



Cleantech Hub Quarterly Update | January 2022

Cleantech Hub

Cleantech Hub Updates

[Honorable Harjit S. Sajjan, Minister of International Development and Minister responsible for the Pacific economic Development Agency \(PacifiCan\) visited Cleantech Hub](#) in November. The Hub received \$1.9M from PacifiCan in 2020 to catalyze academic-industry collaborations that help Canadian companies bring their technologies and products to domestic and international markets.

[NSERC president Alejandro Adem, makes first-ever visit to UBC Okanagan.](#) Adem met Cleantech Hub researchers & students and had a visit to the facility during his day-long trip. The UBCO's total research funding increased from \$11 million in 2015 to more than \$46 million in 2022 and is projected to increase to more than \$60 million by 2023.

Dr. Sediako's research team published two articles on the development and characterization of a high-efficiency diesel engine block and hybrid-electric vehicle battery tray to help lower the automotive industry's carbon footprint.

Cleantech Hub hosted its 2nd [Advisory Committee](#) meeting in October in Kelowna. In the evening, [Mark Kirby](#) gave an exciting presentation on Hydrogen Solutions 101 in Hub's first Cleantech Guild.

In this newsletter:

Note: Anchor links may not work in all email applications. Scroll to view content.

New Projects

- [Innovative approach for transforming Bio-Carbons into Graphitic materials](#)
- [Upscaling of carbon black production to enable testing of rubber compounds](#)

New Partners, Investments

- [Dr. Arjmand's recent collaboration with Mark's and Zentek on developing slip-resistant micro and nano reinforced polymeric soles with surface patterning received \\$520,000 from Mitacs](#)
- [New net zero home is ready to be explored. UBCO Okanagan College collaborate with community partners to create home of the future](#)

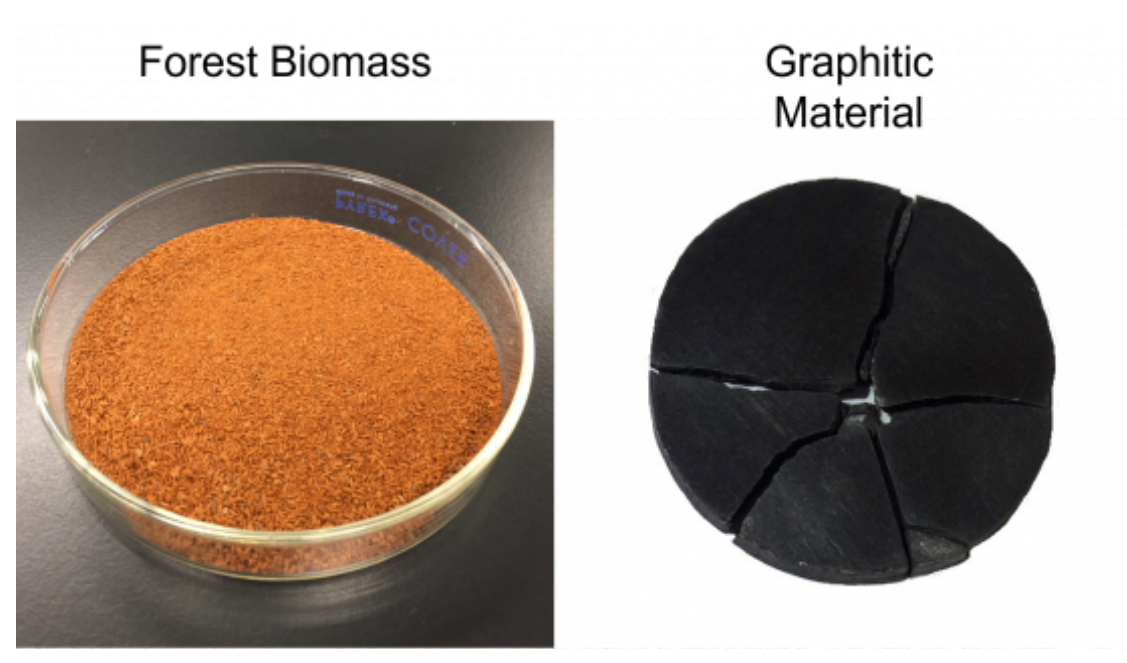
Researcher Spotlight

- [Professor Shahria Alam is helping to make bridges and buildings safer, more sustainable and resilient to hazards](#)

Student Spotlight

- [Yue Zhang is part of a new energy frontier](#)

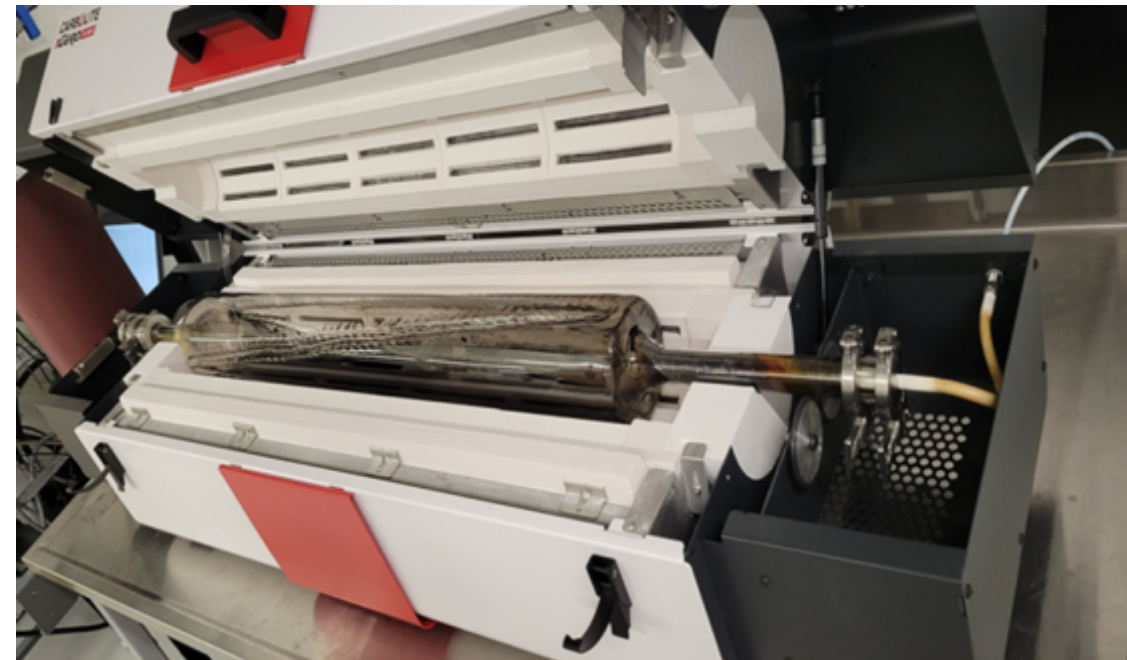
New Projects



Samples describing conversion of Bio-Carbons into Graphitic material

Innovative approach for transforming Bio-Carbons into Graphitic materials

Our Blue Planet and its subsidiary [NanoTerraTech](#) (NTT), are actively developing new methods for the transformation of bio-carbons into graphitic materials. Mr. Scott Farnham (NTT), Dr. Bichler (UBC) and Mr. M. Barrett (UBC, MASC student) were successful in converting bio-mass waste from BC's forests into graphite. An innovative approach combining high-temperature carbonization, followed by high-temperature – high-pressure processing of the bio-carbons, resulted in the formation of multi-layer graphene material. Future work will focus on the characterization of the electrical and thermal properties of the novel graphitic materials, with a view of using the bio-waste carbon as a precursor for graphite used in energy storage systems.



Upscaling of carbon black production to enable testing of rubber compounds

Research led by Dr. Bichler (UBC) and Mr. Nilsson ([KalTire Mining Tire Group](#)) is exploring the use of recycled carbon black (rCB) as a substitute for virgin Carbon Black used in automotive and mining tires. The work carried out at UBC has resulted in a significant know-how relating to the optimization of the purity and structure of the rCB. Currently, experiments are being conducted with KalTire's partners on the integration of the rCB into rubber compounds. The work at the Cleantech Hub in the upcoming weeks will focus on comparing the novel rubber compounds against traditional re-tread rubber compounds.

New Partners, Investments



Dr. Arjmand's recent collaboration with Mark's and Zentek on developing slip-resistant micro and nano reinforced polymeric soles with surface patterning received \$520,000 from Mitacs

Slips, trips, and falls are common causes of many injuries people experience inside or outside of their workplace each year all over the world. Using high-performance shoes can decrease slip falls. Winter and safety footwear should provide sufficient slip resistance on icy surfaces to overcome the slip hazard in frozen and contaminated environments. Two PDFs in 3 years and one Ph.D. will work on the developing reinforced polymeric shoe sole with high slip resistance.

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New net zero home is ready to be explored. UBCO, Okanagan College collaborate with community partners to create home of the future

UBC Okanagan, Okanagan College, the Wilden Group, Authen Tech Homes and FortisBC launched the Wilden Living Lab project in 2016 to create an energy-efficient, high-performance home. Now the collaboration is going further with the construction of a third-generation home, built to the BC Energy Step Code's highest level. Phase 2 of the Wilden Living Lab project is open to the public starting Sunday, November 20, at noon. The home will remain open to the public to explore weekly, Saturday through Thursday, noon to 5 pm until May 18, 2023

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Researcher Spotlight



Professor Shahria Alam is helping to make bridges and buildings safer, more sustainable and resilient to hazards

Dr. Alam is a civil engineering professor at UBC Okanagan's School of Engineering and a Tier 1 Principal's Research Chair (PRC) of Resilient and Green Infrastructure. In this role, Dr. Alam provides global leadership in developing resilient, green infrastructure components and systems that can survive multiple hazards. He is developing novel, sustainable materials as well as contributing to advancing research that will safeguard aging and new infrastructure.

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Student Spotlight



Yue Zhang is part of a new energy frontier

Doctoral student is working with Dr. Jian Liu to research the next generation of rechargeable batteries for consumer electronics like cellphones and laptops and all the way up to electric car batteries. Zhang is excited by the potential of her research to impact the general population and hope to be an instructor one day, passing her knowledge and skills, and encouraging more people to enter the field of battery research.

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Cleantech Hub
UBC Innovation Precinct 1
1540 Innovation Drive
Kelowna, BC Canada V1V 1V7
cleantech.ok.ubc.ca



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