NRC·CNRC

THE NATIONAL RESEARCH COUNCIL OF CANADA

Next-level science, technology, and research

National Research Council Canada
Conseil national de recherches Canada

Canada

A better Canada and world through excellence in research and innovation

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The National Research Council of Canada (NRC) works with partners to deliver a national platform for innovation. We conduct research, support small and medium-sized businesses to help them scale up and compete, and connect Canadian innovators to leading R&D capabilities. We also enable cross-sector partnership and collaboration in Canada and abroad.

The NRC supports industrial innovation, the advancement of knowledge, and government priorities. We collaborate with over 1,000 companies a year, applying research and development (R&D) to their pressing challenges and opportunities. We provide advice and funding through our Industrial Research Assistance Program to thousands of small and medium-sized businesses.

Our research and collaboration opportunities span a broad spectrum of activities and enable our partners to accelerate commercial development and advance research that leads to scientific breakthroughs and innovation. Working closely with our partners provides us with important insights into emerging strategic needs and future requirements for new research and technology capabilities.

Our technical and advisory services help businesses find innovative ways to overcome limited workforce resources, accelerating design cycles, and identifying and overcoming product performance limits. Our specialized services range from testing and certifications to calibration, prototyping, demonstrations, scale-up, and consulting.

Our licensing opportunities allow Canadian industry partners to access our intellectual property, technology, knowledge, and know-how to attract investment and move more quickly to market-ready solutions that will drive revenue and increase commercial value.

Our research facilities enable innovative businesses to pursue leading-edge R&D opportunities in Canada, while lowering the risks associated with R&D and accelerating product development. Areas of R&D include: aerospace engineering and manufacturing, astronomy, high-throughput DNA sequencing, photonics, biotechnology, and nanotechnology—to name a few.

Our Industrial Research Assistance Program (NRC IRAP) provides Canadian small and medium-sized businesses with the advisory services and financial support they need to build their innovation capacity, develop new technologies, grow their business, and succeed in the global marketplace. With an experienced network of advisors across Canada, NRC IRAP also facilitates linkages with industry experts, world-class research institutions, and potential business partners at home and abroad.

THE NRC'S FULL SUITE OF EXPERTISE, SERVICES, AND FACILITIES CAN BE ACCESSED ACROSS VARIOUS AREAS OF SPECIALIZATION

DIGITAL TECHNOLOGIES

DIGITAL TECHNOLOGIES

Solve real problems and explore the uses of data and information in innovative, meaningful ways with the NRC's Digital Technologies Research Centre. Our areas of focus are: artificial intelligence; bioinformatics; blockchain; computer vision and graphics; cyber-security; data analysis and modelling; human-computer interaction; internet of things; and, natural language processing. With more than 30 years of research experience in digital technologies we offer: an AI for Design Challenge Program; opportunities for research in SCALE AI and with Canada's digital technology superclusters; and, four new collaboration centres with universities and institutes.

2,151 scientists, engineers, technicians, other specialists, and 255 NRC IRAP industrial technology advisors

Specialized facilities in 179 buildings on 22 sites

1,577 R&D collaborations and helped over 8,000 SMEs

WE ARE THE GOVERNMENT OF CANADA'S LARGEST RESEARCH AND DEVELOPMENT ORGANIZATION WITH OVER 100 YEARS OF EXPERIENCE

EMERGING TECHNOLOGIES

ADVANCED ELECTRONICS AND PHOTONICS

Develop new communication and sensor technologies and push the current boundaries of photonics and electronics research at the NRC's Advanced Electronics and Photonics Research Centre. Our areas of focus are: advanced fabrication processes and organic materials; advanced semiconductor materials; GaN electronics; semiconductor devices; and, silicon and integrated photonics. Our sought-after experts and world-class facilities, like the Canadian Photonics Fabrication Centre, are available for engineering and manufacturing services, commercial-grade prototyping, pilot-run production, and full-scale testing.

HERZBERG ASTRONOMY AND ASTROPHYSICS

Develop advanced astronomical instruments and benefit from extensive data management and analysis tools through our Canadian Astronomy Data Centre at the NRC's Herzberg Astronomy and Astrophysics Research Centre. Our areas of focus are: astronomy technology; optical astronomy; and, radio astronomy. Representing the country in some of the world's leading astronomy initiatives, we are Canada's foremost authority on astronomy and astrophysics.

METROLOGY

Tackle a broad range of industrial challenges using our first-rate metrology capabilities, innovative technology, and high-performance laboratories at the NRC's Metrology Research Centre. Our areas of focus are: biotoxin and chemical metrology; black carbon metrology; electrical power measurements; electrical standards; frequency and time; ionizing radiation; mechanical metrology; nanoscale metrology; and, photometry, radiometry and thermometry. Our primary measurement services, like instrument calibration, chemical purity analysis, and certified reference materials, provide accurate, traceable measurements that define the national standard and are in line with international requirements.

NANOTECHNOLOGY

Build the world's first nanoscale instrumentation for R&D and commercial applications and devise novel techniques to solve the toughest characterization challenges at the NRC's Nanotechnology Research Centre. Our areas of focus are: biomedical nanotechnologies; developmental and analytical microscopy; nano- and atom-scale electronics; and, nanomaterials deposition and characterization. We provide access to state-of-the-art nanoscale imaging capabilities that enable experiments unavailable on commercial units. With top multidisciplinary expertise under one roof enhanced by solid partnerships with leading national and international institutions, we can develop solutions for health, environment, and agri-food challenges.

SECURITY AND DISRUPTIVE TECHNOLOGIES

Build emerging technology platforms that will sustain Canada's industrial competitiveness into the future at the NRC's Security and Disruptive Technologies Research Centre. Our areas of focus are: advanced materials for additive manufacturing; quantum photonic sensing and security; and, security material technologies. With strong, established partnerships in Canada and internationally, we offer scientific and engineering expertise in nanomaterials synthesis, printed electronics (2D-3D printing), nanocomposites, electronic and fibre photonic sensors, quantum information and security, quantum theory, and state-of-the-art ultra-fast spectroscopy.

ENGINEERING

CONSTRUCTION

Validate innovative building solutions and test for compliance to Canadian and international standards at the NRC's Construction Research Centre. Our areas of focus are: building envelopes and materials; civil engineering infrastructure; fire safety; and, intelligent building operations. With access to unique, large-scale facilities and testing expertise, we offer unparalleled expertise in building, structural and materials engineering, analytics, and human factors for smart construction solutions.

ENERGY, MINING, AND ENVIRONMENT

Tackle sustainability challenges, like clean energy and environmental remediation, in the energy and mining sectors at the NRC's Energy, Mining, and Environment Research Centre. Our areas of focus are: bioenergy from waste streams; clean energy materials and technologies; contaminant detection and remediation; energy storage; sensor technology; and, sustainable mining technologies. With access to one of a kind, large-scale facilities and testing expertise to validate innovative energy, mining, and environmental solutions, we offer world-leading and unbiased technology performance validation and collaboration opportunities.

OCEAN COASTAL AND RIVER ENGINEERING

Research engineering solutions in harsh marine environments such as ice, waves, cold, and wind at the NRC's Ocean Coastal and River Engineering Research Centre. Our areas of focus are: Arctic research; digital waterways; flooding; marine and coastal infrastructure; and, ocean engineering. With world-class facilities and expertise in physical and numeric modelling and digital capabilities, we offer opportunities to improve the performance and safety of ocean, coastal, and marine operations, meet the challenges of climate change, and protect infrastructure, property, and people from severe weather events and other environmental risks.

LIFE SCIENCES

AQUATIC AND CROP RESOURCE DEVELOPMENT

Develop and transform agricultural and marine bioresources into food, feed and ingredients, and other high-value bioproducts at the NRC's Aquatic and Crop Resource Development Research Centre. Our areas of focus are: algal technologies; industrial biotechnology; and, sustainable biomarine and agriculture biomass transformation. With one-of-a-kind industrial-scale facilities, we offer research opportunities spanning multi-disciplinary expertise in genomics, bioconversion and bioprocessing, toxicology, and manufacturing.

HUMAN HEALTH THERAPEUTICS

Transform human health outcomes in collaboration with public and private sector organizations at the NRC's Human Health Therapeutics Research Centre. Our areas of focus are: antibody-based therapies against cancer and neurodegenerative diseases; biomanufacturing platforms; disruptive technology solutions for cell and gene therapy; and, vaccines and emerging infections readiness. With Canada's largest research and development team dedicated to biologics development, we offer preclinical expertise and scientific leadership in the research of therapeutics for cancer, neurodegenerative diseases, emerging infections, immunobiology, vaccines, bioprocess engineering, and advanced analytics.

MEDICAL DEVICES

Create innovative medical device technologies at the NRC's Medical Devices Research Centre to aid in patient healthcare and stimulate economic opportunities for Canada. Our areas of focus are: digital health and simulation technologies; implantable biomaterials; micro and nano fabrication of biosensors, biochips and microfluidics devices; and, precision medicine. With access to key innovations and one-of-a-kind,

large-scale facilities, we offer expertise in materials, bio-analytics, microfluidics, medical implants, and simulation required for effective solutions to complex healthcare technology needs.

TRANSPORTATION AND MANUFACTURING

AEROSPACE

Conduct research, advance innovative technologies, and solve complex problems in aeronautics and space with the NRC's Aerospace Research Centre. Our areas of focus are: aerodynamics; flight research; icing; propulsion; structures and materials; and, unmanned systems. With a track record of developing advanced civil and military aircraft technologies, we offer collaborative and customized research opportunities with scientists and engineers in multiple specialized disciplines.

AUTOMOTIVE AND SURFACE TRANSPORTATION

Design more competitive products through innovations in mobility and manufacturing excellence with the NRC's Automotive and Surface Transportation Research Centre. Our areas of focus are: additive manufacturing; testing and validation of connected and autonomous vehicles technologies; defence and security vehicle technologies; digital manufacturing; heavy-duty vehicle testing and evaluation; intelligent transportation system and fleet management; metallic polymer and composite manufacturing; rail vehicle-infrastructure technologies; surface engineering; vehicle electrification; and, vehicle light weighting. With state-of-the-art research and testing facilities, we offer expertise in smart manufacturing processes, digital capabilities, sustainable materials, electric motors, thermal spray coatings, materials for lithium batteries, and multi-material joining.

Learn about how the NRC can support your innovation efforts with strategic and collaborative research centres, scientific and technical advisory services, and licensing opportunities.