Elise Rogers** [PhD, CIVIL]
The impacts of wind-generated waves on suspended sediment concentrations in the Minas Basin, Bay of Fundy

Room 225 | Intelligent Systems, Information & Communication Technology

Chairs: Mariam Guizani and Ying Zou

- 9:30 **Ying Zou** [CRC Tier 1, Faculty, ECE]
The Agentic Shift: AI-Driven Software Engineering
- 9:39 **Karen Rudie** [Faculty, ECE]
Secrecy and Security in Discrete-Event Systems
- 9:48 **Melissa Greef** [Faculty, ECE]
Engineering the Eye in the Sky: Resilient UAV Autonomy for Real-World Impact
- 9:57 **Amy Wu** [Faculty, MME]
Robot Companionship? How Robots Affect Human Gait and Other Studies at the Intersection of Biomechanics and Robotics
- 10:06 **Aaliyah Chang** [MAsc, ECE]
From Exposure to Persistence: Understanding Motivations and Challenges in Software Engineering Careers
- 10:13 **Chu Fei Luo** [PhD, ECE]
Towards Low-Resource Alignment to Diverse Perspectives with Sparse Feedback
- 10:20 **Jayalekshmi Jayakumar** [MAsc, ECE]
Zero-Shot Robotic Grasping from Local Surface Geometry
- 10:27 **Haleh Damirchi** [PhD, ECE]
Seeing Pedestrians, Predicting Paths: Practical Methods for Crowded and Dynamic Scenes

Room 235 | Power, Energy, & Fluid Systems

Chairs: Barbara da Silva, Giusy Mazzone, Suzan Eren

- 9:30 **Giusy Mazzone** [Faculty, MATH]
Motions of a harmonic oscillator in a Newtonian fluid
- 9:42 **Barbara da Silva** [Faculty, MME]
Wakes, cubes and vortices
- 9:54 **Katie Cooper-Gray** [MAsc, MME]
Simulation of a Rotating Cylinder at Subcritical Reynolds Numbers: Validation and Preliminary Results
- 10:01 **Shadi Zargari** [MAsc, ECE]
Using cooperative game theory to improve power efficiency in small-scale, independent power grids
- 10:08 **Catherine Douglas** [MAsc, MME]
Experimental Investigation of Monodispersed Fuel Droplet-Assisted Detonations
- 10:15 **Maddy Moran** [PhD, MME]
Turbulent flame-shock interaction at the end of a rectangular shock tube
- 10:22 **Jerin Tasnim Farin** [PhD, MATH]
On the Regularity of traction vector on the Fluid–Structure interface
- 10:29 **Abirami Kalathy** [PhD, ECE]
Geometry-Based Nonlinear Control for Resilient Solar Microinverters
- 10:36 **Katie Schreiner** [PDF, MME]
Large eddy simulation of the outer bank cell in riverbends and its implications for erosion

10:45 –
11:15

Coffee Break | Rooms 215 / 225 / 235

Technical Sessions

Room 215 | Multidisciplinary Engineering

Chairs: Barbara da Silva, Myra Hird and Elayne Marques Silva

11:15 –
12:30

- 11:15 **Myra Hird** [Chair E4H, Faculty, CHEE]
Engineering for Humanity: Transferable Skills, Interdisciplinarity, Belonging and Inclusion - First Steps
- 11:27 **Kim McAuley** [Faculty, CHEE]
Combining Information from Fundamental Models and Data

- 11:39 **Nerissa Mulligan** [PhD, OTHER]
Uneven Foundations: A Study of Gender and Self-Efficacy in Engineering Education
- 11:46 **Netsai Wiboonwipa** [PhD, GEOE]
Water Level Monitoring in the Mekong Basin using Heterogenous Satellites and In-Situ Measurements
- 11:53 **Sarah Hall** [PhD, CIVIL]
Combining field observations and modelling to investigate the hydrodynamic and morphologic impacts of coastal storms in Atlantic Canada
- 12:00 **Yidan Wen** [PhD, CHEE]
From Agricultural Waste to Sustainable Plastics: Extraction and Self-Assembly of Canola Proteins into Biodegradable Films
- 12:07 **Elayne Marques Silva** [PDF, CIVIL]
Challenges in the Shear-Friction Behavior in GFRP-Reinforced Concrete Members
- 12:14 **Elizaveta Ivanchikova** [MAsc, MINE]
Improving Processing of Gold Flotation Concentrates with Microwave Pretreatment
- 12:21 **Emma Greenall** [MAsc, MME]
Radiation stability of nanostructured zirconium nitride

Room 225 | Natural Resources & Environment

Chairs: Ana da Silva, Xiaying Xin and Armineh Azizi

- 11:15 **Ana da Silva** [Faculty, CIVIL]
Effects of climate and land-use changes on river morphology
- 11:27 **Xiaying Xin** [Faculty, CIVIL]
Nano-Scale Bubbles, Macro-Scale Control: Oxidative–Hydrodynamic Disruption of Biofilms and Microplastic-Associated Risks in Drinking Water Systems
- 11:39 **Armineh Azizi** [PDF, CHEE]
Turning Forestry Waste into Renewable Energy: Improving Biomethane Production from Canadian Hardwoods
- 11:47 **Meghan Boyd** [PhD, GEOE]
Investigating an anthropogenic enrichment of Rhenium in two Ontario watersheds
- 11:55 **Petra Berin-Costain** [PhD, MINE]
The influence of spodumene grain size on mineral surface chemistry and flotation performance
- 12:03 **Dulmini Hissalle** [MAsc, MINE]
Microwave Calcination of Polymetallic Sea-Bed Nodules: A sustainable Thermal Processing Approach

12:11 **Nasim Fadaie** [PhD, CHEE]
Crosslinkable Protein Nanofiber Aerogels for the Removal of Cationic and Anionic Dyes

Room 235 | Biomedical, Biomechanical & Bioengineering

Chairs: Lindsay Fitzpatrick and Lidan You

11:15 **Lidan You** [CRC Tier 1, Faculty, MME]
Fighting Metastasis with force: Mechanical loading as a Defense Against Cancer in Bone

11:27 **Lindsay Fitzpatrick** [Faculty, CHEE]
From Danger Signals to Fibrosis: Modeling DAMP–TLR Crosstalk in the Foreign Body Response

11:39 **Kathryn Jalink** [PhD, CHEE]
The Development of Collagen and Hyaluronic Acid Scaffolds for in vitro Lens Wound Closure and Regeneration Models

11:47 **McKinley Van Klei** [MAsc, MME]
Comparison of Magnetic Resonance Imaging and Computed Tomography -Based Models for Shoulder Tracking Using Dynamic Biplanar Radiographic Imaging

11:55 **Kelly Godkin** [MAsc, MME]
Sex differences in Scaphoid allometry

12:03 **Skylar Knibbs** [MAsc, CHEE]
Evaluating the Immunomodulatory Effects of Insulin Analogues and Phenolic Preservatives Associated with Infusion Sets on TLR-Induced Macrophage Activation

12:11 **Haarini Suntharalingam** [BHSc, ECE]
Wrist Actigraphy for Dementia Risk Stratification: A Systematic Review and UK Biobank Analysis

12:30 –
13:30 **Lunch & Poster Presentations | Bartlett Gymnasium**

13:30 –
13:45 **Celebration of CERCs, CRCs | Bartlett Gymnasium**

Technical Sessions

13:45 –
15:00 **Room 215 | Multidisciplinary Engineering**

Chairs: Georgia Fotopoulos and Michela Lai

13:45 **Georgia Fotopoulos** [Faculty, GEOE]

The role of satellite observations and artificial intelligence in large-scale site investigations

- 13:57 **Michela Lai** [Faculty, PHYS]
New technologies for the dark matter detection in noble liquids
- 14:09 **Ivanna Boras** [PhD, PHYS]
Quantum Photonic Neural Networks in Time
- 14:16 **Heidi Miller** [PhD, ECE]
Shaping Light with Engineered Geometries to Compute Ultrafast Feedback Control Signals
- 14:23 **Aarchi Shah** [MSc, PHYS]
Balloon Borne Very Large Baseline Interferometry Experiment
- 14:30 **Mouna Harb** [PhD, CHEE]
Improved gain conditioning for linear model predictive control
- 14:37 **Maryam Azhdari** [PhD, CHEE]
Extremum Seeking-Based Output Regulation Using Time-Scale Transformation for Nonlinear Systems
- 14:44 **Natasha Anderson** [MAsc, MME]
Real-Time Estimation of Clinician Spinal Loads Using Machine Learning and Wearable Sensors
- 14:51 **Emese Elkind** [BSc, COMP SCI]
Development of a Low-Cost Above-Elbow Prosthetic in Low-Resource Communities

Room 225 | Advanced Materials, Structures & Manufacturing

Chairs: Yanwen Zhang, Kim McAuley

- 13:45 **Jane Howe** [Faculty, U of T]
What happened to lunar rocks after a meteorite impact?
- 14:00 **Yanwen Zhang** [CERC, Faculty, MME]
Materials Challenges for Nuclear Energy Applications
- 14:10 **Meng Li** [Faculty, MME]
AI Is Not Always the Answer When Understanding Matters
- 14:20 **Hoda Osman** [PhD, CIVIL]
Behavior of Cast-In Connectors in Ultra-Thin UHPC Panels
- 14:27 **Noushin Rajabalinia** [PDF, CHEE]
Resolving Solvent-Controlled Reactivity in Acrylate–Methacrylate Copolymerization: Toward Predictive Design of Waterborne Polymer Materials

- 14:34 **Natalie Arpin** [PhD, CIVIL]
Quantifying Frost Jacking of Bridge Piles in Subarctic Regions: A Case Study from the Hudson Bay Railway
- 14:41 **Jayme Sheriff** [MAsc, CHEE]
Novel Binder-Free Activated Carbon Hydrogels for Supercapacitor Electrodes
- 14:48 **Kristina Bodioga** [MSc, PHYS]
Nanofabrication of InP Photonic Circuits for Telecom Wavelength Chiral Quantum Optics
- 14:55 **Shivanthi Dharmarathna** [PhD, CHEE]
Hybrid Polyamide-Based Nanocomposites Containing Graphene Nanoplatelets and Carbon Nanotubes

Room 235 | Biomedical, Biomechanical & Bioengineering

Chairs: Laura Wells, Nasim Montazeri

- 13:45 **Nasim Montazeri** [Faculty, ECE]
Sleep and Brain Health
- 13:57 **Laura Wells** [Faculty, CHEE]
An "eye" towards adding function to ocular biomaterials
- 14:09 **Thamali Kariyawasam** [PDF, CHEE]
Harnessing genetically modified microalgae for innovative diabetic foot ulcer wound care
- 14:17 **Jenny Lee** [PhD, MME]
Emotional and Physiological Impact of Robot Companion on Performance of Routine Tasks
- 14:25 **Cherie Dai** [PhD, MME]
Investigating the Role of Microproteins in Regulating Mechanical Loading Induced Inhibition of Breast Cancer Bone Metastasis
- 14:33 **Abbey Stein** [MAsc, CHEE]
Investigating the Inflammatory Response to Surgical Mesh
- 14:41 **Alejandra Correa-Belloso** [PhD, MME]
Effect of high dietary phosphate and simulated microgravity on female bone integrity in spaceflight animal model
- 14:49 **Nia Ralston** [MAsc, MME]
Inflatable Bipedal Walking Robot and Simulation

15:00 –
15:30

Coffee Break & Poster Viewing | Bartlett Gymnasium

Concurrent Workshop / Panel Sessions

Room 215 | Work-Life Balance: Cultivating Wellbeing in a Complex World

Host(s): Shannon Hill & Linda Henderson, Queen's University Human Resources

In today's fast paced and demanding work environment, sustaining wellbeing can feel increasingly challenging, particularly in academic and research-intensive roles. This one-hour session explores practical, evidence informed strategies to support wellbeing while navigating competing priorities, high workloads, and constant connectivity.

Participants will gain insight into current research on workplace stress and burnout, learn to recognize early signs, and explore practical approaches for preventing burnout before it takes hold. The session will focus on realistic, applicable strategies such as setting boundaries, managing time and expectations, prioritizing, and leveraging personal strengths.

The session will also introduce Queen's specific resources available to support employees, including learning opportunities, online tools, and wellbeing and management toolkits. Participants will have the opportunity to reflect, share what has worked for them, and consider small, meaningful changes that can support their wellbeing in a complex work environment.

15:30 –
16:30

This session is ideal for employees seeking practical tools to support wellbeing while remaining engaged, productive, and resilient in complex professional environments.

Learning objectives include:

- Examining key research and trends related to workplace wellbeing and burnout
- Identifying practical strategies for managing workload, boundaries, and expectations
- Exploring prioritization, time management, and strength-based approaches to work
- Increasing awareness of employee resources available at Queen's University

Room 225 | Careers: Finding Opportunities and Communicating Your Value

Host(s): Anne Ginn, Career Services

This workshop explores how to explore career opportunities by leveraging networks, hidden job markets, and strategic relationship-building.

Participants will learn how to translate technical research and project experience into language that resonates with employers, collaborators, and non-technical audiences to pursue opportunities across industry, academia, and beyond.

[Organized by: Smith Engineering Corporate Relations]

Room 235 | Successful Research Proposals: Sex & Gender Integration

Host(s): TBA

How is sex and gender relevant to engineering research across multiple disciplines? Successful Tri-Agency research proposals require outstanding research that embeds sex and gender by design.

Workshop participants will be introduced to methods in which addressing sex and gender have contributed to engineering design and then brainstorm on how sex and gender considerations could be included to strengthen grant applications and research approaches.

This active workshop includes definitions of sex and gender, examples of sex and gender in engineering research, and a panel discussion with TriAgency reviewers.

[Organized by: Claire Davies, Heidi Ploeg, Katrina Gee, Laura Wells, Lindsay Fitzpatrick, Susan Phillips]

**16:30 –
17:00**

Poster Awards, Thank-Yous & Closing Remarks | Bartlett Gymnasium

**17:00 –
19:00**

Reception | Bartlett Gymnasium

Poster Presentations

Power, Energy, & Fluid Systems

Poster #	Presenter	Stage / Dept	Presentation Title
1	Mia Dong	BASc / MME	<i>Detonation Propagation through a Narrow Channel</i>
2	Robin Krasinkiewicz & Janet Liu	BASc / MME	<i>Dielectric Barrier Discharge Plasma Actuators to Mitigate Flow Separation</i>
3	Alexia Economou	MASc / MME	<i>Three-Dimensional Effects on the Flow Around an Isolated Square Prism</i>
4	Yaroslava Poroshyna	PhD / MME	<i>Three-Dimensional Effects in Detonation Re-initiation at a Sudden Expansion</i>
5	Sumin Lee	MASc / MINING	<i>Control of nickel concentration in copper electrorefining using anti-solvent technology</i>

Natural Resources & Environment

Poster #	Presenter	Stage / Dept	Presentation Title
6	Maryam Karimi Nouroddin	MASc / CIVIL	<i>Tracer-Based Estimation of Reactive Specific Surface Area in Ultramafic Rocks: Implications for CO₂ Dissolution and Mineralization Processes</i>
7	Charlotte Sabourin	PhD / CIVIL	<i>Colorful Proxies for Forever Chemicals: Predicting PFAS Behavior via Dye Surrogates</i>
8	Nimaat Salami	MASc / CHEE	<i>Unlocking Sugars from Wood Waste for Sustainable Biofuel Production</i>
9	Mahta Fakhraei Rad	MASc / MINING	<i>Recovery of Rare Earth Elements from Canadian Ore</i>
10	Caroline Kupczyk	MASc / CIVIL	<i>Enhanced Electrochemical Detection of Per- and Polyfluoroalkyl Substances using Self Assembled Monolayers for Application in Soil Washing</i>
11	Kiana Rahnama	PhD / MINING	<i>Microwave-Assisted Comminution and Downstream Processing of Copper-Zinc Sulphide Ore</i>
12	Karsyn Beatty	MASc / MINING	<i>Surface Weathering of Spodumene: Implications for Lithium Beneficiation</i>
13	Kira Van Doorn	BASc / CIVIL	<i>Environmental Impact of Residual Hydroxamic Acid Collectors in Niobium Flotation Tailings</i>
14	Gabriella Candussi	MASc / CIVIL	<i>Performance of Sustainable Concrete at High Temperatures and Fire Conditions</i>
15	Ksenia Lada Bilaniuk	MASc / MINING	<i>Pyrrhotite Superstructures and Grinding Media Abrasion in Ni-Cu Mineral Processing</i>

Poster #	Presenter	Stage / Dept	Presentation Title
16	Becca Otsuki	MASc / CIVIL	<i>Analytical Dimensionless Modeling of Irregular River Meanders Beyond the Sine-Generated Curve</i>

Multidisciplinary Engineering

Poster #	Presenter	Stage / Dept	Presentation Title
17	Nastaran Kianersi	MASc / ECE	<i>Data-Driven Pipeline for Learning Automata Models of Cyber-Physical Systems</i>
18	Dimitria Silveria	PhD / ECE	<i>Decentralized Swarm Control via SO(3) Embeddings for 3D Trajectories</i>
19	Monique Rivard	MASc / GEOE	<i>Exploring the Benefits of Integrating Medium and Low Earth Orbit Satellites for Land Vehicle Wireless Positioning</i>
20	Julia Brachman	BSc / PHYS	<i>Design Trade-Offs in Single- and Dual-Phase Liquid Argon Dark Matter Detectors</i>

Intelligent Systems, Information & Communication Technology

Poster #	Presenter	Stage / Dept	Presentation Title
21	Charlotte Goobie	MASc / ECE	<i>Antipodal Bowtie Antenna Array with Tunable SIW Filter</i>
22	Suzhen Zhong	MASc / ECE	<i>The Human-AI Interplay in Agentic Code Review</i>

Advanced Materials, Structures, & Manufacturing

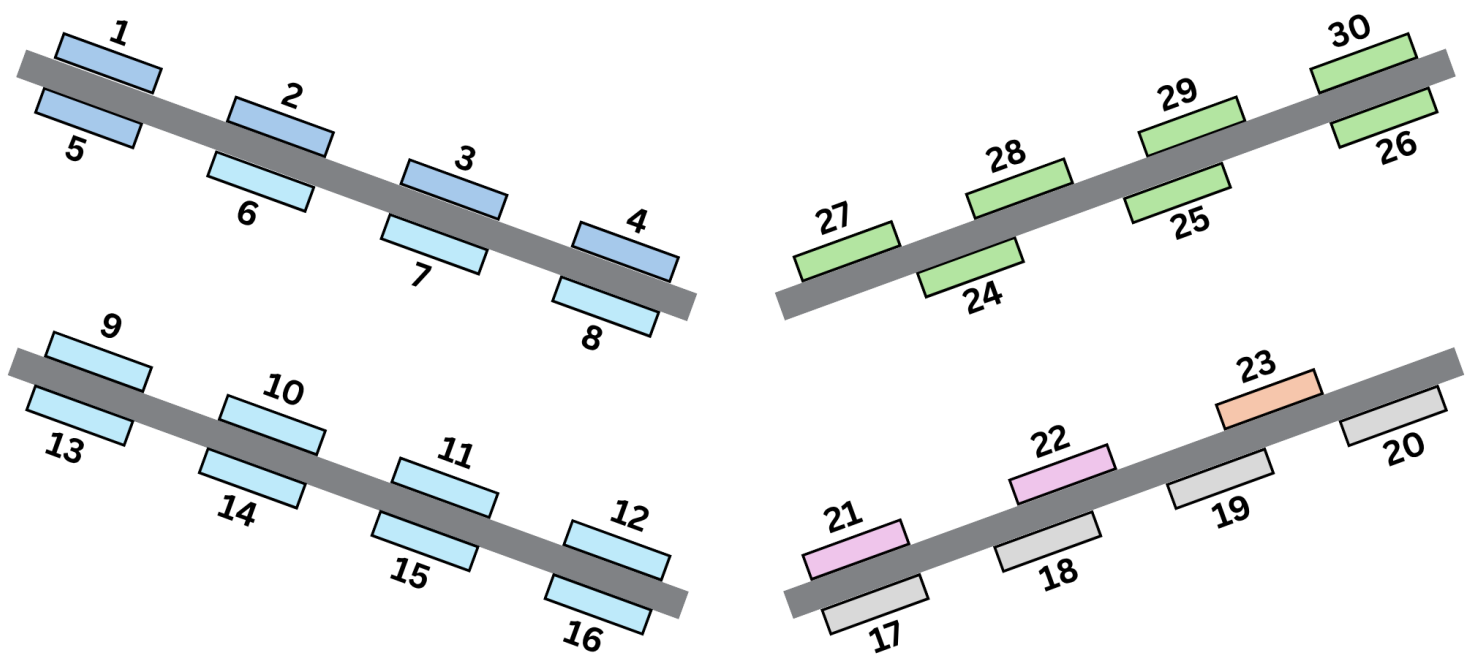
Poster #	Presenter	Stage / Dept	Presentation Title
23	Xiaojing Wu	PhD / CIVIL	<i>Assessment of Ultra-High-Performance-Concrete (UHPC) Overlays for Bridge Decks</i>

Biomedical, Biomechanical & Bioengineering

Poster #	Presenter	Stage / Dept	Presentation Title
24	Zoe Irwin	BASc / ECE	<i>Non-invasive detection of sleep apnea: developing an AI model to identify pauses in breathing from brain signals</i>
25	Pegah Nomanfar	PhD / MME	<i>Reinforcement learning control for Cable-Driven Parallel Robot in upper body rehabilitation</i>
26	Meghan VanBuuren	MASc / CHEE	<i>The development of fibrin-fibroblast hydrogels for 3D in vitro modelling of the foreign body reaction</i>
27	Emily Cameron	PhD / MME	<i>Comparative Hip Joint Morphology in Affected and Unaffected Hips of Hip Resurfacing Patients: A CT-Based Retrospective Study</i>

Poster #	Presenter	Stage / Dept	Presentation Title
28	Marium Japanwala	PhD / MME	<i>An Ergonomic Design of the Interaction Interface of the Colonoscope</i>
29	Hayley Galsworthy	BASc / MME	<i>The Effect of Contractile Muscle Secretome on Stem Cell-Derived Engineered Cartilage under Inflammatory Stress</i>
30	Anastasija Mihic	MASc / MME	<i>Comparison of Anterior Cruciate Ligament Elongation During Low- and High-Impact using Biplanar Videoradiography</i>

Poster Map



Intelligent Syst. Info & Comm	Adv Materials, Structures	Natural Resources & Env	Biomed, Biomech & Bioeng	Multidisciplinary	Power, Energy & Fluid Systems
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