Artificial leaf could debut new era of 'fast-food energy'

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Technology for making an "artificial leaf" holds the potential for opening an era of "fast-food energy," in which people generate their own electricity at home with low-cost equipment perfect for the 3 billion people living in developing countries and even home-owners in the United States. That's among the prospects emerging from research on a new genre of "electrofuels" described in the current edition of *Chemical & Engineering News*, the American Chemical Society's weekly newsmagazine.

In the article, C&EN Senior Correspondent Stephen K. Ritter describes research on electrofuels, made by using energy from the sun and renewable ingredients like water and carbon dioxide, reported at a gathering of experts sponsored by the U. S. Department of Energy's Advanced Research Projects Agency (ARPA-E). Created in 2009 by the American Recovery & Reinvestment Act, ARPA-E is funding electrofuels research, with the goal of developing technologies that improve on nature's approach - photosynthesis. Electrofuels is one of 12 programs funded by ARPA-E.

The artificial leaf is one of the electrofuels technologies. Made of inexpensive materials, the leaf breaks down ordinary water into the oxygen and hydrogen that can power an electricity-producing fuel cell. Just drop the credit-card-sized device into a bucket of water and expose it to sunlight. With the cost-conscious technology, one door-sized solar cell and three gallons of water could produce a day's worth of electricity for a typical American home. The article describes a range of other electrofuel technologies, including ones based on engineered microbes, being developed in the quest for new ways of making fuels.

More information: "Electrofuels Bump Up Solar Efficiency" cen.acs.org/articles/89/i48/El … olar-Efficiency.html

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