advance YOUR competitive edge WITH UNMATCHED INNOVATION
At the University of Waterloo, we understand manufacturing. A long relationship with industry is at our core and innovation is intertwined in our history, day-to-day operation, and strategic plan for the future.

This makes partnering with Waterloo research easier. An entrepreneurial spirit fuelled by research excellence and enriched with a unique “creator-own” IP policy means we can help find solutions to your manufacturing challenges.

Our industrial liaison officers will help connect your needs with research expertise to evolve your business and help you advance your competitive edge with unmatched innovation.

To learn more about research at Waterloo, please contact: or-ilo@uwaterloo.ca
ADDITIVE MANUFACTURING

Pursuing new opportunities to produce complex and precise parts with superior mechanical properties while reducing cost and waste through:

» Research in the Multi-Scale Additive Manufacturing Laboratory including variable density printing, porous and/or fully dense metallic, cemented, and ceramic structures,

» Innovation like the student development and commercialization of Voltera, a 3-D circuit board printer named one of the top 10 Innovation awards by Popular Science,

» Varied materials and uses such as bone replacements, functional organs, and joint replacements,

» Smart structures with embedded sensors and multi-scale manufacturing technologies.

ADVANCED MATERIALS AND JOINING

Redefining physical materials with groundbreaking research resulting in:

» Strategies for processing composite materials including concrete and cement, intermetallics, and thin films,

» Materials for bendable electronics, hydrogen storage, superconductivity, and other energy conversion applications,

» Expertise in the design, planning, and construction of civil infrastructures and their reliability,

» Discovery of materials and design of systems through the Waterloo Institute for Nanotechnology’s (WIN) leading nanofabrication and metrology facilities, which are among the most advanced of their kind in the world.

MANAGEMENT SCIENCE

Solving logistical, scheduling, and management issues with:

» Expertise in large-scale and complex optimization systems to manage supply chains under various requirements, cost settings, and service agreements,

» Research in performance evaluation including agile manufacturing to improve flexibility and cost-effectiveness,

» Education and training for industry through Waterloo Management of Integrated Manufacturing Systems (WATMIMS) and Waterloo Optimization Lab (WATOPT).
Canada’s TOP comprehensive research university for the past 7 years (Re$earch InfoSource Inc.)

Canada’s most innovative university (23 of 23 years)

best overall (19 of 23 years)

leaders of tomorrow (16 of 23 years) (Maclean’s University Rankings)
ENERGY GENERATION AND STORAGE

Meeting energy needs with greater efficiency through:

» New ways to harvest, generate, and store electrical energy ranging from small scale energy harvesters to next generation power grids,

» Nanostructured batteries and less expensive alternatives to lithium-based batteries in Waterloo’s Electrochemical Energy Storage Laboratory,

» Inventions such as zinc-air rechargeable batteries with the potential to store energy generated by wind turbines and solar collectors,

» Cutting-edge research and technology development in photovoltaic energy conversion at the Centre for Advanced Photovoltaic Devices and Systems,

» Long-term evolution of sustainable energy systems by considering the deployment and effects of the next generation of solar panels.

ROBOTICS AND PRECISION MACHINE CONTROL

Leading the way for increased efficiency and new approaches to automation with robotics and mechatronics supported by:

» Centre for Intelligent Antenna and Radio Systems (CIARS) which is recognized for facilities in the areas of emerging intelligent wireless technologies, sensing, nano-scale radio-wave devices, and bio-medical electromagnetism — the first of their kind in Canada and among the most advanced in the world,

» Strength in robotics that stems from a culture of forward thinking graduates like the founders of Clearpath Robotics,

» State-of-the-art equipment and expertise to advance nano, micro, and macro materials joining and smart materials,

» Development of new precision machine tool concepts, computer numerical control (CNC) algorithms to shorten cycle time and improve part accuracy and quality, as well as virtual modelling techniques to digitally plan and optimize complex machining operations in advance in the Precision Controls Laboratory.
Waterloo Institute for Sustainable Energy (WISE)
Transforming the energy system for long-term sustainability with innovative solutions and policies.
wise.uwaterloo.ca

Waterloo Centre for Automotive Research (WatCAR)
Creating collaborative research solutions that streamline production processes, advance connectivity, improve fuel economy, and lower emissions to enhance innovation and competitiveness through the industrial supply chain.
uwaterloo.ca/watcar

Centre for Advanced Materials Joining (CAMJ)
Developing new and innovative technologies for materials joining with cutting-edge laboratories and strategic industry collaborations for research and development.
uwaterloo.ca/centre-advanced-materials-joining

Waterloo Institute for Nanotechnology (WIN)
Pioneering discovery and engineering cutting-edge technologies in nanomaterials, nanoelectronics, nanoinstrumentation, and nanobiosystems for global applications and impact.
uwaterloo.ca/institute-nanotechnology