

# OF TERMITES, ALGAE AND MICROBES

**The search to derive alternatives to fossil fuels through algae and microbes gains momentum.**

Achim Steiner, executive director of the UN Environment Program, said a Brazilian newspaper last week that termites host microbes that can transform wood waste into sugar for ethanol production “in an effective and economic way.”



He was referring to studies underway and a lot of investment being spent on termites in the US and Researchers funded by Europeans that are studying tropical insects in laboratories in Kenya. The termite technology could surpass “in a few years” corn and sugar cane-based ethanol, used by the United States and Brazil respectively, Steiner said.

The promise held by this line of investigation had been voiced many times before, for example, by Steve Chu – a Nobel laureate, no less (see “Termite guts...” a 2005 article at Science Daily). Originally uploaded by mini-d

Anyway, as if confirming Steiner's words, CNET reported yesterday how LS9, a high-tech fuel company that's all about imitating nature, has received \$5 million in funding. The company hopes to make what it calls "renewable petroleum," a synthetic version of petroleum and other oil-based industrial products. It could provide more energy, per gallon, than ethanol and less carbon dioxide emissions than gas.

Some start-ups, such as Solazyme and LiveFuels, have announced plans to produce synthetic petroleum from algae. Fields of algae will absorb carbon dioxide and other compounds and metabolize it into petroleum, the companies said. Arizona Public Service Company (APS) and GreenFuel Technologies Corporation raise algae and use it to make biodiesel, feeding them carbon dioxide from a natural-gas-fired power plant, Red Hawk, west of Phoenix .

A Spanish start-up, Bio Fuel Systems (web in Spanish only) has also developed a method of breeding plankton and turning the marine plants into oil. It was formed after three years of research by scientists and engineers connected with the University of Alicante.



LS9 will do something different from what all these companies are doing: it will brew petroleum through synthetic biology, laboratory and industrial processes that can perform the same function as algae or microbes. As a result, production doesn't rely on live, single-celled creatures. Ideally, this will make the manufacturing process more amenable to performance enhancement or control.

Algae Originally uploaded by Kimono.

Khosla Ventures is the principal investor in LS9. In a relatively short time, the Khosla firm has invested in a wide variety of companies that concentrate on harnessing the power of synthetic or real biology. But Vinod Khosla, its founder and considered the best venture capitalist in the world by both *Forbes* and *Red Herring* magazines is hedging his bets in different renewable energies. According to this interview at Technology Review, he thinks CSP (Concentrating Solar Power) makes a lot of sense.

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