

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

In the CFGC Phase III project NORAM will combine its experience with new technology development & scale-up, to advance a new process to produce bulk short carbon fibres from asphaltenes in a manner that would be more cost-effective and easily scaled to high capacity than current production techniques. This work will build on experience gained in Phase 1 and 2 on low-cost fiber spinning, robust low temperature chemical stabilization methods, and alternative designs for high-temperature carbonization reactors.



RECIPIENT:
**NORAM
 Engineering and
 Constructors Ltd.**



PARTNERS:
**MITACS, University
 of British Columbia**



TOTAL BUDGET:
\$1,921,330



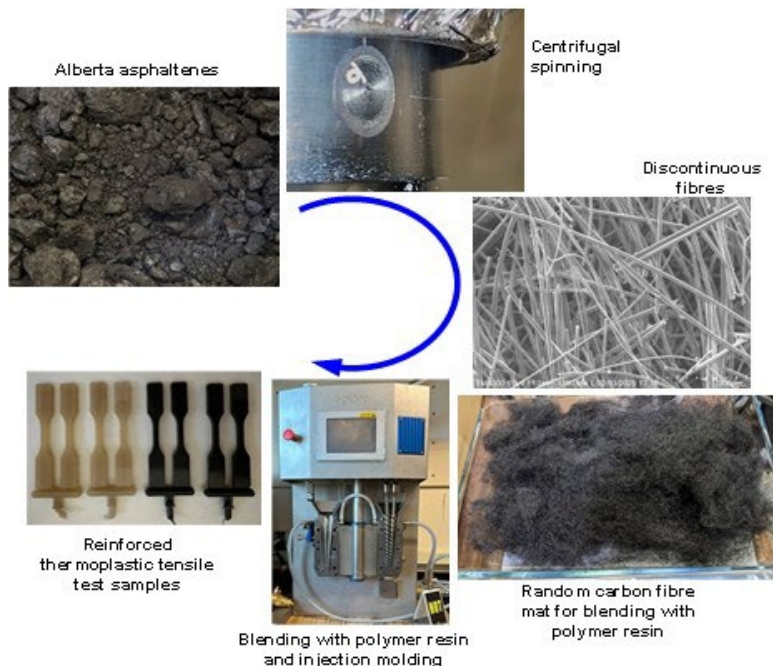
AI FUNDING:
\$1,440,000



PROJECT DATES:
**FEB 2024 –
 DEC 2026**



PROJECT TRL:
**Start: 5
 End: 6**



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 CLEAN ENERGY

ADVANCED HYDROCARBONS

CARBON FIBRE GRAND CHALLENGE PHASE III

PROJECT GOALS

In this project NORAM will upgrade and operate our 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 New
Product/Service**



1 Student Trained



1 Patent



2 Collaborators

CURRENT STATUS

JUN 2025

Upgrades have been made to our pilot which have reduced our fibre diameter into our target range, improved fibre uniformity and increased yields. Process engineering work resulted in improvements to our fast, low temperature (ambient) stabilization which have been implemented and validated in the pilot. Pilot work is now focused on optimizing stabilization and carbonization conditions and producing material for applications testing. Additional work is investigating surface modifications of the product carbon fibres to maximize their benefit for different composite applications.