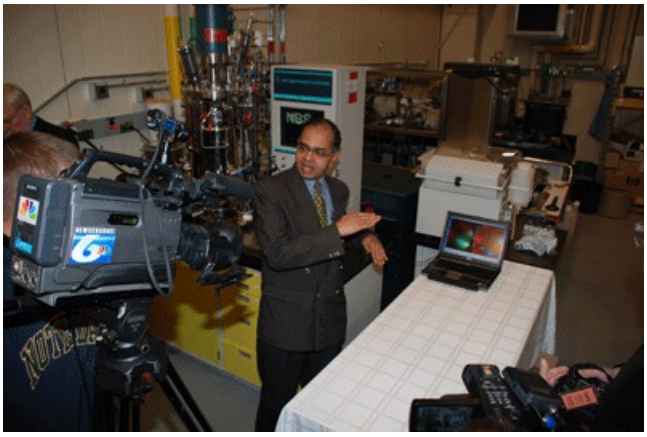

At recent signing ceremony and news conference, INL agreed to help OriginOil, Inc., validate and scale its technology for converting algae to oil. Here, OriginOil Chief Technical Officer Vikram Pattarkine outlined his company's strategy for the news media.

INL and OriginOil to develop algae-to-oil technology

by Reuel Smith and Keith Arterburn , *INL Communications & Public Affairs*

Idaho National Laboratory recently signed an agreement to help OriginOil, Inc. validate and scale the company's proprietary technology for converting algae to oil. Representatives from the company converged at the U.S. Department of Energy lab for a February signing ceremony.

Algae grows faster and requires less energy than other biofuel sources, or "feedstocks." But only a few technology companies have seriously pursued algae-to-oil research. In addition to INL's science and engineering strengths, the lab has a history of algae research experience dating back three decades.

OriginOil Chief Technical Officer Vikram Pattarkine (left) signs an agreement on algae research with INL commercialization manager David Anderson.

"INL is uniquely positioned to analyze the efficiency and effectiveness of industrial systems and to develop algal resources for biofuels," J.W. "Bill" Rogers Jr., INL associate laboratory director for Energy and Environment, said at the signing ceremony.

Algae, a photosynthesizing organism more primitive than plants, requires only light, carbon dioxide and limited nutrients to grow.

"Algae is the fastest growing biomass that we know of and it can grow on waste gas — carbon dioxide — waste water and waste land," said OriginOil Chief Technical Officer Vikram Pattarkine. "This does not compete with irrigation, food or use for land — we are using these waste resources and converting them into something useful."

Making biofuel from algae requires large quantities of algae and the means to process fat-soluble molecules inside cells, called lipids, to remove oils.

Click on the image above to view the CNN video.

"It is easy to grow a little bit of algae, but difficult to grow a lot of algae," Pattarkine said. "We have developed a process that will grow it on an industrial scale and we have intellectual property on how to convert that into lipids."

INL will analyze OriginOil's technology and devise models for reducing costs and helping it meet some of the system's commercial requirements, said Thomas Ulrich, an advisory scientist in INL's Biofuels and Renewable Energy Department.

"We have the opportunity to leverage our capabilities in feedstock supply chain logistics, which we have applied to other biomass conversions," Ulrich said. "Partnerships with innovators like OriginOil will accelerate our pursuit of national energy-independence initiatives."

INL's algae research history dates back to the 1970s, when INL biologists researched whether algae could extract undesirable minerals from geothermal waters. They drew on algal knowledge during the 1980s to remove it from storage pools and evaporation ponds at INL facilities. They also used algal and bacterial remediation methods to remove metals from surface waters at the Blackbird Mine, near Cobalt, Idaho.

More recently, INL scientists, with support from DOE's Office of Fossil Energy, evaluated whether green algae and cynobacteria could be used to capture carbon emissions from coal-fired power plants.

The initial phase of the OriginOil project, which starts immediately and will last several months, will focus on developing an energy balance model for systems that grow algae in a "photobioreactor," according to OriginOil's news release. The company expects to use this model to optimize its algae-to-oil technology as early as spring 2009. Subsequent phases will focus on validating the OriginOil processes and piloting specific commercial applications, the news release said.

"The collaboration that we are entering into with OriginOil is to advance their proprietary technology and to help them work through the feasibility of taking this algae system to a commercial state," said INL commercialization manager David Anderson, who negotiated the agreement with OriginOil. "We look forward to a successful collaboration."

Read the OriginOil, Inc., news release.

Visit the OriginOil, Inc., Web site www.originoil.com.

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