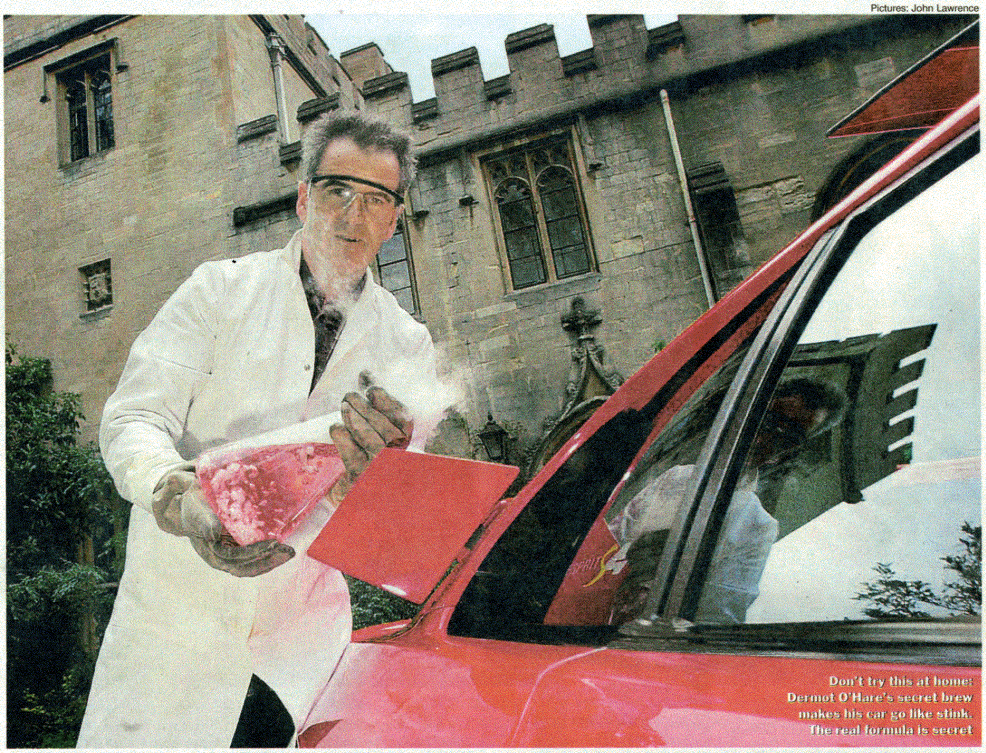
Go faster with the mad professor

A leading scientist wants his Lotus to have an edge. So he mixes his own magic fuel, finds **Richard Lofthouse**

Pictures: John Lawrence



Don't try this at home: Dermot O'Hare's secret brew makes his car go like stink. The real formula is secret

Imagine the ivy-clad silence of an Oxford college, deep in the long summer vacation. Suddenly the wrought-iron gates open and in rumbles a gleaming red Lotus Esprit, exhaust popping and whizzing to break the scholarly spell. But at the wheel isn't some uncouth boy racer breaking into Balliol for a dare — it is one of the university's senior chemistry professors.

Meet Dermot O'Hare, an inorganic chemist originally from Newry, Co Down. He has been identified as one of the 50 leading young scientists in Europe, and his specialities include exploratory synthetic organometallic chemistry, intercalation chemistry and the synthesis of meso- and microporous solids. Oh, and making cars go very fast.

For O'Hare, 44, is a committed car customiser who uses his scientific skills to brew up weird and wonderful fuel-enhancing potions. "The modding [car modifying] began through necessity, when I was a young lecturer at Oxford," he says. "I was married with two infants and found a way of attaching child seats into my Lotus Excel.

"When I bought the Esprit five years ago I started with a series of cosmetic changes but quickly progressed to mechanical modifications as well." As for the fuel enhancing, he explains: "I began a few years ago by sampling some of the fuel additives already on the open market, one or two of them excellent, and others anything but."

He soon decided he could improve on what was available, and set about mixing in the laboratory to come up with a magic formula he could add to his tank to increase the Lotus's power. The result is a brew he dubs Mad Merlin's Mix.

Normal unleaded petrol has an octane rating of 95 RON (Research Octane Number). Premium petrols such as Shell Optimax and BP Ultimate have ratings of 98 and 97 respectively. Mad Merlin's Mix has an estimated 101 RON.

"The ideal fuel enhancer has to try and achieve two things at once. It must increase RON but it should also increase fuel density," says O'Hare.

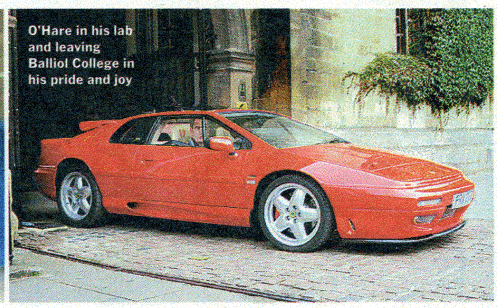
Fuel injectors squirt a given volume of fuel into the combustion chamber, so a denser fuel contains more energy for the same volume. And the magic ingredients after much trial and error in the lab? O'Hare won't reveal the exact formula, but admits to including toluene, xylene, methanol and methyl tertiary-butyl ether (MTBE).

"Toluene was used extensively in the F1 turbo era in the 1980s," he says. "Power output exceeded 1,500bhp, and their fuel was typically 84% pure toluene. Toluene and xylene add density; methanol and MTBE increase the octane rating. I only use a tiny amount of MTBE, an oxygenated hydrocarbon that helps combustion."

Mixing the formula is relatively straightforward. "For everyday purposes I mix this stuff up in the garden shed, directly into a calibrated one gallon jerry can," says O'Hare. He then adds the mixture to nine gallons of petrol.

None of the substances is restricted, but few of us have cheap access to chemical manufacturers in the way O'Hare does. "Anyone can get these ingredients with a bit of ingenuity, but you can't get them at Sainsbury's," he says.

That leaves the driving experience, and make no mistake, O'Hare is no slouch. He took me out in the Esprit and "revved the nuts off it". For a few glorious miles I thought we had actually taken off.



O'Hare in his lab and leaving Balliol College in his pride and joy

MAGIC FORMULAS

The cans of petrol additives you can buy in accessory shops make big claims about raising power, sometimes by 10%, but do they work?

You can split the potions into two classes: first, those that claim to increase the octane rating of the fuel, and second, those that remove or inhibit the build-up of deposits — namely carbon — in the engine and thereby increase its efficiency and power.

The first type can increase power but only if the engine is retuned as well — a car with an engine management computer tuned to run on 95 or 98 RON fuel will not perform any better if petrol with a higher rating is suddenly added.

The second type can also give a boost — but is likely to make a big difference only on an older car. New cars using modern oils rarely suffer significant carbon build-ups.