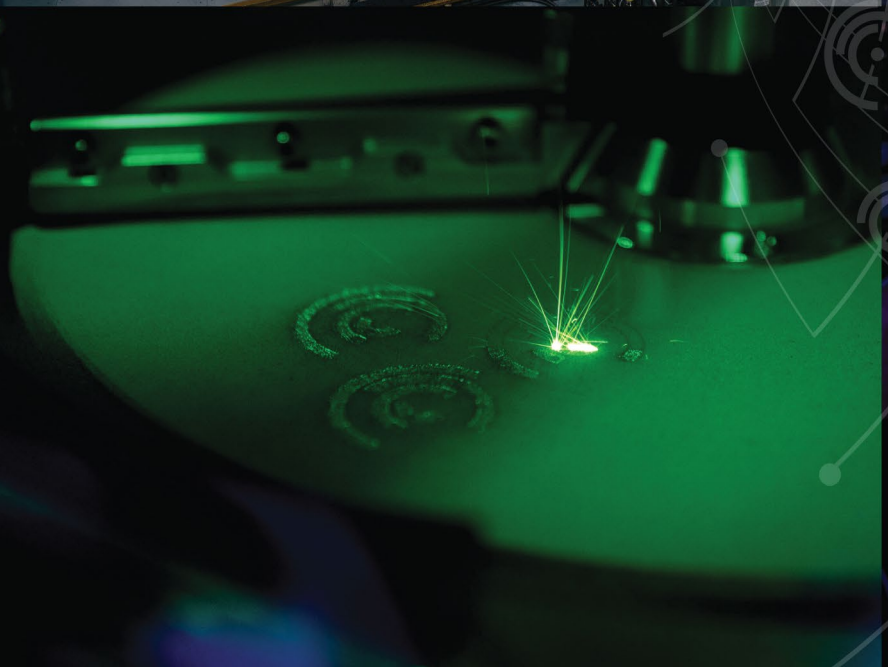
InnoTech ALBERTA
A SUBSIDIARY OF ALBERTA INNOVATES

Service Offerings 2024-25



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.

innotechalberta.ca

Advanced Materials & Monitoring Services

FOR MORE INFORMATION, PLEASE CONTACT:

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Service Offering	Sub-Offerings	Key Activities
Advanced Materials and Sustainable Manufacturing	**Additive Manufacturing**	Develop, advance, and validate additive manufacturing technologies and processes for fabrication of components for harsh environment applications Develop and optimize design of novel materials for niche applications including asset integrity and performance improvement
	Materials Performance Assessment for Industrial Applications	Assess, characterize, and validate durability of materials for industrial applications and severe service environments Develop and assess unique and customized protocol to support non-metallic coating development and applications, and failure analysis investigations Develop, validate, and support product development for non-metallic asset longevity solutions, including material compatibility, fluid permeability, and repair and repurpose solutions
	Welding Technology Validation	Assess and de-risk welding technology application, adaptation, and deployment
Asset Reliability Management	**Asset Integrity Solutions**	Evaluate and validate integrity management technologies such as pigs, inhibitor filming, metering, leak detection, and integrity monitoring instrumentation for piping applications including severe service under slurry and multiphase flow conditions Evaluate, validate, and/or develop digital solutions for asset performance management by leveraging advanced flow loop platforms of different scales, data generation for digitization, and computational modeling capabilities
	Corrosion Engineering	Evaluate corrosion resistance of materials through laboratory, pilot scale and field testing, including material qualification for severe service, sour service, or client specified environments Characterize the corrosivity of process environments towards existing or prospective assets including evaluation of process parameters influence Identify corrosion mechanisms and evaluate mitigation methods to support corrosion management strategies. Develop new assessment tools when standardized methods are not suited
Industrial Monitoring Services	**Analyzer / Sensor Prototype Development**	Develop new concepts, prototypes, and ideas into new sensor/analyzer technologies for asset integrity and process monitoring applications
	Smart Field Monitoring Solutions	Maintain and support smart sensor/analyzer technologies deployed in the field for process measurement/monitoring and control applications including leveraging IIoT principles to enable remote connectivity, advanced analytics, predictive maintenance and sustainability services
Digital and Industrial Optimization Services	**AI Process & Vision Solutions**	Combine sensor imaging and data sets with IIoT principles and novel Artificial Intelligence and Advanced Analytics techniques to assist clients in achieving higher process efficiencies and operational cost savings Develop new concepts and digital platforms using Advanced Data Analytics and Machine Learning concepts to provide value added for different customers and industry sectors

Bio-Industrial Service Offerings

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Service Offering	Sub-Offerings	Key Activities
Bio-Composite Material Development	**Bio-Composite Material Production**	Developing novel, eco-friendly, renewable, and sustainable materials utilizing pilot infrastructure like extrusion, filament production, blending, compounding, electrospinning, and injection molding processes Support clients using knowledge of production processes and equipment
	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 Processing	**Bio-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
	Fermentation Processes & Production	Optimize and scale fermentation processes from the development level to production scale Toll manufacture fermented products through the production and downstream processing cycle
	Fibre Processing	Produce alternative materials and configurations associated with fibre processing via chemical, thermal and mechanical processes and validate post processing properties with standard 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
	Genomics and Genotyping	Plant pathology and DNA related services for the characterization and evaluation of organic materials Environmental DNA collection and analysis
	Industrial Hemp & Cannabis Breeding, Processing & Utilization	Advance technologies to support the industrial hemp and low and high THC cannabis industries across the "seed to final product" value chain by: • Assessing and enhancing of varietals 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
Petroleum Subsurface Engineering	In-Situ Recovery Processibility Assessment for 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	Assess and validate new in-well temperature monitoring techniques, flow control devices (FCDs & OCDs), and scaling prevention/remediation methods for well productivity improvement Improve chemical-based heavy oil EOR through reservoir conformance control
	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
Hydrocarbon Extraction & Processing	Assessment of Bitumen Extraction Processability	Develop novel technologies for extracting bitumen from mined oil sands
	Enhanced Fluids Separation and Treatment	Develop and assess coatings, processes, and characterization methods for equipment surface fouling prevention and mitigation Develop and validate processes for management and reclamation of oil sands tailings
Bitumen Beyond Combustion	Asphalt Binder	Develop and validate technologies for using asphalt binder from bitumen vacuum bottoms
	Carbon Fibre	Develop and validate technologies including carbon fiber from asphaltene-based feed stock

Environmental Service Offerings

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Service Offering	Emphasis	Key Activities
Carbon Capture, Utilization and Storage	CO_2 Subsurface Storage	Validate opportunities related to CO_2 geological storage in mature heavy oil reservoirs in conjunction with EOR
	Carbon Capture, Utilization and Decarbonization	Develop, demonstrate, and/or de-risk CO_2 capture, CO_2 conversion/utilization and methane decarbonization technologies in real-life conditions within a semi-commercial scale environment
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 and other tools to understand and predict the impacts of anthropogenic and natural disturbance on groundwater and surface water flows/interactions and receiving environments
Hydrogen Technologies	Hydrogen - Other	Evaluate, test, de-risk, scale-up, and optimize hydrogen production, infrastructure and end use technologies
	Hydrogen Influence on Materials	Evaluate influence of hydrogen on material integrity for use in production, infrastructure, and end-use applications
	Hydrogen Production & Conversion	Evaluate and develop technologies for in-situ hydrogen production from mature heavy oil and bitumen reservoirs
Integrated Environmental Monitoring and Analysis	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
	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

Applied Chemistry Service Offerings

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Service Offering	Emphasis	Key Activities
Chemical Testing & Analysis	Environmental Chemistry and Agriculture	Determine the physical and chemical properties of environmental and agricultural samples, supporting compliance with routine and urgent environmental monitoring programs Customize and develop new test methods or instrumentation for novel and non-routine compounds and matrices
	Industrial Chemistry	Utilizing a wide array of spectroscopy, chromatography, distillation, and thermogravimetry to determine the physical and chemical properties of petrochemical and organic products; a robust suite of chemical testing packages are offered to ensure compliance with international specifications set by standards bodies like CGSB, SAE, and ISO Customize and develop new test methods or instrumentation for novel and non-routine compounds and matrices
	Proficiency Testing	Offer a robust interlaboratory proficiency testing program, consisting of series' of hydrocarbon and petrochemical related tests, sample exchanges, and comprehensive statistical analysis and reporting. The International Quality Assurance Exchange Program (IQAEP) is our flagship proficiency testing program

DISCOVERY R&D TO COMMERCIAL DEPLOYMENT

InnoTech Alberta enables value generation and accelerates commercial development by providing access to worldclass 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.

100 YEARS OF TRANSFORMATION

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