

# Professor uses nanotechnology to prolong machine and engine life

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Guojun Liu has discovered a way to use nanotechnology to reduce friction in automobile engines and machines.

"The technology should be useful in a wide range of machineries other than automobile engines," says Dr. Liu, a professor in the Department of Chemistry and an expert in polymer synthesis. "If implemented industrially, this [nanotechnology](#) should help prolong machine life and improve energy efficiency."

Dr Liu's team prepared miniscule polymer particles that were only tens of [nanometers](#) in size. These particles were then dispersed in automobile engine base oils. When tested under [metal surface](#) contact conditions that simulated conditions found in automobile engines, these tiny particles were discovered to have an unprecedented friction reduction capability.

Even at a low concentration, the [nanoparticles](#) performed much better than the friction additive that is currently used by many industries. They were able to reduce friction by 55 per cent more than the currently achievable rate.

Dr. Liu's discovery has earned the Society of Tribologists and Lubrication Engineers' Captain Alfred E. Hunt Memorial Award. This prestigious award is given annually to the STLE member who authors the best paper dealing with the field of lubrication or an allied field.

This is the first research that Dr. Liu has done in the field of friction reduction and lubrication.

Provided by Queen's University

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