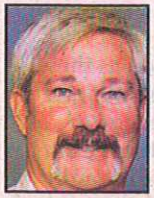
Learn battery options



Stewart Somerville
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Like a battery, a fuel cell has three principal parts: two electrodes — a cathode and anode — separated by an electrolyte. Chemical reactions at the electrodes produce an electronic current that can be made to flow through an appliance connected to the battery or fuel cell. The principal difference between the two? Fuel cells get their energy from an external source of hydrogen fuel, while conventional batteries draw from a finite source in a contained system.

Methanol is directly used as the fuel and reforming of alcohol down to hydrogen is not required. Such a fuel cell is attractive because the only waste products are water and carbon dioxide — the latter produced in small quantities. Also, because methanol is a liquid, it is easier to store and transport than hydrogen gas, and is safer — it won't explode. Methanol also has a high energy density-a little goes a long way, making it especially interesting for portable devices.

The direct methanol fuel cells DMFCs currently on the market, however, have limitations. For example, the material currently used for the electrolyte sandwiched between the electrodes is expensive. Even more important: that material, known as Nafion, is permeable to methanol, allowing some of the fuel to seep across the center of ciency of the cell-because the fuel isn't available for the reactions that generate electricity.

Using a relatively new technique known as layer-by-layer assembly, the MIT researchers created an alternative to Nafion. "We were able to tune the structure of [our] film a few nanometers at a time," Hammond said, getting around some of the problems associated with other approaches. The result is a thin film that is two orders of magnitude less permeable to methanol but compares favorably to Nafion in proton conductivity.

To test their creation, the engineers coated a Nafion membrane with the new film and incorporated the whole into a direct methanol fuel cell. The result was an increase in power output of more than 50 percent.

The MIT team is now exploring whether the new film could be used by itself, completely replacing Nafion. To that end, they have been generating thin films that stand alone, with a consistency much like plastic wrap. ScienceDaily. Retrieved May 20, 2008, from *http://www.sciencedaily.com/releases/2008/05/*

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New things are coming. Within a few years it is hoped that there will be better products out to help with the cost and production of renewable energy. Fuel cell technology is a promising science. As long as we stay away from our food supply for fuel we will do well.

Transportation is so important to all of us. From getting to work to doing our work to getting to our favorite vacation spot we need a reliable transportation vehicle. Whatever form of transportation we have used form our feet to horses to the internal combustion engine. We need ever so more quicker and safer ways of getting there. A more efficient means, a more economical means is the logical conclusion to our efforts.

With our knowledge base doubling every 18 months we ought to be able to solve many of our problems. We need industries that are willing to do the right thing and bring products to market. The big corporations should not with hold new technologies just because they cannot get enough money.

We little people are important. Keep a look out for the new technology. We need tomorrow's ideas today.

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