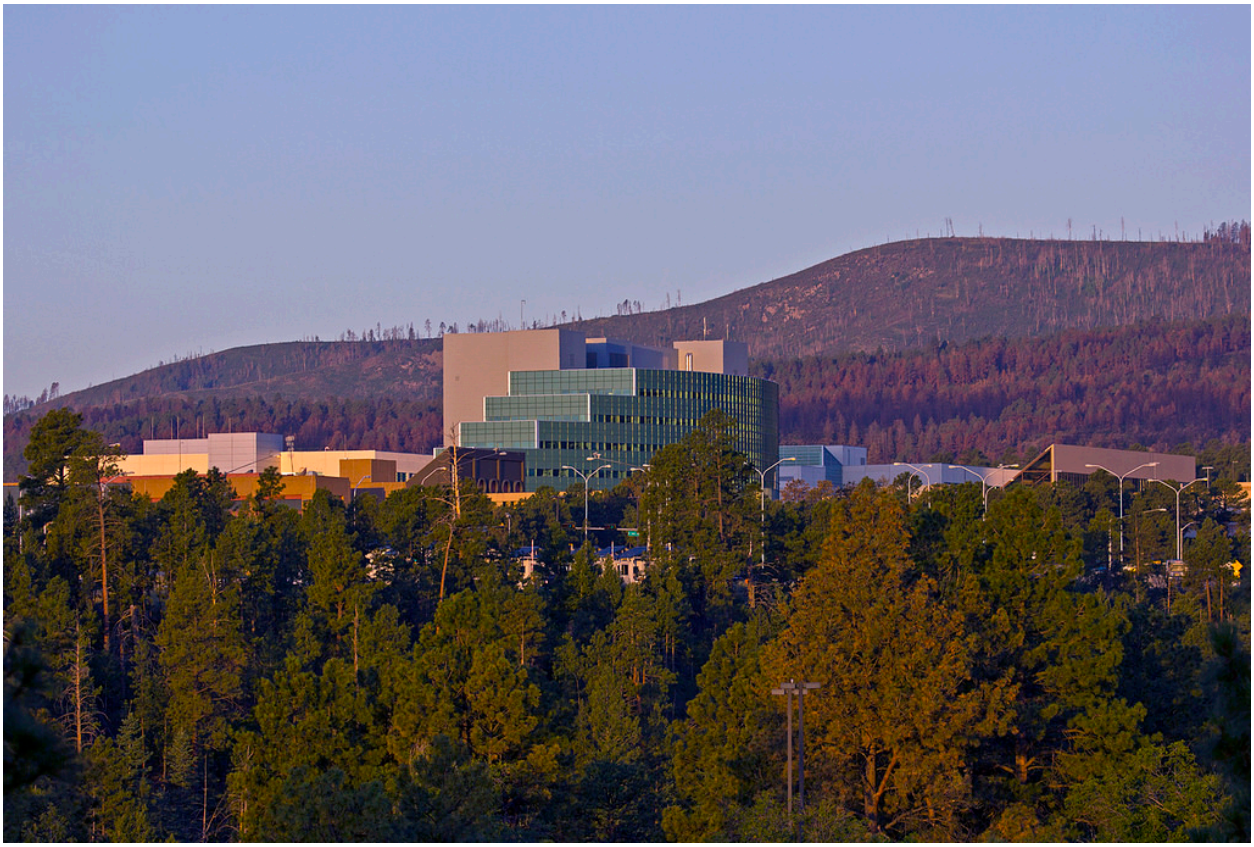
Los Alamos technology strikes a chord with algal biofuels

September 2, 2009



Award-winning acoustic focusing technology will help create 'green gold'

Los Alamos, New Mexico, September 2, 2009—An award-winning Los Alamos National Laboratory sound-wave technology is helping Solix Biofuels, Inc. optimize production of algae-based fuel in a cost-effective, scalable, and environmentally benign fashion—paving the way to lowering the carbon footprint of biofuel production.Algae innards contain a high concentration of lipids, or oils. These lipids can be extracted by a relatively simple chemical process and concentrated into "biocrude"—or "green gold"—an alternative to crude oil that can be refined into biodiesel, gasoline, or even jet fuel.Acoustic-focusing—the novel use of sound waves at the heart of the Los Alamos Acoustic Flow Cytometer, a 2007 R&D100 Award-winning technology—is being harnessed and commercialized in partnership with Solix to harvest algae for fuel.

The work is part of a cooperative research and development agreement (CRADA) between the Laboratory and Solix.In order to turn algae into transportation fuel, the tiny plant-like organisms first must be separated from their watery home and the growth medium used to sustain them. Current methods rely on giant centrifuges to separate liquids from algae solids. Centrifuges take a lot of power to operate, raising production costs and increasing the process' overall carbon use. Moreover, standard fuel-conversion methods extract lipids from the algae using solvents that are potentially hazardous to humans and the environment, and costly to dispose of.Thanks to use of Los Alamos's acoustic-focusing technology, the algae-water-growth-medium mixture is subjected to ultrasonic fields that concentrate the algal cells into a dense sludge. This combined separation and concentration method uses hundreds of times less power than centrifuges. The Lab's lipid extraction and fractionation technique also avoids the need for costly, hazardous solvents.Under the CRADA, Los Alamos bioscientist Greg Goddard and Solix's cofounder and chief technology officer, Bryan Willson—an engineering professor at Colorado State University and founder of the university's Engines and Energy Conversion Laboratory—will develop by year end a working extraction prototype using the licensed acoustic-focusing technology at Solix headquarters in Fort Collins, Colorado. The technology then will be deployed to Solix's Coyote Gulch Demonstration Facility near Durango, Colorado, for real-world production of lower-cost biofuel.Los Alamos and Solix's work in the biofuels arena makes both entities members of the 2009 National Alliance for Advanced Biofuels and Bioproducts (NAABB). The Alliance is a consortium of government, university, and private-sector organizations working to forge the technical foundation for a scalable, responsible, and renewable biofuels industry.Creation of the Alliance was born of the urgent need to develop renewable and sustainable sources of transportation fuels in a manner that minimizes emissions of "greenhouse gasses" such as carbon dioxide, uses a relatively small amount of land, is frugal with energy, and conserves water. The Alliance will develop new technologies and processes to support widespread commercialization of algae-based fuels and useful byproducts.As part of the American Recovery and Reinvestment Act (ARRA), nearly $50 million in stimulus funds will become available under the auspices of the U.S. Department of Energy for Algal Biofuels Research and Development. If awarded, the funding from this investment will assist the Alliance and potentially attract and assist new research partners interested in participating.