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# Temple professor's find may pave way to using less oil

Philadelphia Business Journal - by [Peter Key](#) Staff Writer

A technology developed by a [Temple University](#) professor has the potential to reduce oil consumption, increase oil production and make it easier for food manufacturers to put peanut butter into jars.

The technology, which was invented by Rongjia Tao, the chairman of Temple's physics department, uses an electrical field to reduce the viscosity of various kinds of substances, which improves their capacity to flow.

Doing that to diesel fuel makes it burn more thoroughly in an internal combustion engine, which improves the engine's efficiency. In the case of a car or truck, that means the technology can be used to increase miles per gallon and decrease emissions.

A device that uses the technology was tested on a diesel-powered Mercedes Benz car for six months. It boosted the car's miles per gallon by 20 percent in highway driving and 12 percent to 15 percent in city driving, according to results recently published in Energy & Fuels, a bimonthly journal put out by the American Chemical Society.

Save the World's Air Inc. of Morgan Hills, Calif., has licensed the technology from Temple and is working with a company in Robesonia, Berks County, to test a device that uses the technology on truck engines.

STWA thought truckers were a better initial market for devices using the technology than car drivers because trucks get much worse mileage and rack up many more miles per year than cars.

The device used on a car or truck engine consists of an electrically charged tube that draws power from the vehicle's battery and is attached to its fuel line near its fuel injector. As fuel passes through the tube, it is thinned so that it can be injected into the engine in smaller droplets that burn more thoroughly, improving the vehicle's mileage and decreasing the amount of pollution the vehicle puts out.

STWA is working both on optimizing the results the device gets and on reducing the amount of space the device takes up, said Joe Dell, STWA's vice president of marketing. The company hopes to have a version of it on the market within the next six months, Dell said.



Rongjia Tao heads up Temple's physics department.

STWA and Temple also are working with oil companies, which think they can use the technology in two ways. One is to improve the flow of oil and oil products through pipelines, which could dramatically reduce the amount of money the companies have to spend cleaning the pipelines. Another way is to improve the flow of oil from oil wells, which would enable oil companies to get more oil out of their wells.

Dell wouldn't identify the companies but said they "are the 'Who's Who' of the oil industry and they came to us" after seeing the article in Energy & Fuels.

The article also generated interest from food packaging companies. They currently have to heat peanut butter to get it to flow enough to package it and they think Tao's technology could enable them to reduce the amount of heat they use or not use heat at all.

Tao seems nonplused by the amount of attention his invention is getting or the possible markets for it.

He's working with Temple to license another of his inventions: a magnetic material that can turn on fire sprinklers when the temperature goes above 150 degrees and can also shut them off when the temperature drops below that level, thus reducing the amount of water damage caused by a fire.