

STEM Innovation Agenda



SAF PRESENTATION 2024



STEM

Innovation



Agenda

- Launched in 2022, the STEM Innovation Agenda aims to advance key strategic priorities and increase Science and Engineering research revenue.
- Create partnership opportunities for both Faculties
- Mission - oriented view to priority areas
- Foster growth of groups and facilities beyond a traditional research group
- Partnerships with other national labs, government, municipalities and industry associations

STEM Innovation Agenda Timeline



2022

...2022:
STEM Innovation
Agenda approved.

2023

March

March - July 2023:

Gregor Lawson hired as Director, Research, Innovation & Partnerships, Faculty of Engineering.

Lauren Mercier hired as Manager, External Research Partnerships, Faculty of Science

- Outreach to Faculty, Research Centers, Facilities, and Units across campus.
- Engaging with industry associations and external sponsors
- Engineering Faculty Review and Strategic Planning

2023

August

August – December 2023:

Lauren Mercier transitioned to Senior Advisor, Research Innovation & Partnerships, Faculty of Engineering

Events:

- SMR Research Day
- Semiconductor Research Day

2024

January

January - May, 2024

Hira Azam hired as Program Coordinator, Research Innovation & Partnerships, Faculty of Engineering

Monika Stolarz hired as Manager, External Research Partnerships, Faculty of Science

Events:

- Academic Entrepreneurship: From research to start-up
- Biomanufacturing Research Day
- Community Energy Transitions Workshop

The Team

John
Preston



Associate Dean
Research Innovation &
Partnerships

Gregor
Lawson



Director

Hira
Azam



Program Coordinator

Lauren
Mercier



Senior Adviser

The Team

Juliet
Daniel



Associate Dean
Research & External
Relations

Monika
Stolarz



Manager, External
Research Partnerships

Diana
Danescu



Director, Research
Administration



➤ What We Do

Advance strategic research priorities through:

- Promotion of funding programs
- Major proposal development
- Facilitate connections
- Outreach to industry
- Events coordination
- Program development
- Undergraduate research & innovation
- Prizes, awards & honorifics
- Promoting research chairs
- Enhancing research facilities

Priority Areas

<p>Energy & Decarbonization</p>	<p>Hydrogen & e-fuel technologies, community energy, nuclear energy, SMRs and decarbonization of heavy industry</p>
<p>Electrification & Smart Mobility</p>	<p>Sustainable urban transport, AI-enabled connected and autonomous vehicles, advanced battery technologies, EV and grid charging solutions</p>
<p>Semiconductors</p>	<p>Compound semiconductors, advanced chip packaging and device development for variety of applications, including electric vehicles, communications, computing and healthcare</p>
<p>BioInnovation & Health</p>	<p>Continuous biomanufacturing, tissue engineering, diagnostics, drug discovery and medical imaging</p>
<p>Entrepreneurship & Commercialization</p>	<p>Contributing to McMaster's innovation ecosystem; assisting faculty commercialization of research and supporting student innovation.</p>



Canadian Nuclear Laboratories

Laboratoires Nucléaires Canadiens



ArcelorMittal



SARTORIUS

Building Networks

Goals

- Enhance opportunities for connection and collaboration between McMaster faculty
- Foster new collaborative projects with external partners and support existing strategic relationships

Activities

- Engage faculty to identify individuals interested in participating in large-scale
- Encourage increased communication between departments
- Establish working groups to develop projects ideas in areas of strategic interest

Outcomes

- Creation of collaborative interdisciplinary teams positioned for success in Federal and Provincial funding programs
- Initiation of new collaborative research projects



➤ Research Days

SMR Research Day, August 2023

- Developed with Nuclear Operations & Facilities
- 40 attendees from nine departments
- Focus on emerging technologies, integration, clean energy, materials and manufacturing
- Moderated discussion / call to action

Major Proposal Development



Dr. David Novog
Engineering Physics
McMaster University



Dr. Carmel Mothersill
Biology
McMaster University



Dr. Keena Trowell
Mechanical Engineering
McMaster University



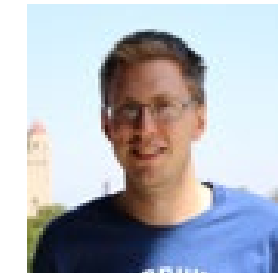
Dr. Adedapo Awolayo
Civil Engineering
McMaster University



Dr. James Cotton
Mechanical Engineering
McMaster University



Dr. Goran Calic
Strategic Management
McMaster University



Dr. Drew Higgins
Chemical Engineering
McMaster University



Community & Engagement



Enabled technology



Economics and Policy



Sustainability



➤ Additional Outcomes

- New faculty connections and collaborations
- New working groups established
- Nuclear Now Event
- CNL Summer Research Program
- NSERC CREATE Proposals
- NEA Materials Modelling and Simulation for Nuclear Fuel (MMSNF) Workshop 2023



↗ Faculty Support

- Early Talent Accelerator Supplement
- Strategic advice on funding programs
- Support with application development
- Connection to companies and industry networks

NSERC Alliance CRITICAL MINERALS Award



Dr. Nana Ofori-Opoku
Materials Science and
Engineering



Dr. Adedapo Awolayo
Civil Engineering



Dr. Joseph Okeme
Chemistry & Chemical Biology

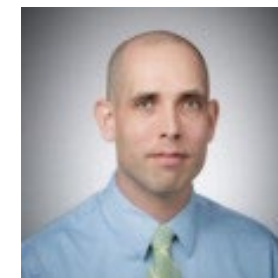
- Up to \$1.5M over 3 years
- No cash contributions from partner organizations required.
- Developed 1 page handout for research teams
- Leverage existing networks with connection to mining and minerals
- "Sustainable critical mineral recovery: advancing CO2 sequestration and mineral extraction", with Rockburst Technologies Inc. (\$1.4M / 3 years)





➤ Bio interfaces Institute

- A new vision for Bio interfaces Institute (BI)
 - Partnership with Sartorius
 - Will create Canada's first automation-focused biom an u fa ct u ri ng re se a r ch fa ci li ty w i th i n BI
 - Sartorius contributions: \$980,000 cash, \$3.5 M in-kind
 - NSERC, CBRF / BRIF Applications (a waiting results)
 - Potentia l 5x m u l t i p l i e r



Dr. David La tulippe
Chem ical Eng ineer ing



Dr. John Brennan
Chem istry and
Chem ical Biology



➤ Entrepreneurship

- Build network / community
 - MILO
 - AVP, Research (Commercialization & Entrepreneurship)
 - The Forge
 - Innovation Factory
 - The Clinic
- Campus wide working group established
- Academic Entrepreneurship: From research to start-up



➤ Entrepreneurship

- McMaster Seed Fund
 - Jim Cotton / HARVEST
 - \$256,000 investment
- Faculty Entrepreneurship Fellowship
 - Jim Cotton
 - Wael El-Dakhni
 - Maryam Aramesh



Acknowledgement

- Office of the Provost & Vice-President Academic
- Office of the Vice-President Research
- McMaster Industry Liaison Office
- Research Office for Administration, Development and Support
- Nuclear Operations & Facilities
- McMaster, Engineering & Science Communications
- Engineering Outreach
- Engineering & Science Research Facilities

Contact us

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Any questions?

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