

Automotive-Related Research at Western University

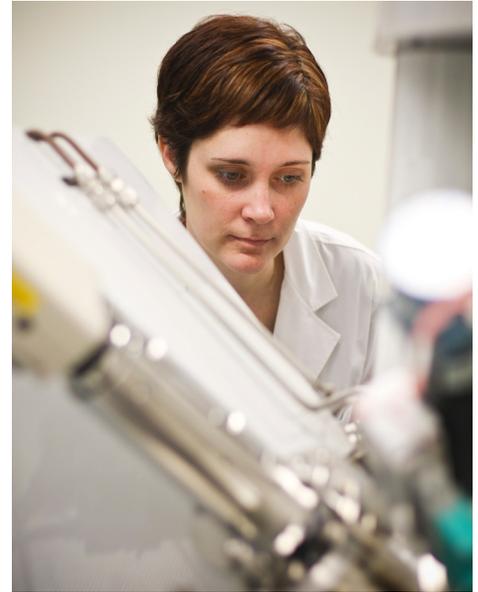
From the production of biofuels, fuel cells and alternative forms of energy, to improved design, manufacturing processes and materials, research across the disciplines at Western University offers tremendous advantages to companies operating throughout the automotive sector and its supply chains. By reducing manufacturing costs, improving design and production, making safer, cost-efficient and environmentally progressive components, this research provides critical advantages for the sustained future of the automotive industry.

Design and Manufacturing

- The automotive paint market is approximately \$7 billion annually, yet as much as 60% of conventional solvent-based paints end up in the air
- **Powder Technology Research Centre:** has discovered a solution for fluidizing paint powders to spray uniformly, while rivalling high-quality surface finishes produced by liquid paints – and reducing emissions
- Computer-aided design, manufacturing and inspection research has significant applications for the development of an advanced computer-aided process planning system that achieves efficient and precise machining, including dies and molds
- Fluid and energy transport research, including heat transfer studies, sheds light on fluid flow and convective heat transfer in highly conductive porous metals, which has specific applications for magnesium die-casting
- Engineering researchers are developing human-safe robotic interactions and improving haptics, resulting in efficiencies and cost-savings for robotics used in automotive assembly systems
- **Integrated Engineering Program:** leaders in engineering design, design process and concurrent design, this group is also responsible for training many young engineers who will go on to careers in the automotive sector
- **Auto21 Research Laboratory:** promotes safe driving among seniors and investigates issues related to technology in automobiles, vehicle design and seating configuration
- Western's global research strengths in wind engineering have applications in the design and function of automotive cooling fans
- Other projects are examining ergonomics, in-car intelligent systems for training and retraining drivers, and online training simulators

Materials

- **Fraunhofer Project Centre @ Western:** world's premiere facility for developing, validating and industrial-scale testing of lightweight materials, products and related applications
- **Surface Science Western:** leading surface analysis laboratory for all aspects of material surface properties, including thin films, trace element impurities, polymers, nanoscale mechanical properties of materials and interfaces, corrosion and stress corrosion cracking, interfacial dynamics, semiconductor surfaces and tribology and adhesion
- Extensive strengths in areas related to physical metallurgy, composite materials and materials selection in engineering design
- Specific strengths in the development of stronger, lighter composite metals, and for improving the efficiency of the manufacturing process
- Developing a better understanding of factors affecting the performance of magnesium die-castings, which are finding widespread use in the automotive sector
- Scientific basis for large-scale production of highly tailored nanotube-based materials for applications in such areas as fuel cells, batteries and sensing technologies



Surface Science Western is Canada's most comprehensively equipped surface analytical laboratory, and a leading consulting and research centre.



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Research**