Welcome to the University of Alberta’s Inaugural Digital Innovation Showcase! On Monday, May 10, 2021, and continuing until Friday, May 14, 2021, researchers from across the University will present virtual posters, sharing knowledge and breakthroughs in an accessible format, and engaging with fellow researchers, members of the public, industry and more.

Below are guidelines to ensure success in this event. Read them carefully to ensure that you complete all required tasks and properly create your poster.

There is a limit on the number of posters therefore make sure that you apply early. It is a first come first served. When you apply, you must classify yourself as one of the below options as registration limits are based on groups.

- Health
- Science, Engineering
- Arts, Social Science
- Future Energy Systems (if you are in Future Energy Systems, select this option)

**Deadlines:**
- Optional info session: Friday, April 9, 2021
- Registration opens: Friday, April 9, 2021 Register here
- Registration closes: Monday, April 19, 2021 at midnight
- You will be informed if your application has been accepted: Wednesday, April 21, 2021
- Optional training session: Tuesday, April 27, 2021 at 12:00-13:00. Register at https://ualberta-ca.zoom.us/meeting/register/tJwod-yhpz0sGN26Hfl0G3W6gTeQmhR-WNrs.
- Marquee Event: Monday, May 10, 2021 at 12:00-14:00
- Innovation Showcase: Monday, May 10 at 12:00 to Friday, May 14 at 16:00.
- Innovation Connect Mixer: Thursday, May 13, 2021 at 12:00-13:30
1. Why Do A Twitter Poster? Why Join The Innovation Showcase?

- Learn new skills for working in social media, a new venue.
- Twitter is very common for researchers and professionals, this is a great opportunity to build up a reputation online.
- Twitter offers a lot of flexibility in format - both in how you connect to an audience, but also how you create the poster.
- You can tie social media to LinkedIn, creating great networking opportunities.
- As many of the stakeholders attending the mixer on Thursday will be invited to this event as well, it is a great way to connect with stakeholders.
- This is a great way to share research with the public. In a world with so much misinformation, it is essential to be able to share your work effectively with the public.
- This is a way for researchers to learn new communication styles.
- Unlike in person conferences which are limited to specific topics and you have a limited ability to see other posters, this format gives you exposure to research outside of your own field and to be a part of the larger research entity.

2. Twitter Account

To participate in the Innovation Showcase, you require a Twitter account. If you already have one, great. If you do not have a Twitter account, we recommend that you create one now and start building up your community.

Make sure that your account is not private, at least during the Showcase, otherwise people will not be able to see your poster.

3. Copyright Considerations

Before you make your poster, consider the content that you want to share and whether you have permission to share it. These guidelines are based on those provided to the participants of the #RSCPoster Twitter Conference.

If the research is already published, check the guidelines from the publisher regarding what can be shared or how they prefer attribution. If the research is not yet published, check with the publishers you are considering to see if they have any restrictions regarding publication after presentation in a conference, online or in person. This varies between publishers so we cannot provide universal advice.

According to Copyright Alliance:

“A tweet is protected by copyright if the following criteria are satisfied:
• The content must be original to its author, meaning the expression cannot be copied from someone else, and it must possess at least a minimal amount of creativity. For example, a tweet that merely lists the 5 most popular television shows in the country will likely not contain the requisite amount of creativity (remember facts aren’t protected). On the other hand, a tweet or thread of tweets containing commentary and analysis about what makes those 5 shows so popular would likely satisfy the requirement.

• The tweet must contain something more than simply a name, single word, or short phrase, since these are not protected by copyright law. Although there is a 280-character limit, a lot can potentially be said in 280 characters or less. Additionally, Twitter now allows for tweets to be “threaded,” which allows a user to post longer, cohesive messages, despite the character limit.

4. Poster Content

Your poster must cover your individual research (i.e. not an overview of the entire lab or research group), but does not need to present data. If you are still new in your program or in a course based program, you are welcome to present a proposal. Make sure that it can be understood by those without an overt specialization in your research topic and without a verbal explanation of content.

Given the digital format, we encourage you to condense your poster into one simple message and link all content back to the ‘big picture’. Focus on the most important part of your research and leave out unnecessary details as they can clutter your poster.

Any images or figures must belong to you, you must have permission to use them for this purpose, or they must be available open access from the internet (potential sources could be Unsplash, Pixabay). Participants are expected to follow the University of Alberta copyright guidelines.

Participants are encouraged to accompany posters with short videos (e.g. 30 seconds) introducing their poster topic. You cannot post a video and your poster in the same tweet, but you can post videos as a reply to your poster (in a thread). If you decide to add an accompanying video, the content should be clear, concise, and entice ‘audience’ to further examine your poster.

Make sure to check with your supervisor regarding what funding agencies, partners, etc. should be acknowledged on the poster. Also check regarding authorship - who should be listed?

5. Poster Format

We encourage you to be creative with your poster format. You are free to use any program and to try different formats, sizes, or features if you believe they will make your poster stand out. Consider use of animations or creating a GIF. Make sure to include any necessary logos for
funders. Here are the winners of the 2020 Royal Society of Chemistry online poster competition. Check out what they have in common, what makes them stand out and what you like about them. Integrate those ideas into your posters.

Because of the digital nature of this event, we advise reduced use of text and increased use of images. Remember people may be looking at your poster on a phone, so make sure they aren’t having to scroll around to read paragraphs. Use bullets and make sure the font is large enough to read. Use high resolution images so that nothing is blurry or pixelated. Make your poster eye-catching - perhaps through use of animations, bright or contrasting colours, etc.

Posters should be posted in an widely accessible format - e.g. .png (preferred) or .jpeg. Poster resolution and size should be large enough to be easily read and consumed - e.g. 300dpi or greater. It is important to note that the highest image size allowed on Twitter is 5 MB. If an accompanying video is posted, .mov and .mp4 formats are acceptable, and videos must remain under 2 min 20 sec.

The posters featured are here to give you ideas of how you may want to present your research to the public. This is an opportunity to be a bit more creative with your presentations and titles while sharing the importance of your work.
Homelessness and Affordable Housing in the Northwest Territories: From the Lens of Energy
Abhimanyu Jamwal¹ and Sandeep Agrawal²

BACKGROUND

- Northwest Territories has the highest electricity cost in Canada.
- In Alberta, an average resident pays 75% less per kWh of electricity compared to a resident in the NWT.
- Almost 95% of electricity is produced through diesel and it is one of the main causes for the high cost of energy.
- Inability to pay the electricity charges results in the termination of services by the power company and affects residents into homelessness.

Research Questions:
1. How does the cost of energy contribute to unaffordable housing and results in homelessness in NWT?
2. Is the cost of energy high in NWT? If yes, what are the reasons for it?
3. Are there any existing challenges in reducing the cost of energy?
4. What efforts have been made in reducing the cost of energy?

FINDINGS

- Transportation of diesel increases its cost.
- Lack of decentralized diesel generation facilities are the cause of the generator capacity.

REASONS FOR THE HIGH COST OF ENERGY

- Inefficiency of inter-grid connectivity
- Inadequate infrastructure by the North American Power Grid
- 100% of electricity is produced through diesel
- Diesel costs are not a sustainable solution

CHALLENGES IN REDUCING THE COST OF ENERGY

- Hydropower from the Mackenzie River Basin
- Renewable energy projects are funded by the territorial government and NWT’s Indigenous communities
- Existing rural power project funded by the Government of Northwest Territories and Green Energy

EFFORTS TO REDUCE THE COST OF ENERGY

- Expansion of Urban Hydro Power Project
- Implementation of renewable energy projects
- Market-driven renewable energy projects

CONCLUSION

- Indigenous communities cannot afford to pay the cost of electricity in NWT, with 97% of all sources of income, it is 3.2 percent of the annual income household income towards electricity and 18 percent for an average household.
- inability to pay the electric bill by public housing to evict the family has to apply for the expected housing from the social housing
- Renewable energy projects are expected to reduce the cost of energy.

ACKNOWLEDGEMENT

We thank our partners, Northwest Territories Government, Energy Division, Northwest Territories Housing Corporation and Arctic Energy Alliance for their inputs in this research.
NANO HUMUS AS A SOIL CONDITIONING AMENDMENT IN COAL MINE RECLAMATION

BACKGROUND

The Problem
- A former coal mine
- Sandy soil with low nutrient concentrations
- Soil heavy metal contamination (cadmium)
- Challenging to be reclaimed to farmlands

Nano Humus
- Coal-derived humic substances
- Raw material (coal) can be found on site
- Improve plant growth and soil properties
- Work as adsorbents to remove pollutants

RESULTS

Root Length
- Increased 5% for alfalfa
- Increased 6% for barley

Soil Properties
- Total organic carbon increased 48%
- Cadmium exchange capacity increased 38%
- Soil available nitrogen increased 29%

Cadmium Removal
- Soil cadmium reduced 18%

RESEARCH BENEFITS

Who Will Benefit
- Mining industries
- Farmers
- Communities and the public

Technical Benefits
- New reclamation management strategy
- Beneficial impacts (plant growth, soil properties, contaminants)
- Suitable for large scale applications

Economical Benefits
- Reduce reclamation costs
- Cost-effective soil amendments
- Low material transportation costs
- Low maintenance costs

PARTNERS

Tsinghua University (China)
- Dr. Yifei Huang
- Dr. Jianhua Wei
Shenhua Coal Mine, China Shenhua Energy
WIRELESS COMMUNICATION AND POWER DELIVERY TO SENSORS IN HEAVY OIL PRODUCTION

Fabiano Domingos¹, Rashid Mirzazadeh¹

HEAVY OIL AND SENSORS

- Canada is the world's 5th largest oil producer, with heavy oil from the oil sands accounting for 42% of total production.
- New developments improve efficiency of production methods, such as Smaller- artisanal Cavity Drilling (SACD).
- Use sensors to gather real-time data from the reservoir.
- Need to develop new wireless methods for power and data transfer to support more sensors.

RESULTS AND CONCLUSION

- Simulated scenarios:
  - 1 km long pipe, 50 m underground depth.
  - Frequency of 160 MHz, 3 different power
- Proposed path D is always better than conventional path A.
- Almost 26-58 improvement for any type and lower pipe separation.
- Results show that using existing SACD pipe as part of the distribution path leads to higher received power by sensors.
- Provides increased range, improved signal-to-noise ratio, therefore allowing the deployment of more sensors.
- Future work includes optimal frequency analysis and small-scale prototype verification.

REFERENCES


The Uneven Urban Geography of Energy Transitions: Lessons from Edmonton

Neerakshi Joshi and Sandeep Agrawal, Urban Environment Observatory, University of Alberta

Introduction: Canadian cities on a pathway to carbon neutrality

Canadian cities are important partners for transitioning to a low-carbon pathway. Cities aim to substantially reduce their carbon emissions by 2035 and aim for carbon neutrality by 2050.

Emission reductions from heating, electricity, and transport are identified as key areas of action.

What is unique about Edmonton: adopting a geographical lens

Geographical location in a fossil-fuel rich area impacting the availability and price of energy

Political territoriality: limited legislative and financial powers with the city to support low urban development

Urban landscape characterized by a low-density and automobile dependent built form

Social embeddedness reflected in habits and culture around high energy consumption

Why is a geographical lens important

Starting point: Cities in high carbon geographies have higher per capita emissions to start with.

Political and social support for energy transitions is lower in high carbon geographies.

Time: Taken to alter the physical landscape and the habits and culture of consumption associated with it impact the transition process.

Conclusion

A geographical lens highlights that although cities aim for carbon neutrality, their strategies and pathways for attaining it would vary significantly.

Acknowledgements

We thank key informants at the city and provincial level for their inputs in this research and Alireza Parvaneh for primary data collection and analysis.
6. Poster Tweet

Take time to carefully craft your poster tweet. You only have 280 characters. Consider how to make it catchy, e.g. use a question, an interesting fact, emojis, etc. Similar to a 3 Minute Thesis, use this tweet as your hook - use it to encourage people to look at your poster.

For example

Over 50% of the Earth has been altered by human activity. To ensure an Earth for future generations, land reclamation is required. My research focuses on building soil using waste materials to support mine reclamation #UAlbertaInnovationShowcase #UAlbertaInnovationShowcaseSciEng

Dirt, or more accurately soil, is essential for humans, from food we eat to materials we use to water we drink. Yet for many disturbances, there is no soil left to reclaim the land. See my research building these needed soils #UAlbertaInnovationShowcase #UAlbertaInnovationShowcaseSciEng

Make sure to include the event tag, #UAlbertaInnovationShowcase, or people will not be able to find your poster and the University will not be able to engage. Consider tagging your collaborators and institutions.

In addition to the overall hashtag, you should add the sub categories so that it is easier to find your poster. These are not based on your faculty, but how you would classify your research.

- #UAlbertaInnovationShowcaseHealth - medicine, health
- #UAlbertaInnovationShowcaseSciEng - science, engineering
- #UAlbertaInnovationShowcaseArtsSS - arts, social science, humanities
- #UAlbertaInnovationShowcaseFES - members of Future Energy Systems

When you upload your poster image, click “Add Description” and briefly describe what is in the poster. This makes the content accessible to the visually impaired.

You may want to add a link to your LinkedIn account so that people can connect with you. If you have space in the Tweet, add it there. If not, add it as the first comment.

It is important to note that the image of your poster that appears in the Twitter feed will be cropped until a viewer clicks on it. Make sure that it is visually appealing no matter what part of the poster is visible.

7. Event Launch

On Monday, May 10, 2021, the Showcase starts with a Marquee Event which will run from 12:00 to 14:00. You must post your poster on your Twitter feed at 12:00 (you can prepare your Tweet in advance and schedule it to post at that time). You are expected to be active
during the entire Marquee Event, monitoring threads related to your poster and responding to re-tweets, questions etc., as well as engaging with other participants and their posters. This is a unique opportunity — during conventional poster presentations, you must wait by your poster and often miss out on seeing other posters. Now you have the opportunity to see other researchers!

During the Marquee Event and throughout the week, the FGSR Twitter account will periodically highlight and retweet posters to encourage further interaction, as well as partners.

8. Remainder Of Event

Until the completion of the Showcase on Friday, May 14, 2021 at 16:00, you are encouraged to continue monitoring your poster Tweet and remain active on your Twitter feed, responding to questions and engaging with people on your own and other researchers’ tweets.

9. Innovation Connect Mixer

This virtual event will take place May 13, 2021 from noon - 1:30 pm MST and is open to participants and attendees of the Innovation Showcase. Participants are encouraged to meet with Alumni and members of the community who will have had an opportunity to see some of the posters. This will also be a great opportunity to learn more about the industries and organizations they represent. The event is coordinated with the University of Alberta Alumni office, and we hope that you use this opportunity to grow your network.

Online Resources

- Top tips for Twitter Posters (AB Journals): [https://abjournals.org/top-tips-twitter-posters/](https://abjournals.org/top-tips-twitter-posters/)
- Twittering About Research: A Case Study of the World’s First Twitter Poster Competition: [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4706062/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4706062/)
- Better Posters: [http://betterposters.blogspot.com/](http://betterposters.blogspot.com/)
- #RSCPPoster Twitter Conference tutorial: [https://www.youtube.com/watch?v=N3KIDBFCBP0](https://www.youtube.com/watch?v=N3KIDBFCBP0)

Nature Articles

Getting to grips with online conferences: [https://www.nature.com/articles/s41560-020-0656-z](https://www.nature.com/articles/s41560-020-0656-z)

Organizing a virtual conference changed the way we think about academic exchange: [https://www.nature.com/articles/d41586-020-01896-3](https://www.nature.com/articles/d41586-020-01896-3)

What’s on the agenda for post-pandemic meetings?: [https://www.nature.com/articles/d41586-020-02254-z](https://www.nature.com/articles/d41586-020-02254-z)
Research Poster Repositories

- **Figshare** - An open repository
- **Poster Sessions (Flickr)** - images from poster sessions
- **F1000 Posters** - An open repository
- **ePosters.net** - An online journal of scientific posters

Demo Poster used from FigShare: [https://figshare.com](https://figshare.com)