COLORADO

CAFÉ SCIENTIFIQUE

TUESDAY 19 MAY 2009

at the Wynkoop Brewing Company

http://www.wynkoop.com/

Corner of 18th and Wynkoop in LoDo, Denver

About a block from Light Rail. Thirteen minutes by foot from Auraria.

Getting Hydrogen From Water the Way Algae Do

Paul W. King, PhD

Senior Scientist, National Renewable Energy Laboratory

Everyone has heard the claim that hydrogen power is the future: What could be nicer than an eternally renewable resource that, when burned in your car, produces nothing but pure water? The problem is, there is almost no naturally-occurring hydrogen on earth; it's too reactive. H_20 is very abundant, though. We can make H_2 from it, but we need to capture light or electrical energy to split water by photolysis or electrolysis. There's the rub: What's the good of burning dirty coal to make the energy to produce clean hydrogen? And the precious-metal catalysts for these processes are expensive and scarce. So here's where Paul King and his NREL team come in. They study microbial enzymes called hydrogenases, which catalyze the combination of protons (hydrogen ions) and electrons to make hydrogen. The algae's hydrogenase uses a metal catalyst, too, but it's plain old iron. Like most enzymatic reactions, this one's reversible, so you can also use hydrogen to make electrons (current) as in a fuel cell. Now, to capture the current, you need some kind of wire, and Paul's group have combined hydrogenases and single-walled carbon nanotubes so that the electrons are captured in the nano "wires." This wicked cool technology won't be powering your SUV any time soon, but as the beaver remarked when he took a bite out of the sequoia, it's a start.

EVERYONE IS WELCOME. **The discussion starts at 6:30 in the Mercantile Room (no food service there). Come before 6 PM to leave yourself time to get something to eat, or stay and eat afterwards. We end around 8 PM.**

There's no charge. The Wynkoop is generously providing the facility; we buy our own drinks. It is first come, first seated, and **seating is limited** so that everyone can take part in the discussion.

The Colorado Café Scientifique is organized by an informal group of President's Teaching Scholars and faculty from CU and institutions up and down the Front Range, as well as science fans from industry, government and elsewhere. We welcome your input, including ideas for speakers and topics. Bring them with you to the next Café, or e-mail them and any questions to John.Cohen@UCHSC.edu

Essential information on our Web site at http://CafeSciColorado.org