

REPORT OF THE FINAL PANEL
BOARD OF REGENTS SUPPORT FUND
INDUSTRIAL TIES RESEARCH SUBPROGRAM
FY 2011-12

BACKGROUND INFORMATION

Thirty-three research proposals requesting a total of \$2,550,500 for the first year of work were submitted for funding consideration during fiscal year (FY) 2011-12 in the Industrial Ties Research Subprogram (ITRS) component of the Board of Regents Support Fund (BoRSF). Of the thirty-three proposals submitted, eight contained information of a confidential or proprietary nature. A three-phase evaluation process conducted exclusively by out-of-state experts was used to review these proposals.

REVIEW PROCESS

Phase I: In-Depth Mail Review

The thirty-three proposals were reviewed for scientific and technical merit, as well as for their potential to contribute to Louisiana's economic development and diversification, by ten out-of-state experts. The experts included two reviewers in each of the following five subject areas: agriculture, aquaculture, and animal science; biotechnology and health care; chemical materials and petroleum engineering; computer and information sciences; and mechanical and materials engineering. Each subject-area mail reviewer independently evaluated and prepared an in-depth evaluation form for each assigned proposal in the subject area.

Phase II: Reviewer Consensus Evaluation

After each reviewer independently reviewed each assigned proposal, members of the various subject-area groups communicated with each other to arrive at a consensus ranking of proposals within each subject area. Proposals were placed in one of three categories:

1. Priority One: Highly Meritorious Proposals Recommended for Funding;
2. Priority Two: Meritorious Proposals of a Lower Priority; and
3. Priority Three: Do Not Fund as Submitted.

All evaluation forms from out-of-state experts who participated in Phases I and II of the review process were available for each member of the final panel, along with all proposals submitted. Each member of the final panel read and studied each proposal and each evaluation prior to the final panel's meeting.

Phase III: Final Panel Review

Three out-of-state experts participated in Phase III of the review process and served on the final panel. The panel convened in Baton Rouge on February 9-10, 2012, to discuss Phase I and II subject-area evaluations, prioritize awards, and develop funding recommendations. The final panel considered each of the thirty-three proposals extensively and based its recommendations on the following criteria:

- A. Scientific and technical merit;
- B. Potential to enhance economic development and/or diversification in Louisiana;
- C. Evidence of private sector involvement; and
- D. Evidence of innovation and ability to advance Louisiana's scientific, engineering, and/or technological bases.

The panel was informed that a maximum of \$559,500 would be available in first-year funds for new research projects in the ITRS in FY 2011-12, and that money to continue the second and/or third years of multi-year projects recommended for funding would be budgeted separately from this amount. As a result of the final panel's deliberations, eight proposals and one alternate (in the event that one of the higher-ranked applicants declines an award) were recommended for funding. These eight Priority One proposals and one alternate are listed in **Appendix A**, immediately following the narrative section of this report. The final rankings and selections for awards were based upon individual ratings of the external reviewers (Phase I), the consensus rankings of the subject-area reviewer groups (Phase II), and the final panel's consensus evaluation (Phase III), taking into account the economic potential of each project.

One other highly meritorious proposal considered at the final panel meeting but, for a variety of reasons, not recommended for funding, is listed in **Appendix B**. The applicant whose proposal is listed in Appendix B should closely review the panel's comments. The final panel believes that this investigator should be notified of his good work and encouraged to revise and resubmit the proposal in the future, with the prospect that improvements in proposal content could ultimately lead to an award. This proposal, listed in Appendix B, should not be funded this year. The Board of Regents Support Fund would be better served by diverting any available funds not awarded to and/or unclaimed by Priority One projects to other R&D program component(s).

Seven other proposals were considered meritorious by both the subject-area reviewers and the final panel, but insufficiently developed in one or more areas to be worthy of funding at this time (Priority Two).

Each of the remaining proposals, although meritorious in some respects, was deemed inconsistent with the goals and purposes of the ITRS and/or seriously deficient in one or more areas (Priority Three). The principal investigators who submitted these proposals are encouraged to submit them to other, more appropriate funding programs or to make significant revisions before considering resubmission to the ITRS.

The panel recommends that the Board of Regents commit funding for each new proposal for a maximum of three years, with renewal in the second and third years made contingent upon satisfactory progress as well as reconfirmation of continued external matching funding. External stipulations and institutional matching requirements applicable in general to the eight Priority One proposals and one

alternate are contained in **Appendix C (C.1)**. The specific levels of outside funding required and detailed stipulations or conditions applicable to each proposal are included in the discussion of the eight Priority One proposals and one alternate listed in **Appendix C (C.2)**. Summary statements have also been provided in **Appendix C** for each meritorious ITRS proposal ranked Priority One by the subject-area panels and considered by the final panel but not recommended for funding **(C.3)**, and Priority Two proposals **(C.4)**. These summaries include the following information for each proposal:

1. Proposal number and title;
2. Strengths and weaknesses of the proposal;
3. Potential economic impact on Louisiana; and
4. Recommended BoRSF funding level and funding stipulations, as applicable. (**Note:** This information is provided only for the eight proposals and one alternate recommended for funding and included in Appendix C.2).

A general statement on proposals ranked Priority III by the final panel is included in **Appendix C (C.5)**.

The individuals who participated in Phases I and II of the review process are listed in **Appendix D**.

In-depth mail reviews will be provided as feedback to all applicants in July 2012.

FINAL PANEL RECOMMENDATIONS

To Phase I and Phase II Subject-Area Reviewers:

Reviewers should be commended for their performance in accordance with the guidelines set forth in the FY 2011-12 Request for Proposals.

To the Applicants:

Applicants should be commended for their efforts to obtain industrial support and for proposing research in areas with high economic potential. Several of the proposals were not supported by strong research plans which included a testable hypothesis. Improving the quality of this section of the ITRS proposals would help ensure that this program contributes to strengthening the academic mission of the supporting university or institution.

Each proposal submitted should include the following information:

1. A one-page summary describing the research in layman's language and assessing its technology transfer potential;
2. An assessment of the supportive scientific and interdisciplinary expertise needed to enhance the potential success of the research, including joint activities with other researchers or research groups at the same or other institutions;

3. A description of industrial participation representing true collaboration, including past, scheduled, and potential contacts and visits to and from industry, as well as scheduled or potential contributions of funds, equipment, and services by industry; and
4. Identification of an existing industry that will utilize project results or of a new industry to be created through the proposed research.

To the Board of Regents: General Recommendations

Over the years there has been a substantial improvement in obtaining industry and non-academic support as well as development of solid research plans. It is important to encourage these improvements through the following (5) processes:

1. Continue to provide workshops and seminars for faculty on proposal preparation and requirements; development of consortia and cooperative research centers; patent and licensing procedures; and technology transfer to commerce.
2. Ensure that funded projects obtain the required industrial matching support. Principal investigators should be required to document acquisition of the recommended level and types of industrial matching support by June 30, 2012, for the mandated first-year matching commitment; by March 31, 2013, for the required second-year match; and by March 31, 2014, for the required third-year matching commitment. The staff of the Board's Office of Sponsored Programs should further promote recognition around the State that the ITRS not only encourages but requires industrial and/or federal governmental support as a condition for funding. Significant external funding is often necessary to purchase equipment and to fund salaries.
3. Notify applicants that literature reviews, the development of databases, and the drafting of research protocols should take place prior to submission of a proposal. These activities should not be funded by the ITRS.
4. Notify applicants that the industrial support obtained should be incorporated into the budgets of proposals under the appropriate line items.
5. Where appropriate, request applicants to include more detailed information regarding current and potential intellectual property rights related to their proposals.

APPENDIX A

ITRS PROPOSALS HIGHLY RECOMMENDED FOR FUNDING
(PRIORITY ONE)

Rank	Proposal No.	Institution	Recommended BoRSF 1 st Year Funds	Recommended BoRSF 2 nd Year Funds	Recommended BoRSF 3 rd Year Funds
1	025B	SU-BR	\$ 50,000	\$ 45,000	\$ 40,000
1	027B	TUHSC	60,000	60,000	60,000
1	032B	ULL	41,000	41,000	41,000
1	008B	LSU-BR	127,595	99,900	80,000
5	029B	ULL	78,699	83,200	65,600
6	021B	LA-TECH	87,000	85,500	67,000
7	007B	LSU-BR	75,000	23,900	-----
8	004B	LSU-AG	<u>40,206</u>	<u>40,206</u>	<u>-----</u>
TOTAL			\$ 559,500	\$ 478,706	\$ 353,600
Alternate 9	019B	LSUHSC-SHREV	\$121,400	\$100,000	\$100,000

APPENDIX B*

MERITORIOUS ITRS PROPOSAL RANKED PRIORITY ONE BY THE SUBJECT-AREA PANELS AND
CONSIDERED BY THE FINAL PANEL BUT NOT RECOMMENDED FOR FUNDING (1)

033B

Note: *The panel's comments on this proposal are provided in **Appendix C.3**. Subject-Area panel reviews for this proposal will also be provided to the applicant in July 2012.

**APPENDIX C
MERITORIOUS ITRS PROPOSALS OF LOWER PRIORITIES**

PRIORITY TWO*

010B 020B
015B 022B
016B 030B
031B

PRIORITY THREE*

001B 013B
002B 014B
003B 017B
005B 018B
006B 023B
009B 024B
011B 026B
012B 028B

Note: *These proposals are not listed in rank order of merit and are not recommended for funding as currently submitted. The Panel's comments on the proposals ranked Priority Two are provided in **Appendix C.4**. Subject-Area panel reviews for each proposal will be provided to the applicants in July 2012.

APPENDIX C.1

GENERAL EXTERNAL AND INSTITUTIONAL MATCHING REQUIREMENT STIPULATIONS FOR ITRS AWARD RECIPIENTS

External (i.e., industrial or approved governmental) and institutional funding commitments may not be reduced below levels pledged in the original proposal unless reductions are specifically permitted in the funding stipulations for a grant. In some cases, additional external funding over and above that pledged in the proposal (see Appendix C.2) may be required. The types and amounts of additional required funding are specified in the funding stipulations for the affected awards. **Unless otherwise indicated, all awards are contingent upon receipt by the Board no later than June 30, 2012, of updated documentation from the provider(s) of the external match reconfirming provision of the match pledged in the proposal. Furthermore, second-year funding will be contingent upon receipt by the Board no later than March 31, 2013, of updated documentation from the provider(s) of the external match reconfirming provision of the required second-year external match. Third-year funding will be contingent upon receipt by the Board no later than March 31, 2014, of updated documentation from the provider(s) of the external match reconfirming provision of the required third-year external match. Letters (originals) from the private sector partner or government agency providing the required match must be provided to the Board on company or agency letterhead and signed by authorized representatives of the companies or agencies by these same dates.**

Although budget requests from the Board of Regents Support Fund have been reduced significantly in some cases, no budget has been reduced to a degree that would impair execution of the proposed research and accomplishment of the project goals. **Therefore, funding for each recommended Priority One project is made contingent upon full and complete execution of the work plan delineated in the proposal.**

**APPENDIX C.2
COMMENTS AND FUNDING STIPULATIONS FOR
PROPOSALS HIGHLY RECOMMENDED FOR FUNDING
(PRIORITY ONE)**

Proposal 025B**Rank: 1**

TITLE: *Production of Niche Marketing Assessment of Aquaculture Waste in Organic Production*

INSTITUTION: Southern University and A&M College – Baton Rouge

PRINCIPAL INVESTIGATOR: C. Reuben Walker, Ph.D.

COMMENTS: Louisiana ranks 1st in the nation in aquaculture production (crawfish, crab, and shrimp). Approximately 85% of crawfish is classified as waste, while 70% and 60%, respectively, of crab and shrimp are classified as waste. The annual economic impact of crawfish, crab, and shrimp sales exceeds \$307 million in Louisiana. The aquaculture waste (AW) from crawfish, crab, and shrimp exceeds 117,000 tons annually. It can be reasoned that finding ways to utilize AW should be of significant economic benefit to the agricultural sector of Louisiana, the region, and the nation. There is a high demand for reasonably priced organic fertilizers and feed ingredients. The reduction in the cost of fertilizers and feed helps to increase or enhance the profitability of organic, conventional, and sustainable farming operations. These products can be used in organic production systems as low input and slow release organic fertilizers, in addition to application as fertilizers in home gardens or in conventional agriculture production systems as fertilizers and feed ingredients.

The proposed research is a collaboration between Southern University—BR and industry partners Jesse Clark Farm (Simmesport, LA), Agromen, Inc. and First Harvest Community Garden (Opelousas, LA), Ranch Outlet and Sancofa Earth Farm (Lafayette, LA), Guillory Farm (Swords, LA), Jetson Center for Youth (Baton Rouge, LA) and the USDA. The primary goal of this research project is to explore solar drying raw AW derived from crawfish, crab, and shrimp processed in Louisiana into aquaculture waste meal (AWM) products. The research will consist of four parts: (1) testing of four environmentally friendly solar processes for drying AW; (2) cost analysis on the conversion of the AW into aquaculture waste meal (AWM); (3) marketing analysis of AWM; and (4) establishment of several extension demonstration sites depicting uses of AWM. This is a well-written, low-cost proposal with a reasonable hypothesis and the potential to impact the LA economy. There is, however, concern that many drying parameters are not being fully explored, e.g. the effect of rain and prolonged humid conditions on drying times. To make the drying process more efficient would be a research goal. The project has a large team of qualified researchers with good grant support. Their publication record is very modest but consistent. This low-cost proposal with no salary requests is considered a good use of BoRSF funds. The pledged industry support of \$52,300/year in-kind will help to insure that project goals are achieved. Funding is recommended at the level requested, i.e., \$50,000 for year one, \$45,000 for year two, and \$40,000 for year three. The PI is required to maintain support for students at the level proposed in the original budget for each year of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2012 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BoRSF	EXTERNAL
1 st Year	\$50,000	\$52,300 as specified in the proposal
2 nd Year	\$45,000	\$52,300 as specified in the proposal
3 rd Year	\$40,000	\$52,300 as specified in the proposal

Appendix C.2 (continued)

Proposal 027B**Rank: 1**

TITLE: *Mechanism of Action Studies of Flufirvitide, a Highly Effective Peptide Inhibitor of Influenza Infection and Transmission*

INSTITUTION: Tulane University Health Sciences Center

PRINCIPAL INVESTIGATORS: William C. Wimley, Ph.D.

COMMENTS: Influenza infects a significant proportion of the world population each year causing widespread morbidity and mortality. The potential for human pathogenic strains to arise, via crossover from other species followed by genetic re-assortment, is well established. Highly virulent strains of influenza virus can rapidly achieve pandemic status in which millions or even tens of millions of people can die. Only a few years ago rising human fatalities in Asia from the H5NI "avian" flu prompted both the World Health Organization and the Centers for Disease Control and Prevention to declare that it is only a matter of time before the next worldwide flu pandemic. In 2009, this point was dramatically emphasized by the rapid global spread of the novel H1N1 "swine" flu pandemic in which hundreds of millions of people were infected in a four-month period. The world was fortunate that the 2009 H1N1 strain, while highly infectious, had mortality rates that were much lower than the avian influenza. However, there is always the threat of the rapid rise of an influenza pandemic with both high mortality and high infection/transmission.

The proposed research is part of an ongoing collaboration between researchers at Tulane University Health Sciences Center and the biotech company Autoimmune Technologies, LLC (New Orleans, LA). The ultimate goal of this research is to understand the molecular mechanism of action of the anti-influenza peptide drug, Flufirvitide-3. This proposal is considered an excellent model of collaboration between academe and industry. This is a well-written proposal from a PI with a very strong publication and grant funding history. The preliminary data derived from this work is compelling and therefore justifies funding support for this project. However, the budget does appear somewhat inflated and should be reduced to limit travel to \$3,000/year. Autoimmune Technologies pledged support of no less than \$12,000/year cash and \$5,000/year in-kind will help to insure that project goals are achieved. Funding is recommended at a level of \$60,000 for year one, \$60,000 for year two and \$60,000 for year three. The PI is required to maintain support for one graduate research assistant (GRA) at the level proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2012 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BoRSF	EXTERNAL
1 st Year	\$60,000	\$17,000 as specified in the proposal
2 nd Year	\$60,000	\$17,000 as specified in the proposal
3 rd Year	\$60,000	\$17,000 as specified in the proposal

Appendix C.2 (continued)

Proposal 032B**Rank: 1**

TITLE: *Phase Transformation-Induced High Strength-High Ductility Combination Nanograined (NG) Ferrous Alloys*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: R. Devesh K. Misra, Ph.D.

COMMENTS: Louisiana's economy continues to revolve around its wealth of natural resources, in particular, oil and gas. The industries in the State use a large volume of steel of varying strengths for pipelines and a number of other structural applications (e.g. welded beams). The oil and gas industry is facing challenges because of the rising costs of natural gas and its transportation. Advanced ultrafine-grained high strength steels make great contributions to energy conservation and cost reduction as well as transportation efficiency, as they allow transportation of crude oil and gas under high pressure through pipes of significant reduction in wall thickness and, thereby, reduced weight.

The proposed research is a joint collaboration between researchers at ULL and Nucor Sheet Mill—Decatur, LLC (Trinity, AL). The primary objective is to elucidate the fundamental principles underlying high strength and high ductility in nanograined (NG)/ultrafine grained (UFG) materials using model FCC Fe-Ni and Fe-Ni-Cr alloys. The four specific research tasks are: (1) processing of nanograined (NG) material; (2) phase transformation mechanism and evolution of NG structure; (3) physics of deformation and physical modeling of yield strength; and (4) development of a physical model with predictive capabilities. Although the procedures are not novel, understanding the fundamental principles underlying high strength and high ductility in nanograined (NG)/ultrafine grained (UFG) materials using model FCC Fe-Ni and Fe-Ni-Cr alloys must be understood before this type of material can be commercialized. The PI is a proven researcher with a solid publication and grant history. It should be noted that this is not the first submission of this proposal, which has evolved over many revisions. Nucor Steel has long been a proponent of this work and pledges in-kind support of \$50,000/year. Additionally, Nucor Steel Corporate is currently building a \$3.4 billion facility in St. James Parish which further enhances the potential impact on the Louisiana economy. The letter (no address) from Franks Casing supports the need for the research but provides no financial support. Funding is recommended at the level requested, i.e. \$41,000 for year one, \$41,000 for year two, and \$41,000 for year three. The PI is required to maintain support for one graduate research assistant (GRA) at the level proposed in the original budget for each year of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2012 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BoRSF	EXTERNAL
1 st Year	\$41,000	\$50,000 as specified in the proposal
2 nd Year	\$41,000	\$50,000 as specified in the proposal
3 rd Year	\$41,000	\$50,000 as specified in the proposal

Appendix C.2 (continued)

Proposal 008B**Rank: 1**

TITLE: *An Integrated Computational and Experimental Study of Driven Pile Set-Up in Soft Clays*

INSTITUTION: Louisiana State University – Baton Rouge

PRINCIPAL INVESTIGATOR: Carol Friedland, Ph.D.

COMMENTS: Driven piles are used to support the majority of heavily loaded structures and highway bridges constructed in Louisiana and the nation. These foundations are very expensive because of the cost of materials, equipment and labor required for installation. Large highway, industrial, and commercial projects often include thousands of driven piles, with the cost of installation directly proportionate to the number, length and size of installed piles for a given project. These pile parameters affect the cost of manufacturing, transportation, labor, equipment and testing required during pile handling, driving, and re-testing after driving. The current engineering practice in Louisiana is based on testing piles 14 days after driving for capacity estimation, ignoring any pile set-up that may occur after that and before the project is open for service, leading to an overly conservative pile design. The accurate prediction/estimation of the increase in pile capacity with time (or pile set-up) will result in reducing the number of piles, shortening pile length, reducing pile cross-sectional area (using smaller-diameter piles), and/or reducing the size of driving equipment (using smaller hammers and/or cranes).

The proposed research is a joint collaboration between industry partners Cajun Deep Foundations, LLC, Boh Bros Construction Co., LLC, Pile Driving Contractors Association (PDCA) Gulf Coast Chapter, Eustis Engineering Services, LLC, the Louisiana Transportation Research Center (LTRC), and the Louisiana Department of Transportation and Development (DOTD). The overall goal of the project is threefold: (1) to develop a fundamental understanding of the physical mechanisms underlying the pile setup process; (2) to formulate an analytical model/equation for estimating and predicting pile setup with time; and (3) to develop plans and mechanisms for the transfer of the developed technology. This is a well-written proposal with clearly stated goals and objectives. The PI is an assistant professor with minimal funding and does not appear to have published in the area of pile technology. In contrast, Dr. Guoping Zhang, co-PI for the project, appears to have extensive experience in soft clay research. In addition, the PI has assembled a team of technically sound researchers in addition to a team of industry partners to support this project and should be commended for this effort. Industrial partners have pledged cash and in-kind support valued at \$370,002. It should be noted that Eustis Engineering Services is listed as not only an industry partner but also a consultant for the project. In their letter of support dated October 28, 2011, Eustis Engineering Services agrees to provide \$40,120 of in-kind support for this project. However, the proposed budget lists Eustis Engineering consultant charges for “geotechnical drilling and testing” as well as “installation of soil instrumentation” in the amount of \$86,702. Inclusion of Eustis Engineering Services as both an industry partner and a consultant represents a potentially serious conflict of interest. Therefore, it is recommended that consultant costs of \$86,702 are rebudgeted to the sub-contract budget category and the proposed consultant work by Eustis Engineering Services subjected to a State-audited bid process. In the event that Eustis Engineering Services is selected as the sub-contractor, this process would greatly reduce any potential conflict of interest in one company serving as both an industry partner and a sub-contractor. Funding for the project is recommended at a level of \$127,595 for year 1, \$99,900 for year 2 and \$80,000 for year 3. The PI is required to maintain support for graduate research assistants (GRAs) at the level proposed in the original budget for each year of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2012 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BoRSF	EXTERNAL
1 st Year	\$127,595	\$25,570 as specified in the proposal
2 nd Year	\$99,900	\$295,254 as specified in the proposal
3 rd Year	\$80,000	\$49,178 as specified in the proposal

Appendix C.2 (continued)

Proposal: 029B**Rank: 5**

TITLE: *Pilot Scale Investigation of Biomass Torrefaction Technology Using an Indirectly Heated Reactor*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATORS: Prashanth Buchireddy, Ph.D.

COMMENTS: Co-firing biomass with coal has gained a lot of attention from utility companies in an attempt to reduce greenhouse gas emissions and comply with renewable portfolio standards. However, several properties of biomass, such as lower heating value, density and higher moisture compared with coal, pose challenges related to storage, transportation, milling, and feeding in coal fired power plants. Torrefaction of biomass is a thermal pretreatment technology that has near-term potential to solve these issues by producing a superior quality fuel with higher heating value, mass energy density, and improved grindability characteristics. To support this commercialization initiative, this proposal will investigate the use of an indirectly heated pilot scale reactor to produce torrefied biomass via optimized operations and improved system design. The effect of temperature, residence time, biomass type, etc., on the properties of torrefied wood will be investigated. In addition, the energy from the volatile gases produced during torrefaction will be utilized by combusting the volatiles and gases to improve process efficiency and economics.

The University of Louisiana at Lafayette (ULL) has formed a developmental partnership with Cleco Power, LLC (Pineville, LA) and Louisiana Biofuel Resources, LLC (recent start-up company in Louisiana) to accelerate commercialization of torrefaction. Although the proposed research addresses concerns regarding the possible depletion of fossil fuel resources, economic justification (part of the work) is crucial to the viability of the end product. The experiments identified in the proposed work plan should point the researchers in a direction of highest yield. The PI is a research scientist with a very modest publication and funding history. The proposed budget includes a significant amount of undergraduate student support as well as supplies. Nevertheless, the substantial pledged industry support of \$117,280 cash and in-kind by Cleco, LLC and Louisiana Biofuel Resources, LLC, further justifies funding for this project. Funding is recommended at a level of \$78,699 for year 1, \$83,200 for year 2, and \$65,600 for year 3. A minor correction in the proposed budget is recommended to reflect private sector support of \$117,280 as pledged in lieu of \$117,212 budgeted. The PI is required to maintain support for one graduate research assistant (GRA) at the level proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments as stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2012 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BoRSF	EXTERNAL
1 st Year	\$78,699	\$37,361 as specified in the proposal/consultant
2 nd Year	\$83,200	\$39,623 as specified in the proposal/consultant
3 rd Year	\$65,600	\$40,228 as specified in the proposal/consultant

Appendix C.2 (continued)

Proposal 021B**Rank: 6**

TITLE: *Identification of Optimal Products Allocation for Strategic Planning Using LIDAR Data*

INSTITUTION: Louisiana Tech University

PRINCIPAL INVESTIGATORS: Bogdan Strimbu, Ph.D.

COMMENTS: Forest-related industries (such as harvesting, pulp and paper industry or production of engineered wood) occupy the third position, according to revenue, in the economy of Louisiana, after chemical processing and manufacturing and petroleum (US Census Bureau 2009). The main drivers of the forest industry in the State are paper manufacturing (with a total value of \$4.7 billion in 2009) and wood product manufacturing (with a total value of \$1.3 billion in 2009). The advent of petroleum-derived products, the appearance of new markets targeting the forest holistically (such as carbon storage) and the rise in market dynamics placed and increased stress on the importance of the forest to the State's economy. Furthermore, with more than half of Louisiana covered by forests, forestry has a significant social dimension, as forest-related products and services are the main economic driver in rural areas. Therefore, the performances of the forestry sector have a significant importance not only at the State level but also at the local community level. Currently, the mathematical models that are used in forest planning do not necessarily supply the optimal solution as they face two challenges: (1) large amounts of data to be processed; and (2) difficulty in implementing social, economic and environmental constraints in real time.

The proposed research is a partnership between Louisiana Tech University and RoyOMartin (Alexandria, LA) that seeks to develop and implement a method that integrates fast and accurate inventory tools using remote sensing Light Detection and Ranging (LIDAR) and aerial orthophotos. The approach to optimization is not new, but based on existing proven algorithms/techniques developed by the PIs and other researchers. However, the practical application of these methods to solve the optimal product allocation for strategic use of forest resources can be considered as advancing the state of the art in the field. It is not exactly clear how the imaging data on a tree-by-tree basis as implied by the data collection methods will help if areas are not considered, as logging will not proceed on a tree-by-tree base. The potential utility of satellite-generated LIDAR data should be considered as a means of significantly reducing the cost of data acquisition. Overall this is considered to be a meritorious project of academic interest and of potential value to an important sector of the Louisiana economy. The PI has a good publication and grants generation history and has assembled a team of well-qualified researchers including consulting support from Texas A&M University. RoyOMartin's pledged support of \$112,000 in-kind will help to achieve project goals. Funding is recommended at a level of \$87,000 for year 1, \$85,500 for year 2, and \$67,000 for year 3. The PI is required to maintain support for one graduate research assistant (GRA) at the level proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments as stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2012 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BoRSF	EXTERNAL
1 st Year	\$87,000	\$45,000 as specified in the proposal
2 nd Year	\$85,500	\$45,000 as specified in the proposal
3 rd Year	\$67,000	\$22,000 as specified in the proposal

Appendix C.2 (continued)

Proposal 007B**Rank: 7**

TITLE: *Construction of Prototype Laboratory Tomography Instrument for Industrial Research Applications in Polymer Blends and Catalysts*

INSTITUTION: Louisiana State University – Baton Rouge

PRINCIPAL INVESTIGATOR: Leslie G. Butler, Ph.D.

COMMENTS: The needs of the chemical industry for 3D imaging of polymer blends and catalysts pellets are not being met by the vendors of today's laboratory X-ray tomography system. The goal of this project is to build a new-generation system as a prototype for development and evaluation of new analytical procedures that will form the basis for a customized, vendor-manufactured system. The prototype laboratory tomography system will be constructed in a two-phase project. In phase 1, a single-photon counting, position-sensitive detector will be acquired and characterized at the LSU CAMD synchrotron tomography beamline. In phase 2, NSF-Major Research Instrumentation (MRI) funding will be requested to build a laboratory tomography system with a microfocus X-ray source mounted on a gantry system, allowing a stationary sample environment. The phase 1 detector will be moved from the synchrotron to the phase 2 laboratory system.

Researchers at LSU and Albemarle Corporation (Baton Rouge, LA) have a long history of collaboration on the development of new analytical procedures. Currently, a \$449,500 NSF Grant Opportunity for Academic Liaison with Industry (GOALI) grant supports this collaboration. Development of a piece of equipment to be utilized in basic science research has few industrial ties capabilities in the near term, and is typically not funded by the ITRS program. However, the PI provided an exceptionally strong justification for purchase of a Pilatus100K-S X-ray instrument valued at \$101,100. This instrument is considered to be essential for the generation of further support from the NSF and to allow Albemarle to develop flame retardant polymer blends. The existing collaborative relationship between Dr. Butler and Albemarle combined with Dr. Butler's high level of success in the NSF-MRI and GOALI programs encouraged both subject-area reviewers and the final review panel to recommend this extraordinary equipment purchase. The letter of support from Albemarle pledges a \$25,000 cash match for the purchase of the Pilatus100K-S equipment but there is no reference to the \$75,000 cash match for the NSF-MRI proposal (Phase 2). This is crucial since the success of the project is dependent on Phase 2 equipment purchases. Therefore, the letter of support must be revised to reflect pledged support for not only Phase 1 of the project but also Phase 2. With the new X-ray tomography system additional GOALI grant support could be a reality and funding for basic research is therefore justified. The PI has several large grants that seem to parallel and support this proposal. Funding is recommended at \$75,000 for year one, in lieu of the \$76,100 requested to reflect the \$25,000 cash match (25% cash match required for all BoRSF equipment purchases), and \$23,900 for year two.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2012 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BoRSF	EXTERNAL
1 st Year	\$75,000	\$25,000 as specified in the proposal/consultant
2 nd Year	\$23,900	

Appendix C.2 (continued)

Proposal 004B**Rank: 8**TITLE: *The Use of Plant Hormones in Integrated Pest Management Programs*

INSTITUTION: Louisiana State University—Agricultural Center

PRINCIPAL INVESTIGATOR: Michael J. Stout, Ph.D.

COMMENTS: Insect management in virtually all crops continues to rely heavily on broad-spectrum synthetic insecticides. However, overreliance on insecticides is costly, can sometimes exacerbate pest problems, and is damaging to human health and the environment. Tactics that allow reduced reliance on insecticides enhance the profitability of agriculture both directly, by increasing the cost-effectiveness of insect management, and indirectly, by reducing costly impacts on human health and the environment. Recent investigations of plant resistance to insects and other plant physiological processes have revealed important roles for hormone-mediated signal pathways. This fact creates the possibility of manipulating the resistance or tolerance of crop plants to insect pest in the field by applying elicitors of hormonal signaling pathways.

LSU Agricultural Center in collaboration with Valent USA Corporation (Germantown, TN) and Syngenta Crop Protection, LLC (Cypress, TX), will explore the potential for using plant hormones, hormone mimics, or elicitors of plant signaling pathways as tools to manage insect pests of crop plants and more specifically the use of elicitors and hormones as components of pest management programs in rice and soybean in Louisiana. Preliminary evidence from rice suggests that (1) plant hormone gibberellic acid (GA) synergizes the activity of the insecticide Belay against the rice water weevil, an important pest of rice; (2) the application of the plant hormone jasmonic acid (JA) induces resistance to insects in rice; (3) evidence from soybean indicates application of the commercial product Actigard, a mimic of the plant hormone salicylic acid (SA), induces resistance to the soybean looper, a major defoliating pest; and (4) in both rice and soybean, treatment of seeds with neonicotinoid insecticides has been shown to stimulate early plant growth. It should be noted that jasmonic acid may be currently marketed (or is in the process of being approved for market in the US) for stimulation of natural plant insect resistance. This is a well-written proposal with a strong research team. The research hypothesis is innovative with a sound research approach. The economic benefits are far reaching both inside of the State and beyond. The pledged industry support of \$10,000/year is relatively modest but will help to ensure that project goals are achieved. The letter of support from industry partner Valent USA states they “will be contributing \$5,000 for a two year term” but should specify support of \$5,000/year, consistent with the proposed budget. Furthermore, the letter did not include a date or signature by an authorized company representative and should therefore be revised and resubmitted prior to funding. Funding is recommended at a level of \$40,206 for year one, and \$40,206 for year two.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2012 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BoRSF	EXTERNAL
1 st Year	\$40,206	\$10,000 as specified in the proposal
2 nd Year	\$40,206	\$10,000 as specified in the proposal

Appendix C.2 (continued)

**Alternate
Proposal 019B****Rank: 9**

TITLE: *Final Development of a Novel Drug Eluting Stent with Improved Efficacy, Safety and Biocompatibility*

INSTITUTION: Louisiana State University Health Sciences Center—Shreveport

PRINCIPAL INVESTIGATORS: Tammy Dugas, Ph.D.

COMMENTS: Drug-eluting stents (DES) are used to open arterial blockages that restrict blood flow to cardiac tissue. Stents consist of a metal scaffold coated with a polymer that elutes drugs to prevent vessel renarrowing caused by vascular smooth muscle cell proliferation. Unfortunately, current DES release compounds are toxic to endothelial cells, thus delaying vessel healing and increasing the risk of major thrombotic events. In this proposal LSUHSC-Shreveport researchers have expanded their work to finalize development of DES coatings releasing resveratrol and quercetin (RQ) to prevent vessel renarrowing. RQ are non-toxic and should promote rapid healing.

The proposed research is a joint collaboration between LSUHSC-Shreveport and ReQuiste Biomedical (Shreveport, LA). Although this proposal is listed as a new request, initial funding was provided with one year of support in 2009-10. The objectives of the study have been reasonably modified to account for the work already accomplished. The proposal provided excellent preliminary data, some of which is now published. The proposed studies will satisfy some of the necessary FDA-required preclinical tests to complete the development of the DES stent, prior to moving forward. In year one, rat carotid stenting will be used to assess tissue uptake and accumulation from the stent. Doppler ultrasound will be used to assess *in vivo* efficacy. In year two, studies will involve analysis of material collected in year 1 and investigation of a rabbit *iliac* crest model in which the extent of restenosis will be measured over a five-month period. In year three, the work will involve completion of efficacy studies along with assessment of vascular healing in rabbits (using histopathological analysis). It should be noted that pig studies, considered the gold standard in the field, will not be a part of this undertaking due to cost. This is understandable, considering that successful completion of the proposed work is very likely to result in additional funding external to ITRS. Given the progress achieved with initial funding and the reasonable modification of the proposal to account for such, it is the opinion of the panel that there is sufficient justification to warrant continued funding. The PI is well trained in this area, and previous funding is a reasonable sign of success. The economic impact of this work is not near term and there is concern that ReQuiste Biomedical, which conducts much of its work out of the State, may be seeking to relocate (Ohio). This is a high budget proposal and although the cost of animal studies is recognized by the reviewers, it is the role of the industrial partner to help support those aspects of the proposal from which it will benefit. The letter of support from ReQuiste Biomedical agrees to provide the coated stents required for the proposed experiments and include all the necessary coatings process development, elution testing and production of the completed test stents from implantation in animals, but did not place a value on this in-kind support. The letter should be revised and resubmitted to reflect in-kind support valued at \$75,133.22, consistent with the proposed budget. Lastly, it should be noted that the PI has a pending NIH proposal entitled "Drug Eluting Stent for Promoting Vascular Healing" in the amount of \$90,077 (direct cost) for the period 4/1/2012 – 3/31/2013 that overlaps with AIM 1 of the ITRS proposal. *Therefore funding recommendations for this project are as follows:

- If NIH funding *is not* received, travel support should be limited to \$3,000/year for a year one award of \$121,400. Funding is recommended at a level of \$100,000 for year two and \$100,000 for year three.
- If NIH funding *is* received, the year one ITRS award of \$121,400 (referenced above) should be reduced by the amount provided by the NIH grant. At a minimum, the year one ITRS funding should provide support for one GRA \$24,000, and overhead \$6,000. Funding is recommended at a level of \$100,000 for year two and \$100,000 for year three.

The PI is required to maintain support for one graduate research assistant (GRA) at the level proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2012 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BoRSF	EXTERNAL
1 st Year	*\$121,400	\$33,243.77 as specified in the proposal
2 nd Year	\$100,000	\$41,889.45 as specified in the proposal
3 rd Year	\$100,000	

APPENDIX C.3
COMMENTS ON PROPOSAL RANKED PRIORITY I BY THE
SUBJECT-AREA PANEL AND CONSIDERED BY THE FINAL PANEL
BUT NOT RECOMMENDED FOR FUNDING

Proposal 033B

TITLE: *Defense Data and Telecommunications Industry in South Louisiana—A Pilot Project*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATORS: George Thomas, Ph.D.

COMMENTS: Software-defined radio (SDR) has been recognized as the preferred platform for deployment of cognitive radio (CR) technology where radio transceivers are aware of their radio environment and can detect unused spectral bands and utilize them on a secondary (i.e., preemptive) basis. The US Federal Communications Commission (FCC) has recently encouraged innovative CR applications as a relief measure for the acute paucity of new radio spectrum for emerging new applications. The new IEEE 802.22 standard for wireless rural area networks (WRANs) is an example of civilian applications of CR technology. Military applications of SDR/CR are obvious: entering into an alien territory and establishing viable radio communications in an unknown radio environment possibly exacerbated by intentional jamming. Its potential in satellite communications has not been as widely recognized. Currently, the Cajun Advance Picosatellite Experiment (CAPE) SRD project at ULL is largely funded, and technically assisted by Datacom, LLC (Lafayette, LA). The CAPE program launched CAPE-1 in 2007, and CAPE-2 is currently under development.

The purpose of this proposal is to develop SDR technology appropriate for picosatellites, use them in CAPE-2 and transfer the technology to Datacom, enabling them to engage successfully in the defense communications business. The proposal is well written and the PI well qualified to carry out the proposed work. However the use of SDR technology on “picosatellites” is not unique to this project. Researchers at Cornell University Department of Mechanical and Aerospace Engineering have proposed advanced implementations of SDR technology in picosatellites. This information should have been discussed in the proposal. There is concern that the research did not account for the possibility of a launch delay or a catastrophic failure. The proposal is centrally aimed at helping one company get a larger share of the defense communications market and thus considered proprietary in nature. Lastly, the PI has no active grants in the area but strong industrial ties with Datacom, LLC. For these reasons, the final panel does not recommend funding for the proposal, but encourages the PI to submit a revised proposal to a future competition.

APPENDIX C.4

GENERAL STATEMENT ON MERITORIOUS PROPOSALS NOT RECOMMENDED FOR FUNDING AT THIS TIME (PRIORITY TWO)

Proposals included in this category are those applications the panel believes to be meritorious, although of a lower order than those rated Priority One. Individual subject-area commentaries on proposals ranked Priority II are not included in this report. Proposals so ranked were not recommended for funding or recommended only if additional money becomes available.

Proposal 010B

TITLE: *Fabrication of SiC Nano Whisker Based High Performance Filters Using Industrial Rice Husk Ashes*

INSTITUTION: Louisiana State University—Baton Rouge

PRINCIPAL INVESTIGATOR: Shengmin Guo, Ph.D.

COMMENTS: The current market for rice husk ashes is small, even though there are many potential applications. Due to the small profit margin for utilizing rice husk ashes, rice husk ash is one of the most under-utilized biomass resources. Yet, Louisiana is an agricultural state with ample biomass supplies, in particular rice husks. This project will explore the feasibility of producing high value added high temperature ceramic filters using SiC nano-whiskers derived from biomass power plant rice husk ashes. The proposed filters will have very low flow resistance and high filtration performance. These high performance filters can be used for many industrial applications, such as diesel engine particle filters (DPF) and petrochemical catalyst supports.

The PI has a current BoR grant in the amount of \$156,864 for a project entitled "Production of Ceramic Materials from Agricultural Waste" that would appear to overlap with the proposed research. The proposal did not include any results from this work or publications. There may be an economic benefit to the project, but this was not clearly stated or well justified in the proposal. The characterization of the proposed method is quite probably a large enough task and must be accomplished before the application activities can start. The proposed timeline for industrialization is not clear. Lastly, the letter of support from industry partner SMA-Materials, LLC (no letterhead or address provided) pledged support that is contingent on receipt of funding from a DOE-SBIR submission of September 2011. If successful, the PI could expect \$32,648.80 to support this research and in Phase 2, the PI would receive a \$100,000 sub-award. It appears that the planned DOE-SBIR is a better source of funding for this work rather than the BoRSF ITRS program.

Appendix C.4 (continued)

Proposal 015B

TITLE: *Unconventional Hydraulic Control for Deep-Aquifer Saltwater Intrusion Mitigation Under Uncertainty*

INSTITUTION: Louisiana State University—Baton Rouge

PRINCIPAL INVESTIGATOR: Frank T. Tsai, Ph.D.

COMMENTS: Due to excessive groundwater withdrawal, many Louisiana freshwater aquifers are being contaminated by saltwater intrusion. The major aquifer systems affected include the Chicot aquifer system of southwestern Louisiana, the Sparta aquifer system of northern Louisiana, and the Southern Hills aquifer system in the Baton Rouge area and surrounding parishes. The project goal is to conduct a pilot study that develops a saltwater intrusion management model by utilizing an unconventional hydraulic control to mitigate saltwater encroachment. The unconventional hydraulic control consists of: (a) horizontal wells in individual aquifers; and (b) slant-hole wells across a sequence of aquifers. The wells can act as extraction wells to pump out saltwater at multiple locations or inject freshwater to form hydraulic barriers. A hierarchical Bayesian model averaging (HBMA) method will be developed to identify and quantify various sources of uncertainty in the management model.

The PI has an excellent history of funding support and is well qualified to carry out the proposed research. The proposal is well written and addresses an important problem of salt-water intrusion in LA aquifers. However, the economic impact is not considered near term, though the implications of no controls are far reaching. The PI has received a large NSF grant in this area for the period 3/1/2011 – 2/31/14, as well as other funding. There is concern regarding potential overlap. Industry partner Baton Rouge Water Company (Baton Rouge, LA) has agreed to provide the necessary data for building the models but is not contributing any further financial support towards leveraging this proposal. The lack of external support for this research from either government agencies or the private sector severely weakens this otherwise good proposal.

Proposal 016B

TITLE: *A Novel Peptide as a Vaccine for Seasonal Allergy*

INSTITUTION: Louisiana State University—Baton Rouge

PRINCIPAL INVESTIGATOR: Changaram S. Venugopal, Ph.D.

COMMENTS: Recurrent airway obstruction (RAO) is an incurable asthma-like allergic hypersensitivity disease of horses. This common respiratory disease destroys the utility of horses. Currently there is no cure for this disease. Only symptomatic treatments are provided to relieve horses from their breathing difficulty. The disease is prevalent in Louisiana and affects the Louisiana economy through the equine industry which produces goods and services valued at \$1.6 billion/year and provides 5,500 full time jobs. The goal of this study is to investigate the effectiveness of a newly identified peptide to induce a protective immune response against RAO in foals.

The objectives of the proposed research are clearly defined but not highly ambitious. Essentially, the year one objective is to induce antibody generation from the introduction of a peptide that causes an immune response in horses, and in year two, to isolate the antibody and administer to horses to prevent RAO. The research approach does not contain any degree of innovation and the lack of disclosure of the peptide sequence and homology limits evaluation of the hypothesis. Lastly, the proposed budget requires a considerable amount of usage fees, per diem expenses and sample analysis, which is realistic considering the project focuses on horses. However, the panel agrees that this expense should be shared by the industry partner, Antibody Research Company (ARC) (St Charles, MO), which only agreed to provide consulting services valued at \$16,000/year in-kind. The economic impact of this research for the State of Louisiana is considered very distant.

Appendix C.4 (continued)

Proposal 020B

TITLE: *Environmentally Sustainable High Performance Wood Products*

INSTITUTION: Louisiana Tech University

PRINCIPAL INVESTIGATOR: Henry E. Cardenas, Ph.D.

COMMENTS: High performance wood products are generally identified by the species of tree and the type of treatment used for preservation. Both of these aspects are limited by the environmental sustainability of the harvesting and production processes involved. The goal of this project is to develop and validate an integrated electromutagenic recycling technology to produce high performance wood and superior structural resistance and durability that incorporates the use of energy production waste products, i.e., brine water from petrochemical exploration and fly ash from coal burning power plants.

This is a well-written proposal from a team of qualified investigators who appear to understand the limitations of their work. The idea fits well with “green” technologies of waste recovery, but it is difficult to discern how there could be any financial advantage to this high performance wood product over other common construction materials considering the cost of processing. It would seem that encapsulation of waste by-products makes this material potentially hazardous as one would be concerned about the release of these chemicals during wear. The PI has shown prior results for other materials, though he is not well funded. The proposed budget appeared inflated, with considerable graduate student support. The letter of support from industry partner Garland Industries, LLC (Lillie, LA) did not pledge any actual monetary support, although the proposed budget reflects a cash match of \$34,160.

Proposal 022B

TITLE: *Micro and Nano Structured Radiation Detectors for the Nuclear Energy and Defense Industries*

INSTITUTION: Louisiana Tech University

PRINCIPAL INVESTIGATOR: Chester G. Wilson, Ph.D.

COMMENTS: US borders are continually inundated with an influx of shipments from all over the world. To inspect all the shipping containers that enter our borders would be both costly and time consuming. Various methods of detecting possible nuclear materials hidden within these shipments have been put forth, but many have been ineffective for large-scale use. To prevent these nuclear materials from arriving at possible points of use, a device that is effective, cheap, and efficient is needed.

The proposal clearly states the importance of the proposed work, however lacks details of the research or advanced development work that will be supported. Compared to other proposals, this work seems to be oriented towards fabrication of prototypes and application of micro-electromechanical systems (MEMS) manufacturing. This may be a new application of MEMS technology, but is not a clear advancement in the science. Radiation detectors through nano-particle fabrication appear to be an important niche area for the PI since he is already well funded by the US Army and US DoD. There is little if any economic impact to the State of Louisiana. The SBIR program may be a more appropriate source of funding for the project at this stage of development. Three industry partners (Radiance Technologies; Nuclear Microsystems; PACTEC, Inc.) were referenced in the proposal, however there were no letters of support provided that pledged cash and in-kind support valued at \$102,645, consistent with the proposed budget. A fourth company identified as Red Box, Inc. was listed in the budget justification although not referenced in the proposal. The University has invested considerably in nano-fabrication and is well positioned for success. However, BoRSF-ITRS is not considered an appropriate source of funding for this work.

Appendix C.4 (continued)

Proposal 030B

TITLE: *Production of Propylene Glycol via Biomass-Based Feedstocks Using Hydrogen-Induced Catalysis*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Stephen T. Dufreche, Ph.D.

COMMENTS: For the past few years the biodiesel industry has been crippled by an overabundance of glycerol. Although it was once sold as a valuable co-product, it now constitutes a drain on profitability due to greatly decreased market value. UL Lafayette proposes a research partnership with two commercial entities in the conversion of glycerol to 1,2-propanediol, utilizing hydrogen production from biomass gasification. This will convert a waste product into an important precursor for the petrochemical industry. The market for 1,2-propanediol is also larger than that for glycerol, and the final product can be used as a feedstock in polymer production, antifreeze, and other compounds.

As biodiesel economics become less favorable, so will the byproducts. The proposal failed to provide a convincing economic justification for this work. Additionally, the proposal did not include any information regarding recent changes in Federal support programs for biodiesel production. The approach may be realistic (copper chromate as a catalyst), yet there is concern over the long-term yield in conventional production, as contaminants are inevitable given the crude nature of the feedstock and a major source of reduced yield. The proposed budget appears inflated, with considerable requests for GRA support and supplies. The letter of support (no mailing address) from industry partner, Terra BioChem, LLC pledges in-kind support valued at \$25,000/year. Cleco Power, LLC, pledged in-kind technical support in addition to access to a pilot gasification system valued at \$35,000/year. The potential for success seems low, primarily because of the research challenges previously described.

Proposal 031B

TITLE: *Real-Time Fuel Demand Modeling for Enhanced Mass Evacuations Using Social Network Analytics*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Ramesh Kolluru, Ph.D.

COMMENTS: Recent mass evacuations during events such as Hurricanes Rita and Katrina have highlighted the need to augment existing evacuation management systems with real-time evacuee information. Current evacuation management systems are static planning-based systems that rely on historical information and do not capture the changes in on-the-ground conditions due to the disaster. In the largest evacuation in US history, more than three million residents of Texas tried to evacuate in advance of Hurricane Rita in September 2005, with memories of the devastation of Hurricane Katrina (August 2005) fresh in their minds. Highways in Houston turned into parking lots and then into death traps as evacuating motorists ran out of fuel. Public sector response was not coordinated with private sector supply chain capacity. This proposal supports collaboration between the National Incident Management Systems and Advanced Technologies (NIMSAT) Institute and FirstCall Inc., (Baton Rouge, LA). The primary goal of this proposal is to address the problem of estimating fuel demand along evacuation routes during mass evacuations.

The reviewers express doubt regarding the utility of real-time social network data in the face of a rapidly expanding incident. It is unclear how the mined data would aid in procuring fuel for those who are in need of it. The proposal would have been strengthened had the research demonstrated the basic hypothesis that social networks generate accurate information in natural emergencies when power has been lost. The proposal also challenges the constitutional right of any government agency to monitor private communications for any purpose. The researchers have an exceptional history of grant generation, with funding from the Governor's Office that could potentially overlap with this work. If the PI could show results from prior use of this technology for this purpose, it would help to establish the case for research funding.

APPENDIX C.5**GENERAL STATEMENT ON PROPOSALS RANKED
PRIORITY THREE BY THE FINAL PANEL**

Individual commentaries on proposals ranked Priority III by the final panel are not included in this report. Proposals so ranked were not recommended for funding for at least two of the following reasons (not listed in order of importance):

- Insufficient or inappropriate industrial matching funds were pledged and/or external support documented in the proposal budget was not substantiated by required letters of industrial support
- The industrial partner'(s) role in the research collaboration was not provided and/or detailed in the proposal
- Proposals did not have clear objectives and/or research plans lacked scientific rigor or completeness
- The background of a principal investigator was inconsistent with the proposed research and/or the principal investigator had an unusually poor publication record in the proposed area of research
- The proposal showed little or no potential for contributing to the near-term development and diversification of Louisiana's economy
- The proposal did not contain evidence of future commercialization, or it was not clear what economic benefit would be gained from the research
- Budgets were excessive, inadequately justified, or inconsistent with provided budget justifications
- The need for consultants and/or subcontracts was not adequately justified
- Equipment requests were excessive and/or inappropriate for the research proposed

APPENDIX D

**LIST OF SUBJECT-AREA REVIEWERS WHO PARTICIPATED
IN PHASES I & II OF THE REVIEW PROCESS**

Agriculture, Aquaculture, and Animal Science

Dr. Duane L. Johnson, Chair
Great Plains Oil and Exploration Company
Camelina Company

Dr. Paul Raymer
Department of Crop and Soil Sciences
University of Georgia

Biotechnology and Health Care

Dr. Radu Marches, Chair
Cancer Immunobiology Center
University of Texas Southwestern Medical Center at Dallas

Dr. Leo Herbette
President, Exploria

Chemical Materials and Petroleum Engineering

Dr. Russell D. Ostermann, Chair
Department of Chemical & Petroleum Engineering
University of Kansas

Dr. Roger A. Korus
Department of Chemical Engineering
University of Idaho

Computer and Information Sciences

Dr. John Usher, Chair
Professor, Department of Industrial Engineering
Mississippi State University

Dr. Behrooz A. Shirazi
Director, School of Electrical & Computer Science
Washington State University

Appendix D (continued)

Mechanical and Materials Engineering

Dr. John Berry, Chair

E. P. Coleman Professor, Department of Mechanical Engineering
Mississippi State University

Dr. Mathew Schaefer

Department of Mechanical and Industrial Engineering
Milwaukee School of Engineering

APPENDIX E

**SUMMARY OF PROPOSALS SUBMITTED TO THE
INDUSTRIAL TIES RESEARCH SUBPROGRAM (ITRS)
FY 2011-12**

Proposals Submitted to the Research and Development Program - ITRS
for the FY 2011-12 Review Cycle

Proposal #	PI Name	Discipline	Institution	Project Title	Amount Requested				Confidential Info
					Year 1	Year 2	Year 3	Total	
001B-12	Boldor, Dorin	Scientific	Louisiana State	Continuous, scalable production of	\$91,024	\$86,488	\$86,723	\$264,235	No
002B-12	Lampila, Lucina	Scientific	Louisiana State University And A&M College - Agricultural Center	Extending Marketing Opportunities for Louisiana Crawfish	\$54,501	\$44,891	\$0	\$99,392	No
003B-12	Pan, Hui	Scientific	Louisiana State University And A&M College - Agricultural Center	Complete Recycling of Spent Chromated Copper Arsenate (CCA)-Treated Wood to Industrial Raw Materials and Bio-Degradable Foam Insulation	\$58,900	\$58,375	\$57,875	\$175,150	No
004B-12	Stout, Michael	Scientific	Louisiana State University And A&M College - Agricultural Center	The Use of Plant Hormones in Integrated Pest Management Programs	\$42,500	\$42,500	\$0	\$85,000	No
005B-12	Weindorf, David	Scientific	Louisiana State University And A&M College - Agricultural Center	Agronomic Application of Laser Induced Breakdown Spectroscopy	\$127,650	\$82,150	\$65,475	\$275,275	No
006B-12	owens, william	Scientific	Louisiana State University And A&M College - Agricultural Center	Evaluation of antimicrobial resistance in bacterial pathogens present in poultry	\$37,325	\$37,325	\$33,325	\$107,975	No
007B-12	Butler, Leslie	Scientific	Louisiana State University And A&M College - Baton Rouge	Construction of Prototype Laboratory Tomography Instrument for Industrial Research Applications in Polymer Blends and Catalysts	\$76,100	\$23,900	\$0	\$100,000	No
008B-12	Friedland, Carol	Scientific	Louisiana State University And A&M College - Baton Rouge	An integrated computational and experimental study of driven pile set-up in soft clays	\$127,595	\$99,984	\$80,202	\$307,781	No
009B-12	Goettert, Jost	Scientific	Louisiana State University And A&M College - Baton Rouge	SUEX Dry-laminate Resist for Advanced MEMS Applications	\$109,955	\$99,760	\$0	\$209,715	No
010B-12	Guo, Shengmin	Scientific	Louisiana State University And A&M College - Baton Rouge	Fabrication of SiC Nano Whisker Based High Performance Filters using Industrial Rice Husk Ashes	\$61,965	\$60,215	\$58,465	\$180,645	Yes
011B-12	KATO, Naohiro	Scientific	Louisiana State University And A&M College - Baton Rouge	Algal productions of commercially valuable oils using aquaculture wastewater in Louisiana	\$84,958	\$84,369	\$74,018	\$243,345	Yes

Proposal #	PI Name	Discipline	Institution	Project Title	Amount Requested				Confidential Info
					Year 1	Year 2	Year 3	Total	
012B-12	McRoberts, Lisa	Non-Scientific	Louisiana State University And A&M College - Baton Rouge	Enhancing Entrepreneurial Development and Expansion of Louisiana's Culturally Diverse Apparel and Product Designers while Promoting the Economic Potential of the State as a Fashion Center	\$122,368	\$88,829	\$0	\$211,197	No
013B-12	Mukhopadhyay, Supratik	Scientific	Louisiana State University And A&M College - Baton Rouge	Development of an Architecture and Software for an Agro-Intelligence Platform	\$54,451	\$52,451	\$52,451	\$159,353	No
014B-12	Shah, Rahul	Scientific	Louisiana State University And A&M College - Baton Rouge	Personalized Task Outsourcing on Social Networks	\$52,876	\$35,605	\$0	\$88,481	Yes
015B-12	Tsai, Frank	Scientific	Louisiana State University And A&M College - Baton Rouge	Unconventional Hydraulic Control for Deep-Aquifer Saltwater Intrusion Mitigation Under Uncertainty	\$56,129	\$54,129	\$54,129	\$164,387	No
016B-12	Venugopal, Changaram	Scientific	Louisiana State University And A&M College - Baton Rouge	A novel peptide as a vaccine for seasonal allergy	\$83,656	\$81,431	\$0	\$165,087	No
017B-12	Wu, Hsiao-Chun	Scientific	Louisiana State University And A&M College - Baton Rouge	Novel Handoff Technologies for Heterogeneous Communication Networks	\$72,330	\$71,085	\$70,149	\$213,564	No
018B-12	Shellito, Judd	Scientific	Louisiana State University Health Sciences Center - New Orleans	Development of chemokine fusion constructs as vaccines against pulmonary infection	\$150,000	\$100,000	\$100,000	\$350,000	Yes
019B-12	Dugas, Tammy	Scientific	Louisiana State University Health Sciences Center - Shreveport	Final development of a novel drug eluting stent with improved efficacy, safety and biocompatibility	\$122,436	\$100,030	\$100,030	\$322,496	Yes
020B-12	Cardenas, Henry	Scientific	Louisiana Tech University	Environmentally Sustainable High Performance Wood Products	\$60,647	\$63,647	\$62,647	\$186,941	Yes
021B-12	Strimbu, Bogdan	Scientific	Louisiana Tech University	Identification of optimal products allocation for strategic planning using LIDAR data	\$87,081	\$85,581	\$67,081	\$239,743	No
022B-12	Wilson, Chester	Scientific	Louisiana Tech University	Micro and Nano Structured Radiation Detectors for the Nuclear Energy and Defense Industries	\$48,000	\$48,000	\$48,000	\$144,000	No
023B-12	Zivanovic, Sandra	Scientific	Louisiana Tech University	Novel Plasmonic Solar Cell Micromanufacturing Technology	\$91,833	\$91,833	\$91,833	\$275,499	Yes
024B-12	McDowell, Patrick	Scientific	Southeastern Louisiana University	Nerve Stimulus Transfer Device for People with Feeling Loss in Their Feet	\$99,881	\$101,288	\$106,835	\$308,004	No

Proposal #	PI Name	Discipline	Institution	Project Title	Amount Requested				Confidential Info
					Year 1	Year 2	Year 3	Total	
025B-12	Walker, C. Reuben	Scientific	Southern University and A&M College at Baton Rouge	Production and Niche Marketing Assessment of Aquaculture Waste in Organic Production	\$50,000	\$45,000	\$40,000	\$135,000	No
026B-12	Papadopoulos, Kyriakos	Scientific	Tulane University	Dynamic Interfacial Tension at High Temperatures as it Applies to the Printing Industry	\$59,305	\$50,119	\$44,964	\$154,388	No
027B-12	Wimley, William	Scientific	Tulane University Health Sciences Center	Mechanism of action studies of Flufirvitide, a highly effective peptide inhibitor of influenza infection and transmission.	\$66,694	\$67,901	\$69,144	\$203,739	Yes
028B-12	Benson, Barbara	Scientific	University of Louisiana at Lafayette	Growth Kinetics, Light Dynamics and Lipid Content in Cultures of Botryococcus braunii (Chlorophyceae) Grown in Sugar Mill Wastewater	\$55,063	\$49,563	\$48,563	\$153,189	No
029B-12	Buchireddy, Prashanth	Scientific	University of Louisiana at Lafayette	Pilot Scale Investigation of Biomass Torrefaction Technology Using an Indirectly Heated Reactor	\$78,699	\$83,963	\$65,624	\$228,286	No
030B-12	Dufreche, Stephen	Scientific	University of Louisiana at Lafayette	Production of Propylene Glycol via Biomass-Based Feedstocks using Hydrogen-Induced Catalysis	\$70,520	\$75,384	\$77,903	\$223,807	No
031B-12	Kolluru, Ramesh	Scientific	University of Louisiana at Lafayette	Real-time Fuel Demand Modeling for Enhanced Mass Evacuations Using Social Network Analytics	\$87,759	\$77,915	\$0	\$165,674	No
032B-12	Misra, R. Devesh	Scientific	University of Louisiana at Lafayette	Phase Transformation-Induced High Strength-High Ductility Combination Nanograined (NG) Ferrous Alloys	\$41,000	\$41,000	\$41,000	\$123,000	No
033B-12	Thomas, George	Scientific	University of Louisiana at Lafayette	Defense Data and Telecommunications Industry in South Louisiana – A Pilot Project	\$67,299	\$84,011	\$0	\$151,310	No

Total Number of Proposals submitted	33
Total Funds Requested for First Year	\$2,550,500.00
Total Funds Requested for Second Year	\$2,268,722.00
Total Funds Requested for Third Year	\$1,596,436.00
Total Funds Requested	\$6,415,658.00