



InnoTech Alberta, a subsidiary of Alberta Innovates, is Alberta's leading research and technology organization providing innovative solutions to global challenges facing industry, business, and the public sector. With over 100 years of experience, our world-class expertise and industrial-scale research facilities can help you transform technologies into value-generating solutions. We are your innovation partner to help your business increase profitability, optimize processes, and create new market opportunities.



Advanced Materials & Monitoring Services



FOR MORE INFORMATION, PLEASE CONTACT:

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Service Offering	Sub-Offerings	Key Activities
Advanced Manufacturing	Additive Manufacturing	Develop, advance, and validate additive manufacturing technologies for fabricating components for harsh environments Develop and optimize the design of novel materials for niche applications
	Sustainable Manufacturing for the Mining and Energy Sectors	Advance repair and remanufacture technologies to improve equipment performance, increase asset longevity, and lower environmental impacts
	Welding Technology Validation	Assess and de-risk welding technology application, adaptation, and deployment
Advanced Materials and Asset Reliability Management	Corrosion Engineering & Pipeline Integrity Solutions	Assess material corrosion phenomenon including material corrosion resistance and characterization, process corrosivity evaluation and mechanism validation, and mitigation strategy evaluation Evaluate and validate material performance and integrity management technologies piping applications including severe service under slurry and multiphase flow conditions Support asset integrity management strategies through corrosivity assessments of crude oils, emulsions, process and produced water, and sludge deposits
	Materials Performance Assessment for Industrial Applications	Assess, characterize, and validate the durability of materials, coatings, and deposition techniques Evaluate wear resistance of materials under severe service environments Assess gas permeability of non-metallic materials for piping applications
	Pilot Plant Engineering & Experimental Apparatus Development	Design and build pilot-scale equipment needed to validate and de-risk technologies so they can advance to full-scale commercial deployment
Industrial Monitoring Solutions	Advanced NDT Technologies	Evaluate and validate advanced non-destructive testing technologies for material performance and asset integrity monitoring in niche applications
	Energy Efficiency Technology Validation	Assess, de-risk and perform technology validations of novel energy efficiency solutions including flow improvement, waste heat/energy recovery, and thermal energy storage
	Pipe Flow Technology Evaluation	Evaluate, validate, and/or develop technologies for multi-phase flow regime characterization, flow control, metering, deposition detection, virtual sensors, and leak detection.
	Smart Field Monitoring Solutions Smart Analyzer / Sensor Prototype Development	Develop, maintain and support smart sensor/analyzer technologies deployed in the field using remote connectivity, advanced analytics, and predictive maintenance
Digital and Industrial Optimization Services	AI Vision Solutions	Utilize novel Artificial Intelligence, Advance Analytics, and IIoT principles to achieve greater process efficiencies
	Applied Data Science	Develop digital platforms using Advanced Data Analytics and Machine Learning

Bio-Industrial Service Offerings



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Service Offering	Sub-Offerings	Key Activities
Bio-Composite Material Development, Processing, Research & Analysis	Bio-Composite Material Development	<p>Developing novel, eco-friendly, renewable, and sustainable materials utilizing pilot infrastructure like extrusion, filament production, blending, compounding, electrospinning, and injection molding processes</p> <p>Support clients using knowledge of production processes and equipment</p>
	Engineered Composites Development & Assessment	Assess alternative materials and configurations in engineered composite products/panels (i.e., strand-based board, fibre-base board, laminated products, and oriented split straw board) under full scale process conditions and measuring post-production properties
Bio-Industrial Product & Process Development	Designer Carbon Development	<p>Develop high-value activated carbons from biomaterials for use in supercapacitor and battery electrodes</p> <p>Support other potential clients with the unique lab infrastructure associated with supercapacitor and battery production including non-biomass carbon feedstock production</p>
	Forestry Mill Process Support	Provide integration of artificial intelligence supported vision and data acquisition systems that aid and inform process control and production output at mills. Provide process simulations through software applications, and provide standard industry testing that measures material and product properties. Pilot facilities have a wide range of equipment suitable for processing a range of biomass, including agricultural and wood fibres, into materials for product development.
	Fermentation Processes & Production	<p>Optimize and scale fermentation processes from the development level to production scale</p> <p>Toll manufacture fermented products through the production and downstream processing cycle</p>
	Thermo-Chemical Processing	Develop and optimize processes with lab and pilot scale pelletization, agglomeration, carbonization and hydrolyzation, and evaluate produced materials with supporting analytical testing
Plant Sciences	Agricultural Materials and Plant Evaluations	Evaluate new plants, new plant varieties, and associated plant treatments such as herbicides, insecticides, soil conditioners in controlled environment trials (greenhouses or growth chambers) or traditional field trials
	Industrial Hemp & Cannabis Breeding; Processing & Utilization	<p>Advance technologies to support the industrial hemp and low and high THC cannabis industries across the "seed to final product" value chain by:</p> <ul style="list-style-type: none"> Assessing and enhancing of varieties through focused breeding programs Optimizing and de-risking plant fibre processing methods including decortication for biomaterial use

Energy Service Offerings



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Service Offering	Sub-Offering	Key Activities
In-Situ Recovery Process Development & Optimization	In-Situ Recovery Processability Assessment - Unconventional Resources	Develop novel solvent-based in-situ recovery technologies for bitumen & heavy oil reservoirs to lower GHG emissions and improve the efficiency of existing commercial deployments through lab-scale physical models, reservoir simulation, and field trial support
	Near Well & Wellbore Flow Enhancement & Conformance in Heavy Oil Reservoirs	Assess and validate new in-well temperature monitoring techniques, flow control devices (FCDs & OCDs), and scaling prevention/remediation methods for well productivity improvement
	Well Remediation & Testing Alternative Plugging Materials	Test new products and develop emplacement methods to control well leakage Explore the regulatory and implementation requirements for the closure of thermal wells
	In-situ Hydrogen Production from Heavy Oil & Bitumen Reservoirs	Evaluate and develop technologies for in-situ hydrogen production from mature heavy oil and bitumen reservoirs
	CO ₂ Storage in Mature Heavy Oil Reservoirs	Validate opportunities related to CO ₂ geological storage in mature heavy oil reservoirs in conjunction with EOR
Mined Oil Sand Bitumen Extraction & Processing	Bitumen Beyond Combustion	Develop and validate technologies for creating bitumen-derived products not involving combustion including carbon fiber from asphaltene-based feed stock, and asphalt binder from bitumen vacuum bottoms
	Emulsion and Froth Characterization & Treatment	Improve processing and characterization methods for bitumen emulsion and froth treatment, and enhancing liquid-liquid and liquid-solid separation
	Bitumen Extraction Processability Assessment	Develop novel technologies for extracting bitumen from mined oil sands
	Bitumen Partial Upgrading Process Development and Validation	Develop and validate bitumen partial upgrading technologies for application at downstream processing facilities and upstream bitumen/heavy oil in-situ recovery operations

Environmental Service Offerings



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Service Offering	Emphasis	Key Activities
Environmental Impacts Research and Risk Evaluation	De-risking Technologies and Processes	Evaluate contaminant fate, behavior, and environmental impacts across increasing scales from simulated environments to field investigations Develop research and testing plans to de-risk environmental sensors, contaminant management, and the impact of industrial wastes in the environment
	Water Resource Investigations and Impacts	Utilize hydrological, hydrogeological, geochemistry and stable isotope tools to inform geospatial models for predicting the impacts of resource development on groundwater and surface water flows/interactions, and local wetland health
Integrated Environmental Monitoring and Analysis	Remote & On-site Biodiversity Monitoring	Implement monitoring programs at site, local, regional, and provincial scales through the collection of terrestrial and aquatic data and the deployment of advanced sampling techniques and equipment
	Monitoring Plans, Technology Development and Testing	Develop and advise on monitoring plans to inform outcomes and decisions with a major emphasis on environmental effects and adaptive monitoring strategies Develop, advance and de-risk novel monitoring technologies and applications
Asset Retirement and Restoration	Reclamation & Remediation	De-risk, optimize and validate novel reclamation and remediation processes, technologies, and solutions Apply science to address regulatory challenges preventing timely and cost-effective remediation and reclamation
	Sustainability Assessment	Apply a holistic approach to asset retirement and restoration by evaluating technical, environmental, economic, societal, and resilience aspects
Carbon Capture, Utilization and Decarbonization	Alberta Carbon Conversion Technology Centre - ACCTC	Evaluate, test, de-risk, scale-up, and optimize CCU infrastructure and end use technologies
Hydrogen Technologies	Hydrogen	Evaluate, test, de-risk, scale-up, and optimize hydrogen production, infrastructure and end use technologies Evaluate influence of hydrogen on material integrity

Applied Chemistry Service Offerings



FOR MORE INFORMATION, PLEASE CONTACT:

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Service Offering	Emphasis	Key Activities
Chemical Testing & Process Development	Environment and Agriculture	Determine the physical-chemical properties of samples originating from environmental and agricultural matrices Customize and develop novel analysis methodologies for non-routine compounds and/or novel matrices
	Industrial	Determine the physical-chemical properties of feedstock, finished, and used petrochemical or organic products Customize and develop novel analysis methodologies for non-routine compounds and/or novel matrices
	Proficiency Testing (IQAEP)	The International Quality Assurance Exchange Program (IQAEP) is an interlaboratory proficiency testing program consisting of a series of petroleum related tests, frequent exchanges of a wide range of energy products, and rapid report turnaround times

DISCOVERY R&D TO COMMERCIAL DEPLOYMENT

InnoTech Alberta enables value generation and accelerates commercial development by providing access to world-class expertise and industrial-scale facilities needed to transition technologies to value-creating innovations.

InnoTech by the Numbers


- > Over **1 million sq. ft.** of research and lab space.
- > Over **600 acres** of farmland for research and testing.
- > **\$118 million** in innovation infrastructure.

1M
+ SQ FT

221
TEAM MEMBERS
125 PhDs & MASTERS

Our Experts

- > **221 team members** with over **125 Masters and PhDs** with industry and sector expertise in scientific, engineering and technological R&D.
- > **426** lifetime patents
- > **84** active patents
- > **First patent** was issued to Karl Clark in **1929** for Bituminous Sand Processing.


84
ACTIVE
PATENTS



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100
YEARS
OF TRANSFORMATION