

## **Analytical Processing Chemistry Services Request for Proposal**

### **Organization Overview:**

The Agricultural Utilization Research Institute (AURI) is a nonprofit 501 c(3). Its mission is to foster long-term economic benefit for Minnesota through value-added agricultural products. This means AURI helps develop new uses for agricultural products through science and technology, collaborating with businesses and entrepreneurs to bring ideas to reality. AURI generates economic impact in Minnesota communities by helping businesses take advantage of innovative opportunities in four focus areas: biobased products, renewable energy, coproducts and food.

AURI offers a broad range of services to expand markets, develop new uses and improve processes. It also provides hands-on scientific technical assistance, and a targeted network of resources to develop value-added uses for crops and coproducts. We provide applied research services and product development assistance to create new ag-based products, process refinements and to help move them to market. With unique facilities and professional staff, AURI is a one-of-a-kind resource that provides assistance to Minnesota businesses looking to create more value for the state's agricultural products. Please visit <http://auri.org> to explore our work.

### **Intro/Project Overview:**

The Agricultural Utilization Research Institute is soliciting proposals to supply process development expertise and services for deliverables on multiple priority projects. The common theme of these project is to produce value-added chemicals from agricultural commodities in partnership with AURI scientists. Project deliverables include, but are not limited to, demonstration of production of biofuels (such as biodiesel, renewable diesel and jet fuel), developing scalable processes for the isolation of high-value molecules from relevant feedstocks and developing pre-treatment processes for the extraction of sugars. Additionally, these results should be supplemented with a techno-economic analyses to facilitate scale-up for pilot/commercial scape operation. The deliverables will play a central role in fulfilling AURI's commitments to various State and Federal grants.

### **Objectives/Statement of Need:**

The Agricultural Utilization Research Institute, seeks a contract research firm to develop and demonstrate the feasibility of processes for the following three specific objectives:

1. Product and Process Development
  - a. Develop a comprehensive matrix to determine ideal pretreatment for sugar extraction dependent upon each biomass to be utilized. Develop a simple, scalable process to extract high-value molecules from plant biomass relevant to the state and region, including but not limited to alfalfa, kernza, camelina, pennycress, soybeans, wild rice, corn and wheat. The high-value molecules could be natural products that have uses in human/animal health and well-being or fermentable sugars for the industrial production of renewable chemicals and fuels.
  - b. Develop a catalyst and a process for the production of biofuels such as biodiesel, renewable diesel and jet fuel from plant-based oil (e.g. varieties of soy, pennycress, and camelina).
  - c. Upgrading the use of crops such as alfalfa, pennycress, and camelina varieties for food, feed and aquaculture applications. Investigate the storage/shelf-life, digestibility, and nutrient compositions of the crops.
2. Process Research
  - a. Provide technical leadership in application of principles of basic chemical and biological process research and current process understanding to develop new approaches to maximize value from agricultural commodities.

- b. Professional networking with Midwest universities in process development.
  - c. Provide information from current technical research journals and seminars on new and emerging agricultural research themes.
3. Opportunity Foresight and Identification
  - a. Provide insight into emerging Federal Agricultural and bio-energy priorities, needs and opportunities as identified by the U.S. Department of Agriculture (USDA) and Department of Energy (DOE) as well as State and regionally-based AURI stakeholders.
  - b. Professional networking with grant program managers at USDA and DOE to discuss long term program visions.

**RFP Requirements and Timeline:**

Proposals will include

- Engineering expertise for process development.
- Experience working with biological systems and agricultural commodities.
- Strong competency in techno-economic modeling and proven history of commercialization of similar products is required.
- A cover letter indicating interest and a brief description of their expertise and infrastructure capabilities as well as a CV.
- Approximate timeline to complete the work.
- Budget required to fulfill each objective and deliverable.

**Timeline:**

Proposals are due August 9, 2019 with the desired start date of mid-August.

Please email the proposal to AURI by **5PM (CST) August 9 to the attention of Dr. Michael Stutelberg, [mstutelberg@auri.org](mailto:mstutelberg@auri.org)**