

Hello and welcome

To the brilliant young scientists, dedicated educators, proud families, and distinguished guests here at the University of Toronto Scarborough. It is a privilege to stand before you today on behalf of the **Toronto Section of the Society of Tribologists and Lubrication Engineers**—or as we like to call it, STLE. We are here to celebrate curiosity. We are here to celebrate projects that dig deep into one of the most quietly powerful fields of science and engineering: **tribology**.

Now, if the word *tribology* is new to you, you are in good company. It is a term that often hides in the background, yet it touches nearly every moment of our lives. Tribology is the science and engineering of interacting surfaces in relative motion. It is the study of **friction**, **wear**, and **lubrication**. But to describe it only in technical terms would be like describing a symphony as simply “a collection of notes.” Tribology is about something far more elegant.

**STLE’s vision** says it best: *“Perfecting Motion.”*

That is what tribology is, at its heart—the relentless pursuit of making things move better, longer, and more efficiently. Whether we are talking about the smooth glide of a hip joint in the human body, the whisper of a bearing in a wind turbine, or the simple act of oiling a bicycle chain, tribology asks a fundamental question: *How do we manage the forces that resist motion, and how do we harness or reduce them for our benefit?*

Think about it in everyday terms. When you rub your hands together on a cold day, you *want* friction—it creates heat and warms you up. That is tribology in action. When you put a drop of oil on a squeaky door hinge or a bicycle chain, you *want* less friction—you want effortless, silent motion. That, too, is tribology. And when an engineer designs a new lubricant that helps a car engine run cooler and use less fuel, they are applying tribology to conserve energy and protect our environment—exactly what **STLE’s mission** calls us to do: *advance the science of tribology and the practice of lubrication engineering to foster innovation, improve the performance of equipment and products, conserve resources, and protect the environment.*

The global impact of tribology is immense. It is estimated that proper tribological practices save approximately **1.6% of Canada's gross domestic product**.

Approximately a 51 billion dollar annual savings —money saved in energy, in maintenance, in longer-lasting machinery, and in reduced emissions. From solving global challenges such as access to clean water to enabling new technologies in space exploration, tribology delivers profound economic and commercial advantages.

Here in **Canada**, our economy is built on industries that depend on tribology. Consider Canada's vast energy sector, from the oil sands of Alberta to hydroelectric dams across the country to the nearby nuclear power plants: every pipeline, pump, turbine, and conveyor belt relies on friction management to operate reliably and efficiently. Consider our manufacturing heartland right here in Ontario—automotive plants, aerospace innovators, and advanced manufacturers—all of whom depend on tribology to reduce wear, extend equipment life, and remain competitive on the world stage. Consider our natural resources: mining in the North, forestry across the provinces—heavy machinery operating in some of the harshest conditions on Earth, where cold temperatures thicken lubricants, and ice transforms friction. And consider our environment: by reducing friction, we reduce energy consumption and lower greenhouse gas emissions—a goal that matters deeply to Canadians from coast to coast to coast. In fact, Canada's cold climate makes tribology particularly critical. When the temperature drops, lubricants behave differently, and the cost of friction—in fuel, in downtime, in maintenance—can climb dramatically. The work being done by tribologists and lubrication engineers across this country helps keep our trains running through winter, our military equipment mission-ready, and our renewable energy infrastructure—such as wind turbines in Ontario, Quebec, and on the Prairies—spinning smoothly year-round. That is not just engineering; that is enabling the Canadian way of life. And that is why the work we recognize today matters.

The **Toronto Section of STLE** is proud to sponsor these awards at the Toronto Science Fair to encourage exactly the kind of hands-on inquiry that drives tribology forward. We look for projects that explore tribology principles—projects that investigate the effects of friction, that propose clever ways to reduce friction

wear, or that improve lubrication for global benefit. Who knows? One of the projects judged today might one day help extend the life of a mining haul truck in Sudbury, improve the efficiency of a wind farm in the Gaspé Peninsula, or develop a new lubricant that keeps Arctic equipment running safely in  $-40^{\circ}\text{C}$  conditions. This year, these projects were judged by members of the STLE Toronto Section, Jeremy Brideau, Lorne F. Brock, and George Staniewski.

After careful review, this team have selected three outstanding projects that demonstrate exceptional merit and relevance to tribology. Each of these students has taken the time to explore how surfaces interact, how lubrication changes behaviour, and how friction can be managed—and, in doing so, they have shown us a glimpse of the future of motion.

It is now my honour to announce the **STLE Toronto Section Science Fair Awards**.

- **Third Place** receives a certificate and **\$100**. This project demonstrates a strong understanding of tribology principles and a creative approach to managing friction and wear.
- **Second Place** receives a certificate and **\$150**. This project demonstrates deeper insight and a clear connection to real-world applications, reflecting the innovative spirit of lubrication engineering.
- **First Place** receives a certificate and **\$250**. This is the project that best exemplifies tribology excellence—whether through rigorous experimentation, a novel solution, or a compelling vision for how reducing friction can benefit society.

Before I announce the winners, I want to say this to every student who submitted a project in this category: you have already done something remarkable. You have looked at the world and asked, *How do things move? How can they move better?* In doing so, you have stepped into a field that will continue to shape our future—from the cars we drive to the medical devices that heal us, from renewable energy to sustainable manufacturing.

So please, join me in celebrating all our participants, and let us give our full attention as we recognize the students whose projects stood out in this year's tribology awards.

Congratulations to our winners, and thank you all for being part of and supporting the Toronto Science Fair. Keep asking questions, keep exploring motion, and

remember—every time you reduce friction, you help the world move a little more perfectly.

Thank you.