# 2019 Project - Carbon Fibre from Oil Sands Bitumen & Other Feedstocks
A Comparative Lifecycle Assessment

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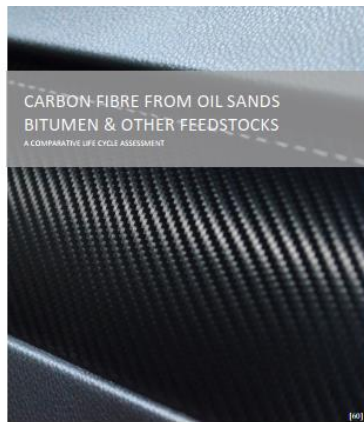
Abstract: This TEAM project developed a comparative green house gas (GHG) Life Cycle Assessment (LCA) for carbon fibre if produced from oil sands bitumen vs. other feedstocks This comparative LCA considered overall GHG emissions for two pathways to produce carbon fibre.

The first is based in using conventional crude oil as well as natural gas condensate to produce Polyacrylonitrile (PAN), a typical carbon fibre precursor. The second was based on using an Alberta oil sands bitumen-based pitch processed into a carbon fibre precursor. Each precursor is derived through a specific pathway of chemical processes that begin with extraction of raw hydrocarbons but differ in the subsequent steps to produce the carbon fibre precursor.

Generally accepted LCA methodology and accounting standards were used to complete the assessment of the two pathways. GHG emission data for each process step and the transportation between processes was collected from LCA databases and literature. Using the yields between each process stage, a cumulative GHG intensity for each pathway was developed. The study found that the bitumen pathway has a significant advantage over PAN in terms of GHG intensity for producing carbon fibre.

To discuss this project or obtain a copy of the final report (a fee is required) please contact contact@bowmancentre.com