

ConocoPhillips Request for Proposals
Thermochemical Conversion of Biomass & Algae as a Bioenergy Feedstock

Summer 2009

The Bioeconomy Institute (BEI) and ConocoPhillips (COP) are pleased to announce a grant program in the areas of densification/storage and chemical conversion of biomass. The grant program is supported by ConocoPhillips.

ConocoPhillips is an international, integrated energy company. It is the third-largest integrated energy company in the United States and the second-largest refiner in the United States. ConocoPhillips is known worldwide for its technological expertise in deepwater exploration and production, reservoir management and exploitation, 3-D seismic technology, high-grade petroleum coke upgrading and sulfur removal. In addition, the company is investing in emerging businesses such as carbons-to-liquids, power generation and alternative energy, and programs that provide current and potential future growth opportunities.

In 2006, ConocoPhillips announced an eight year, \$23M partnership with Iowa State University in the area of biofuels. In addition to funding biorenewables research that directly supports ConocoPhillips core emerging business, ConocoPhillips is committed to funding areas of research that are external to its core business, but that is important to help ensure the viability and sustainability of biofuels as transportation fuels.

The present solicitation is intended to support **research related to the thermochemical conversion of biomass**. Funding can support a wide-range of stages in technology development, from the initial research concept (prior to intellectual property disclosure), to proof of concept, to commercialization. All proposals should have a clear connection to the production of biofuels or fuel-related molecules.

Up to \$500,000 will be available for calendar year 2010. Annual funding per project is expected to range from \$50,000 to \$150,000 and a typical project will last 12 to 24 months, with a review to determine renewal at the end of the first year.

Successful proposals will demonstrate a high potential to lead to one or more of the following:

Thermochemical Biomass Conversion

- Novel pathways to biomass depolymerization
 - Cellulose and lignin depolymerization
 - Controlled and selective oxidative depolymerization
- Identification of primary breakdown reactions
- Influencing and changing chemistry, including catalysis and conversion processes
 - Kinetics and process implications
- Biomass Pretreatments
 - Impurity removal
 - Storage stability
- Optimizing thermochemical fractions utilization such as bio-oil, bio-char
- Bio-crude characterization including the development of new analytical methods

Algae as a Bioenergy Feedstock

- Algae harvest and dewatering
- Lipid Biochemistry
- Algae production systems and process engineering

Procedure for Proposal Submission

Each proposal should be brief and concise and written in 12 pt. font with 1" margins. Proposals must include:

- A **cover sheet** (one page maximum) that includes the project title, the names and contact information for the ISU participants, and an executive summary. A sample cover sheet is attached.
- A **project description** (three pages maximum). This should include the goal of the project, justification for conducting the research (including information on commercial potential), a description of the approach, and a work plan and milestone schedule.
- A **budget** (one page maximum). A budget justification should detail the planned expenditures. The attached template must be employed in preparing the budget.

Proposals missing the required information or not meeting these formatting standards may be automatically rejected.

Submission and Review Procedure

Each proposal should have only one Principal Investigator (PI), but may have additional Co-Principal Investigators (Co-PIs). The proposal should be submitted by email to industry@iastate.edu no later than **July 01, 2009**. The PI will receive email notification of the receipt of the proposal within 24 business hours. Each proposal should consist of just one document that includes the cover sheet, project description and budget.

All proposals will be reviewed and ranked for technical merit by the Science and Engineering Board (SEB) of the Bioeconomy Institute. ConocoPhillips will also review the proposals, and taking into consideration the recommendations of the SEB and in consultation with the SEB, select a group of finalists for an oral project review. Oral project reviews will take place July 28-29, 2009. Final project selections will be made by ConocoPhillips and announced by October 01, 2009, with funding available on January 01, 2010.

Evaluation Criteria

Proposals will be evaluated for their potential to **lead to the production of fuel-related molecules (thermochemical conversion)**. While short-term solutions are welcome, ConocoPhillips wants to encourage long-term visions that would be commercialized in the six- to eight-year time frame. Each proposal should specifically address the stage of research, estimated time to completion, and potential barriers.

**ConocoPhillips Request for Proposals
Chemical Conversion of Biomass Grant Competition**

Project Title:

PI: Name, Department, Campus Address
Campus Phone Number, Email Address

Co-PI: Name, Department, Campus Address
Campus Phone Number, Email Address

(List others as needed.)

EXECUTIVE SUMMARY

(The Executive Summary goes here. Font should be 12-point. Not to exceed 350 words written in non-technical language.)

Budget

Double-click to open the Excel table below, then enter budget data in shaded cells only (non-shaded cells will calculate automatically).

Category	2010	2011	TOTAL
<i>Faculty Salaries</i>			\$ -
<i>P&S Salaries</i>			\$ -
<i>Postdoc Salaries</i>			\$ -
<i>Grad Student Stipends</i>			\$ -
<i>Undergraduate Wages</i>			\$ -
Total Salaries & Wages	\$ -	\$ -	\$ -
Fringe Benefits	\$ -	\$ -	\$ -
Equipment			\$ -
Travel			\$ -
Student Tuition			\$ -
Materials & Supplies			\$ -
Other Direct Costs*			\$ -
Total Direct Cost	\$ -	\$ -	\$ -
Indirect Cost (@ 46.5%)	\$ -	\$ -	\$ -
Total Cost	\$ -	\$ -	\$ -

Budget Justification

Please detail the planned expenditures.