

R008-E: "Development of Advanced Pretreatment Technologies for the Production of Clean Biocoal/Syncoal from Woody Biomass, Ag Residues, and Municipal Solid Waste"

Submitted by EERC

Principal Investigator: Stelios Arvelakis

Request for \$300,000; Total Project Costs \$1,432,047

Technical Advisor Comments

- Two reviewers recommended funding may be considered, one recommended do not fund.
- Applicants will provide a 79% match.
- All 3 reviewers felt that not enough detail was provided in regards to the methodology. One reviewer stated, "The quality of methodology is below average without any clear goals for testing and demonstrating various pilot scale equipment and analytical data. No methodology for torrefaction objective and no justification for using fluidized bed torrefaction unit."
- 2 reviewers felt that the milestones were not well defined, and the management plan was lacking. One reviewer stated, "Very little information is provided. No definition for metrics of completion. Very little discussion on how to manage such a large and yet short term project. Little discussion on how the 6 project staff would interact."
- All 3 reviewers felt that not enough reference material was provided. 1 reviewer commented that "Authors suggest torrefaction at 300° C which is well outside the most economically optimal range..."
- 2 reviewers felt there was a lack of scientific and technical contribution in this project. One reviewer stated "lack of justifications on the proposed pretreatment technologies and inadequate methods and protocols for their processes undervalue it scientific and technical contribution..."

Technical Advisor Recommendations

All 3 reviewers expressed concern regarding the lack of detail in the methodology. This is a critical component to the proposal. The lack of detail regarding methodology has respectively made it difficult for the reviewers to judge the budget, timeline, scientific value.

The applicant made the reviewers make assumptions including:

- In the clarification, it is stated that "The principal investigator is one of the world's experts torrefaction/pretreatment technology research. He has published a large number of papers in the specific research area in the last 15 years..." However, in the proposal there is very little detail. The number of years or papers is not listed. The PI's resume in Appendix B states that he "Has authored and coauthored numerous technical publications." The proposal would have been strengthened if the applicant had listed some of those publications that were relevant to the topic. There is no page restriction in regards to the appendix.
- In response to the reviewer's comment regarding "little discussion on how the 6 project staff would interact," the clarification states "The project staff has worked together on a number of similar research projects and have established a successful pattern of cooperation."

One reviewer wanted more information regarding the feedstocks to be tested. The applicants list woody biomass, dried distiller's grains and soluble (DDGS), wheat straw, corn stover, switchgrass, and refuse-derived fuel (RDF) as potential feedstocks. However, they do not provide justification of the feedstocks, or amounts to be tested. For example, will the focus primarily be on woody biomass? If so, the benefits of this study for ND may be limited.

The technical review process is in place for a reason. Even if the applicant had provided a significant level of detail regarding the methodology in the clarification portion, none of the 3 expert reviewers would have had access to the information. Because of this, the technical advisor is reluctant to recommend funding. While the Council may consider funding, the Council may want to encourage the applicant to revise the proposal and resubmit in the next round.