



### January - March 2023 Happenings

#### Events

The Canadian Land Reclamation Association Annual Meeting and Conference was held in Edmonton this year and many Future Energy Systems members attended. Dr **M Anne Naeth** gave the plenary address entitled Land Reclamation Education Evolution. Dr **Yihan Zhao** gave a presentation on her FES PhD research, Coal Derived Humic Substances In Coal Mine Reclamation.



Abhijeet Pathy, Dr Yihan Zhao, Dr M Anne Naeth and Dr Christopher Nzediegwu at the Canadian Land Reclamation Association Annual Meeting and Conference.

The Alberta Soil Science Workshop (ASSW) was held 21-23 February in Calgary with a theme of Challenges for Soil Science in Response to Changing Needs. PDF Dr **Ali El-Naggar** presented his FES research with Dr Scott Chang, Lead Saturated Biochar-Soil Interactions: Contamination Risks And Release Dynamics Of Pb.

PhD student **Faisal Hossain** attended the American Chemical Society's Spring meeting in Indianapolis 26-30 March. Faisal's research paper Stimuli-Responsive Polymer-Based Portable Sensor To Quantify Naphthenic Acids In Water was featured in the Sci-Mix portion of the conference, as a representation of the best research in the division.

PDF Dr **Yihan Zhao** showcased her research on phytoremediation of oil sands process affected water in the Future Energy Systems Energy In A Flash video series. Her research will contribute to a better understanding of phytoremediation of OSPW employing native aquatic plant species and will assist in the development of future remediation strategies. View the video [here](#).

Dr **Vic Adamowicz** was part of an Expert Panel on Canada's Carbon Sink Potential and the final report Nature-Based Climate Solutions (NBCSS) was recently published by the Council of



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Canadian Academies. While not directly part of his FES research, the report recognizes the modest but important role of natural landscapes in mitigating greenhouse gases and climate change, concluding that "forest, agricultural land, grassland, and peatland NBCSs have the highest national GHG mitigation potential over the next three decades." The findings provide support for our research which aims to reclaim resilient landscapes. More information can be found in the [report](#) and a Folio article, [Natural Carbon Sinks Could Play A Small But Significant Role In Canada's Climate Strategy](#).

### Achievements

Congratulations to **Deborah Crominski da Silva Medeiros** (supervisor: Dr Mohamed Gamal El-Din) on the successful defence of her PhD dissertation on 16 March. The title of her dissertation is Adsorbents for the Removal of Naphthenic Acids from Oil Sands Process Water: Investigation of Reclamation Materials from Surface Mining of Oil Sands and Development of Biochars from Biological Sludge and Peat.

MSc candidate **Abhijeet Pathy** was accepted into a PhD program under the supervision of Drs M Anne Naeth and Scott Chang. He will be researching the use of two novel biochars for remediation of oil sands process water and hydrocarbon contaminated soil and ground water. This research is part of the scaling up of novel adsorbents in our FES theme and Abhijeet is building on bench scale results, from the past 5-years, in mesocosm studies in the lab, greenhouse and field.

PhD student **Abhijeet Pathy** won the Canadian Land Reclamation Student Award and was presented it at their conference in Edmonton. Congratulations!

PhD student **Faisal Hossein** was awarded a Lab2Market Health scholarship for work with Dr Michael Serpe on environmental sensors. He was also a recipient of an Alberta Graduate Excellence Scholarship and an Alberta Innovates Graduate Student Scholarship.

Four peer reviewed scientific papers were published this term:

Cheng, P, **M Usman**, **M Arslan**, H Sun, L Zhou and **M Gamal El-Din**. Enhancing biodegradation of pyridine with trehalose lipid in *Rhodococcus pyridinivorans* sp. strain HR-1-inoculated microbial fuel cell. Fermentation DOI: 10.3390/fermentation9020133.

**Medeiros, D, P Chelme-Ayala** and **M Gamal El-Din**. 2023. Sorption and desorption of naphthenic acids on reclamation materials: mechanisms and selectivity of naphthenic acids from oil sands process water. Chemosphere 326:138462 DOI: 10.1016/j.chemosphere.2023.138462.

**Medeiros, D, P Chelme-Ayala** and **M Gamal El-Din**. 2023. Sludge-based activated biochar for adsorption treatment of real oil sands process water: selectivity of naphthenic acids, reusability of spent biochar, leaching potential, and acute toxicity removal. Chemical Engineering Journal 463:142329 DOI: 10.1016/j.cej.2023.142329.

**Lu, Q**, L Yang, **P Chelme-Ayala**, Y Li, X Zhang and **M Gamal El-Din**. 2023. Enhanced photocatalytic degradation of organic contaminants in water by highly tunable surface microlenses. Chemical Engineering Journal 463:142345 DOI: 10.1016/j.cej.2023.142345.



## Notices And Reminders

### MITACS and NSERC Alliance

We encourage researchers with an industry partner to apply for MITACS funding to support a graduate student or post doctoral fellow. The application process is short and there is a 95% funding rate. They also have a new joint program with NSERC Alliance. This program provides additional funding, on top of what MITACS provides, and is best suited for working with a small to mid sized industry partners. The funding rate for this program is approximately 65% but can result in double the funding. If not successful, your application can still be considered by the other MITACS programs. Contact Sherifat Buhari [sbuhari@mitacs.ca](mailto:sbuhari@mitacs.ca) for more information or to apply.

### Amazon Business Prime

The Amazon Business Prime Catalogue is now available through SupplyNet.

- Amazon Business Prime is available to purchase products only if they are not available from a Preferred Supplier.
- Items can only be shipped to a University of Alberta address.
- An account must be set up through SupplyNet using your work email address. The first time you click on the Amazon catalogue you will be directed through the account set up process.
- In justification box, besides indicating purpose of purchase for FES T10-P04 research, researchers must state that items were not available from a Preferred Supplier.
- Details can be found on the procurement website [www.ualberta.ca/finance-procurement-planning/procurement/supplynet/amazon-business-prime/](http://www.ualberta.ca/finance-procurement-planning/procurement/supplynet/amazon-business-prime/).

### Travel

The University of Alberta corporate purchasing card can now be used to pay for accommodations, including hotels, AirBnB and VRBO rentals, although limited to room, taxes and parking only. More information can be found [here](#).