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## [Nanoscale Device for Fuel Cells Can Store More Hydrogen Than Any Other Material](#)

### *Carbon nanoscrolls*

Hydrogen-powered cars seem to be the best solution to the problem of fossil fuels pollution. The ever increasing concerns about global warming and the future shortage of natural fuel sources have given the automotive industry and researchers from other fields alike a new impulse in developing new technologies. Though fuel cell could one day replace the internal combustion engine, there are still some technological problems to be overcome, like hydrogen storage and the efficiency of the chemical processes. So far, the biggest downside of hydrogen-powered cars is the fact that it is very difficult to store it safely and it's not stable, either, so these cars require bulky pressurized tanks that could explode much in the same way a methane gas tank does. Normal fuel cells produce energy from the electrochemical reactions between hydrogen and oxygen. The best fuel cells available on the market have a range of 200 miles tops, so to increase it to 300 miles, a reasonable mileage, compared to those achieved by internal combustion engines, would require a hydrogen storage tank the size of a double-decker bus. This problem could be solved by a recently found nanoscale solution, as scientists in Greece announced that they found a new way of storing hydrogen in carbon nanoscrolls. These materials can store more hydrogen than any other material and are safe to use for future vehicles and portable applications. George Froudakis at the University of Crete, who led the work, said that they were able to control how tightly the scrolls wind up and, hence, how much hydrogen they adsorb, by adding impurities to the carbon nanosheets. Their findings suggest that adding lithium ions should increase the uptake of hydrogen at atmospheric pressure and room temperature from 0.19% to 3.31%, twice the amount that other materials have achieved. Moreover, the scientists hope that by decreasing the temperature, hydrogen uptake should increase. "Most of the scientists working on this field of research believe that the solution to this problem will arise from the synthesis of new materials," Froudakis says.