

CLEAN RESOURCES

ADVANCED HYDROCARBONS

INNOVATIVE HYDROCARBON PRODUCTS – BITUMEN BEYOND COMBUSTION

FUNDING DETAILS

Low Temperature Stabilization and Bulk Processing Techniques for the Production of Lower-Cost Asphaltene Based Short Carbon Fibres

In the CFGC Phase II project NORAM will combine its experience with new technology development & scale-up, low temperature chemical stabilization techniques developed in Phase I and alternative high temperature reactor designs to advance a new process to produce bulk short carbon fibres from asphaltenes in a more cost-effective, scale-able and higher capacity manner than current production techniques



RECIPIENT:

NORAM



PARTNERS:

University of British
Columbia, Mitacs,
CRIN



TOTAL BUDGET:

\$1,008,900



AI FUNDING:

\$45,000



PROJECT DATES:

AUG 2021 –
JAN 2023



PROJECT TRL:

Start: 3
End: 5

APPLICATION

NORAM's process focus is to prepare short carbon fibres from a raw, non-upgraded / pre-treated asphaltene feed derived from an Albertan bitumen. A significant portion of the reinforced composite materials market uses chopped fibre made by post-production chopping to produce shorter, ~0.6 cm, long fibres. In the proposed project we plan to test a concept for a more scalable technology to directly produce these short carbon fibers.



ALBERTA INNOVATES

[CORPORATE DIVISION]

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PROJECT GOALS

In this project NORAM will design, build and operate small pilot units capable testing key steps and producing short carbon fibres using our low-temperature chemical stabilization and bulk processing methods from both raw and pre-treated asphaltene feeds. Data and samples generated from these trials will be used to advance composite materials testing and market development as well as the updated and refined engineering design and cost estimate development for the future commercial scale plants.

BENEFITS TO ALBERTA

Once further developed and commercialized, the proposed large-scale short fibre process concept could form a basis for a new industry producing carbon fibres from Alberta asphaltenes. Our approach is focused on producing low-cost short carbon fibres from Alberta asphaltenes at a large-scale and low cost to enable adoption into larger markets which are needed to have a significant impact on the asphaltene situation in Alberta. In addition to helping to protect existing jobs in Alberta by improving the environmental sustainability and economics of existing Albertan bitumen processing facilities this could also create new jobs through the production of the carbon fibres as well as their application in a wide variety of new products and materials.



1 Unique
Product/Process



1 Patent



11-100 Future
Jobs

CURRENT STATUS

AUG 2022

NORAM has expanded the Phase 1 testing of the low-temperature chemical stabilization approach to map out the best operating ranges. A small continuous pilot unit has been fabricated to allow testing of spinning of fibres from as-received asphaltenes with in-situ low-temperature chemical stabilization. A second pilot unit has been assembled to test novel bulk processing concepts for fibre handling and carbonization. Produced fibres are being evaluated by UBC’s Composites Research Network (CRN).