

REPORT OF THE FINAL PANEL
BOARD OF REGENTS SUPPORT FUND
INDUSTRIAL TIES RESEARCH SUBPROGRAM
FY 2009-10

BACKGROUND INFORMATION

Thirty-eight research proposals requesting a total of \$3,306,855 for the first year of work were submitted for funding consideration during fiscal year (FY) 2009-10 in the Industrial Ties Research Subprogram (ITRS) component of the Board of Regents Support Fund (BORSF). Of the thirty-eight proposals submitted three contained information of a confidential or proprietary nature and one proposal was a request for continuation. 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-eight proposals were reviewed for scientific and technical merit, as well as for their potential to contribute to Louisiana's economic development and diversification, by twelve out-of-state experts. The experts included two reviewers in each of the following six subject areas: agriculture, aquaculture, and animal science; biotechnology and health care; chemical materials and petroleum engineering; computer and information sciences; mechanical and materials engineering; and environmental science & technology and urban development. 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.

Copies of all evaluation forms from out-of-state experts who participated in Phases I and II of the review process were forwarded to each member of the final panel, along with copies of 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 11-12, 2010, to discuss Phase I and II subject area evaluations, prioritize awards, and develop funding recommendations. The final panel considered each of the thirty-eight 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 \$585,000 would be available in first-year funds for new research projects in the ITRS in FY 2009-10, and that money to continue the second 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 (Phase III) consensus evaluation, taking into account the projects' economic potential.

Six other highly meritorious proposals considered at the final panel meeting but, for a variety of reasons, not recommended for funding, are listed in **Appendix B**. (See Appendix B, which lists proposals placed in the Priority One category by the subject area panels that were not recommended for funding by the Final Panel). Each applicant whose proposal is listed in Appendix B should closely review the reviewers' comments. The final panel believes that these investigators should be notified of their good work and encouraged to revise and resubmit their proposals in the future, with the prospect that improvements in proposal content could ultimately lead to an award. These proposals, listed in numerical order 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).

Twelve 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 been provided in **Appendix C** for each Priority One (C.2), 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 (C.4) proposals. 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 Priority One).

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 2010.

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 2009-10 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 or plan of action:

1. A one-page summary describing the research in layman's language and assessing its technology transfer potential;
2. An assessment of the supportive science and interdisciplinary expertise needed to enhance the potential success of the research, including joint research activities with other researchers or research groups at the same or other institutions;
3. A description of industrial participation representing a 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 proposal 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 developing 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, 2010, for the required first-year matching commitment; by March 31, 2011, for the required second-year match; and by March 31, 2012, for the required third-year matching commitment. The staff of the 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 of the Board of Regents Support Fund.
4. Notify applicants that the industrial support obtained should be incorporated in 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 with 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	008B	LSU-AG	\$ 72,122	\$ 71,122	\$ 61,072
1	009B	LSU-AG	75,822	58,830	57,705
1	014B	LSU-BR	75,000	75,000	-----
1	026B	TULANE-HSC	85,000	85,000	-----
5	020B	LSUHSC-Shrev	80,000	-----	-----
6	011B	LSU-BR	85,000	80,000	75,000
7	019B	LSU-BR	80,000	80,000	80,000
8	023B	McNEESE	<u>41,368</u>	<u>38,668</u>	<u>-----</u>
TOTAL			\$ 594,312	\$ 488,620	\$ 273,777
ALTERNATE					
9	018B	LSU-BR	85,000	75,000	65,000

APPENDIX B*

MERITORIOUS ITRS PROPOSALS RANKED PRIORITY ONE BY THE SUBJECT AREA
PANELS AND CONSIDERED BY THE FINAL PANEL BUT NOT RECOMMENDED
FOR FUNDING (6)

003B
005B
007B
021B
032B
035B

Note: *These proposals are not listed in rank order of merit. The Panel's comments on these proposals are provided in **Appendix C.3**. Subject Area panel reviews for each proposal will also be provided to the applicants in July 2010.

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

PRIORITY TWO*

001B 024B
004B 025B
006B 027B
013B 029B
015B 037B
016B 038B

PRIORITY THREE*

002B 028B
010B 030B
012B 031B
017B 033B
022B 034B
036B

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 2010.

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, 2010, 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, 2011, 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, 2012, 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 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 008B**Rank: 1**

TITLE: *Reinforced Polymer Composite Systems as Lost Circulation Control Material in Oil Drilling Industry*

INSTITUTION: Louisiana State University-Agricultural Center

PRINCIPAL INVESTIGATOR: Qinglin Wu, Ph.D.

COMMENTS: Lost circulation is a problem where drilling fluid is lost in fractures and/or high permeable area in drilled formations which costs the industry over \$800 million per year. Lost circulation has also led to failure to secure production tests/samples and plugging the production zone has led to decreased productivity. The problem is normally reduced or cured using lost circulation materials (LCMs) as part of drilling mud and/or using liquid-polymer squeezing pills in combination with LCMs. Solid LCMs commonly used consists of varying combinations of flakes, fibers, and particles. Significant material handling in conventional compositions are often needed in dealing with various material types and particle size categories and are often less effective. At the same time, few effective liquid polymer systems are available for forming squeezing/plugging pills.

The goal of this research proposal is to develop green polymer composites which can be effectively used as circulation loss control material in oil drilling. The principal investigator has patented economic polymeric cellulose derived wood fiber blends for use with drilling mud or squeezing fluids. The planned research will seek to optimize and field test material that include polyacrylamide based gel systems and recycled plastics. Four industrial partners—Pro-Log, Inc., (New Iberia, LA); Wallace Moulding and Millworks, (Columbia, LA); Bernice Polymers, Inc., (Columbia, LA) and Envision Plastics, (Reidville, NC)—pledged in-cash (\$16,000/annum) and in-kind support (free recycled plastics) demonstrating their commitment to the project. The proposal is well written and presented with a detailed work plan. The goal of hydrogel characterization is an important research aspect that is needed. The principal investigator has an impressive curriculum vita (CV) and a successful track record with the ITRS program that speaks to the high probability of success. The budget is appropriate and funding is recommended at the level requested, i.e., \$72,122 for year 1, \$71,122 for year 2, and \$61,072 for year 3. The PI is required to maintain support for one graduate research assistant 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, 2010 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	\$72, 122	\$28,000 as specified in the proposal
2 nd Year	\$71,122	\$28,000 as specified in the proposal
3 rd Year	\$61,072	\$28,000 as specified in the proposal

Appendix C.2 (continued)

Proposal 009B**Rank: 1**

TITLE: *The Effect of Agricultural Wastes or By-Products on Reducing Body Fat*

INSTITUTION: Louisiana State University-Agricultural Center

PRINCIPAL INVESTIGATORS: Jolene Zheng, Ph.D.; Roy Martin, Ph.D.; Frank J. Greenway, M.D.;
John Finley, Ph.D.

COMMENTS: The prevalence of obesity in children is rising faster than in adults, increasing the risk of diabetes which, like obesity, costs the United States more than \$100 billion per year. Treating childhood obesity is a greater challenge than treating obesity in adults because growing children's body systems are still developing. Resistant starch (RS), a form of dietary fiber, stimulates peptide-YY and glucagons-like peptide 1 from colonocytes through fermentation to short chain fatty acids (SCFA). Resistant starch dilutes dietary energy, and SCFA increase energy expenditure and attenuate body fat in rodents. A whole grain product Sustagrain (ConAgra Foods Inc., Omaha, NE) has the potential to reduce fat, representing a safer strategy to prevent obesity. Through ongoing collaboration with ConAgra Foods Inc., the PIs use the low cost and high efficiency animal model, *Caenorhabditis elegans* (*C. elegans*), to reduce adipose tissue and validate the medical benefits of Sustagrain, leading to human clinical trials. The PIs hypothesize that Sustagrain will reduce fat deposition in *C. elegans* without limiting locomotion or growth, while extending lifespan. The success of Sustagrain in reducing fat will lead to high through-put screening of RS from ConAgra agricultural waste and by-products resulting in cost-effective, RS-containing foods with health benefits.

The utility of this project is dependent on the hypothesis that *C. elegans* is a rational model to determine if given RS products for human use will reduce intestinal fat deposition without affecting health as measured by locomotion, growth and lifespan. The preliminary data is impressive and certainly supports the hypothesis. A drawback to this proposal is the lack of detail relative to the work to be done in year 3 and the limitations of *C. elegans* for neurobiological studies. Nevertheless, this research is clever and innovative work. The research group is broad based and well qualified to carry-out the proposed work.

The budget is modest, although, some equipment is not well justified. The industrial match of \$56,717 in-cash and in-kind from ConAgra Foods, Inc., demonstrates its commitment to the project. The travel budget appears inflated and should be revised to limit travel to \$2,000/year and delete printing charges. The proposal is recommended for funding at a level of \$75,822 in year 1, \$58,830 in year 2 and \$57,705 in year 3. The PI is required to maintain support for one graduate research assistant 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, 2010 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	\$75,822	\$23,577 as specified in the proposal
2 nd Year	\$58,830	\$16,570 as specified in the proposal
3 rd Year	\$57,705	\$16,570 as specified in the proposal

Appendix C.2 (continued)

Proposal: 014B

Rank: 1

TITLE: *Novel Vaccine Against Bovine Respiratory Coronavirus*

INSTITUTION: Louisiana State University – Baton Rouge

PRINCIPAL INVESTIGATORS: Konstantin G. Kousoulas, Ph.D.; Vladimir Chouljenko, Ph.D.; Frederick Enright, Ph.D.; Arun Iyer, Ph.D.

COMMENTS: Respiratory Bovine Coronavirus (RBCoV) is associated with severe acute respiratory disease in naturally-infected animals. The clinical course of the disease shows striking similarity to human severe acute respiratory syndrome (SARS). The early clinical signs in both species include fever, dry cough, dyspnea and death. The incubation period for BRCV is estimated to be 7 days or less, similar to the 2-7 days reported for SARS. The discovery of RBCoV as a potential causative agent of acute respiratory disease implied that like SARSCoV, the RBCoV infection of cattle did not exist in the past, or that it was not detected by previously employed diagnostic methods. The main goal of the proposed research is to develop, locally produce, and test subunit vaccines consisting of codon-optimized BCoV genes fused in-frame with specifically engineered portions of the bovine CD40 ligand (CD40). The proposed work is a collaboration with the Baton Rouge-based biotechnology firm Tempest Biotech, housed in the Louisiana Emerging Technology Center located on the LSU Baton Rouge campus.

This proposal has been improved from the previous submission and is a testament to the diligence of the investigators. The proposal is a model for clear writing and although an ambitious two year project, the preliminary data is impressive. No licensed vaccine is believed to exist which is satisfactory for prevention of bovine respiratory coronavirus. As noted in the proposal, a recombinant vaccine has both safety advantages and possibly is easier (cheaper?) to produce. A drawback of the proposal is providing effective protection with viral subunit vaccines—particularly if both cellular and humoral immunity is desired. The overall approach is straightforward. Difficulties in efficient expression are discussed and a codon optimization scheme is demonstrated to enhance mRNA translation for the S protein.

The proposed budget is relatively modest for the work planned, and the team of investigators is well qualified to carry out the research. The supply budget appears inflated and therefore should be reduced to limit supplies to \$25,000/year. Furthermore, there exists a discrepancy in budget industry match for supplies (\$10,000) and the actual letter of support (\$11,000) that must be resolved prior to funding. Tempest Biological has also agreed to provide \$13,500/year in-kind support for a Tempest staff member to aid in purification of proteins in the investigators laboratory. The proposal is recommended for funding at \$75,000 in year 1 and \$75,000 in year 2. The PI is required to maintain support for students at the level proposed in the original budget in both 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, 2010 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	\$24,500 as specified in the proposal
2 nd Year	\$75,000	\$24,500 as specified in the proposal

Appendix C.2 (continued)

Proposal 026B**Rank: 1**TITLE: *Drug-Coated Glaucoma Drainage Devices*

INSTITUTION: Tulane University Health Science Center

PRINCIPAL INVESTIGATORS: Diane A. Blake, Ph.D.; Ramesh S. Ayyala, M.D.; Vijay John, D. Eng.Sc.

COMMENTS: Glaucoma is one of the leading causes of blindness in the United States. Reduction and control of the intraocular pressure (IOP) is the mainstay of glaucoma treatment and the implantation of a glaucoma drainage device (GDD) is often necessary for intractable cases. Currently, the success rate of GDD implants is relatively low because fibrosis that develops during the wound-healing process ultimately blocks fluid drainage. In this project, the end-plate of a GDD will be coated with a biodegradable polymer that delivers anti-fibrotic drugs in a delayed-release fashion. The specific aims are: (1) to incorporate mitomycin C and/or 5-fluorouracil into biodegradable poly(lactide-co-glycolide) polymers and optimize drug release kinetics *in vitro*; (2) to determine cytotoxicity of the polymer-drug formulations in a newly developed cell culture model system; and (3) to test the *in vivo* efficacy of the new polymer-drug formulations by incorporating them into an existing glaucoma drainage device (GDD, the Ahmed valve) and evaluating the modified device in a rabbit model system.

This project continues a long standing and successful collaboration between Dr. Ayyala and New World Medical and is designed to supplement a Phase 1 SBIR (currently noted as pending). There exists an interesting collaboration of researchers in polymer science, cell biology and-of course-ophthalmology who are all exceedingly well qualified to conduct the proposed research. The group has significant prior research experience with non-biodegradable polymers in this application. The proposal is very well written and is careful to consider potential problems. Reasonable preliminary data is included to convincingly demonstrate feasibility. The considerable industry support from New World Medical is a clear indication of its commitment to this project. The investigators are also very convincing in their demonstration of potential economic benefit (albeit to a California Company) as well as the possibility of additional SBIR phase II funding.

The proposed budget is generally appropriate in year 1 and year2. However, the need for year 3 support is not well justified and therefore not recommended. The supply budget appears inflated and should be limited to \$10,000/year. This project is recommended for funding at a level of \$85,000 for year 1 and for year 2. If results are shown, it will be easy to renew funding when appropriate. The PI is required to maintain support for one graduate research assistant at the level proposed in the original budget in both 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, 2010 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	\$85,000	\$58,630 as specified in the proposal
2 nd Year	\$85,000	\$36,515 as specified in the proposal

Appendix C.2 (continued)

Proposal 020B

Rank: 5

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

INSTITUTION: Louisiana State University Health Sciences Center-Shreveport

PRINCIPAL INVESTIGATOR: Tammy R. Dugus, Ph.D; Elysse Orchard, D.V.M.; John D. Foley, Ph.D.; Meghan Lund, M.S.

COMMENTS: Angioplasty is a clinical procedure in which a balloon is inflated in a blocked artery to re-establish blood flow and prevent a major cardiac event. Its application is limited by vessel re-narrowing, or restenosis, that occurs because balloon inflation stretches the vessel wall, inducing injury to vascular cells. Platelets and inflammatory cells that are recruited to the injured area release growth factors to stimulate vascular smooth muscle cells (VSMC) to migrate toward the intima and proliferate, inducing a re-narrowing of the lumen. Angioplasty is thus commonly accompanied by the placement of a stent, a tubular metal device inserted to maintain blood flow. In 2003 drug-eluting stents (DES) gained federal approval. Their release of anti-mitogenic drugs is intended to reduce VSMC proliferation and thus, restenosis. However, current generation DES are complicated by increased thrombosis and reduction in vascular remodeling by functional endothelial cells. Re-endothelialization is important, as it limits inflammation, platelet adhesion and activation, and VSMC proliferation. Second generation DES are just emerging, but although they reduce VSMC proliferation, they do not address platelet activation, inflammation, and still delay re-endothelialization.

This proposal continues prior work at LSUHSC to develop drug eluting arterial stents which use a polymeric coating to elute a drug which will inhibit smooth muscle proliferation and luminal narrowing. The proposed studies extend what have been predominantly in-vitro and modeling work into in vivo rat models in which stent design will be optimized, followed by the use of a rabbit iliac model in year 3. The research plan is given in some detail, progressing from control bare metal stent implantation to production of stents with different levels of resveratrol and quercetin (RQ) coating (and comparison to a paclitaxel coated stent). Animals will be followed using Doppler ultrasound and detailed Pharmacokinetic (PK) data will be captured. Additional studies will be done using the best coatings and more detailed analysis (including histopathology) will be performed leading up to studies using the rabbit iliac vein model. The year 3 work would be followed by a go/no go decision for good laboratory practices (GLP) porcine stent production to be externally funded. Extensive in vitro and some in vivo data (using a mouse endothelial damage/restenosis model) is presented to support the claims.

The proposal appears to be overly ambitious, given the need to develop the stents prior to commencing trials. It would appear that stent production would depend on Requisite Biomedical (Shreveport, LA). Although they have assembled an excellent team, there is no evidence they can produce the stents (or have funding to do so). This is critical to the success of this project, as stent production is submitted as (in-kind) contribution by the company. If no stents are produced nothing can be accomplished. There is concern over the large amount of unpublished preliminary data that is provided in this proposal to support the concept. Based on these concerns it is recommended that the proposal be funded for one year at a level of \$80,000, with no support provided in year 2 or year 3. Upon successful completion of the proposed device, year 2 and year 3 funding would be easily justified in a continuation proposal. The PI is required to maintain support for one graduate research assistant at the level proposed in the original budget.

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, 2010 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1st Year	\$80,000	\$95,337 as specified in the proposal

Appendix C.2 (continued)

Proposal 011B**Rank: 6**

TITLE: *Developing a Mobile Storm Surge and Wave Monitoring Network to Improve the Prediction of Hurricane Impacts on Natural and Built Environments for Coastal Louisiana*

INSTITUTION: Louisiana State University – Baton Rouge

PRINCIPAL INVESTIGATOR: Qin Jim Chen, Ph.D.; Robert Twilley, Ph.D.; Joseph Suhayda, Ph.D.

COMMENTS: The coasts around the Gulf of Mexico are under severe stresses due to increased human activities and climate change. In particular, the northern Gulf of Mexico is extremely susceptible to the impacts of frequent tropical storms and hurricanes due to its unique bathymetric, geometric, and landscape features. Several coastal flooding, enormous property damage, and loss of life are ubiquitously associated with tropical cyclone landfalls, and this devastation was never more evident than during Hurricanes Katrina and Rita in 2005 and Gustav and Ike in 2008. Over 1,600 people lost their lives and several major coastal populations were crippled for months after the hurricanes passed. The natural and built environments have been negatively impacted by recent hurricanes. Surge and waves are the major environmental forces in coastal flooding and erosion. Mitigating the impacts of coastal disasters requires field measurements and accurate predications of water surges and ocean waves generated by hurricanes to inform the public and decision-makers, facilitate the management of coastal resources and emergency response, and improve engineering design of coastal infrastructure. The goal of the proposed research is to develop a state-of-the-art- mobile storm surge and wave monitoring network and the capability of merging the field data into numerical models for improving the prediction of hurricane impacts on the natural and built environments in South Louisiana and beyond. The work will involve collaborative work between LSU, T. Baker Smith, Inc., (Houma, LA) and the University of Notre Dame.

This is an excellent proposal with a detailed work plan. This project has very significant private sector support (\$50,000 in-cash and \$50,000 in-kind), predominantly to aid in deployment and retrieval of surge and wave gages. The company will be an active participant in the research project. Preliminary data presented in this submission is quite impressive and the research group is well qualified to carry-out the work. The proposal has a very significant subcontract to Notre Dame that will be funded by the industry partner. Issues related to this support should be clearly identified prior to funding. Dr. Chen has considerable external funding support. The proposed travel and supply budget appears inflated and should be reduced. Therefore, it is recommended that the project be funded at a level of \$85,000 in year 1, \$80,000 in year 2, and \$75,000 in year 3. The PI is required to maintain support for one graduate research assistant 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, 2010 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	\$85,000	\$31,160 as specified in the proposal
2 nd Year	\$80,000	\$30,160 as specified in the proposal
3 rd Year	\$75,000	\$38,680 as specified in the proposal

Appendix C.2 (continued)

Proposal 019B

Rank: 7

TITLE: *Novel Red Mud-Based Geopolymers for Environmental and Civil Infrastructure Applications*

INSTITUTION: Louisiana State University-Baton Rouge

PRINCIPAL INVESTIGATOR: Guoping (Gregg) Zhang, Ph.D.; Robert P. Gambrell, Ph.D.

COMMENTS: Noranda Alumina (NA) LLC is an alumina manufacturing facility situated along the Mississippi River in St. James Parish. The plant was originally owned by Kaiser Aluminum & Chemical Corporation. Kaiser began plant construction in 1957, with the first shipment of alumina occurring in 1959. The original plant was designed to produce 438,000 metric tons of alumina per year. Over the life span of the plant several expansions and modernization projects have been completed to increase the output of alumina to 1,250,000 metric tons per year. In 2009, Noranda Aluminum Holding Corporation became the sole owner of the facility. NA currently employs over 500 full-and part-time employees. In the past 50 years (1959 – 2009), this company has been a major private industrial unit contributing continuously and significantly to Louisiana economy and employment. The Bayer process used for the extraction of alumina from bauxite ores results in large quantities of an industrial waste—red mud with a consistency of slurry. According to a recent US Geological Survey report (USGS 2009), bauxite ores mined globally amounted to 202 million tons (MT) in 2007 and 205 MT in 2008. Depending on the purity and quality of the bauxite ores, the quantity of solid red mud generated by the Bayer process varies from 55-65% of the processed ores. As such, the processing of bauxite ores generates annually ~125 MT solid red mud waste globally. In Louisiana, NA now produces alumina at 1.25 MT/year, resulting in red mud waste at 3.0 MT/year (or ~25 million cubic yards of dry red mud) and is currently disposed in four large mud lakes. The cost for the maintenance and monitoring of the mud lakes now exceeds \$12 million per year, excluding the initial expenses for purchasing the land for mud lakes and their construction costs. To save money and minimize the environmental impacts, NA is currently interested in developing a “green” viable technology to reuse red mud by “converting the waste into a valuable resource.”

The proposed research will address geopolymer synthesis, followed by characterization of the mechanical and leaching properties of the red mud derived polymer. The preliminary data does demonstrate feasibility at a laboratory scale but the infrastructure cost to process significant quantities of a very basic and potentially toxic starting component may be overwhelming. Leaching is a major concern in this research as is the size of the potential market for the material. Noranda Alumina has pledged support in the amount of \$20,000/year to this project. The investigators are well qualified to carry-out the proposed work and the overall budget appears appropriate, although the travel and supply budget appears somewhat inflated and should be reduced and printing charges deleted. Prior to funding the intellectual property rights between LSU and Noranda must be resolved to ensure success. Furthermore, the letter of support lists Peter N. Bibko, Secretary, as the authorized signature. The required updated letter reconfirming their commitment to the project must include the complete corporate title that gives authority to this contribution. It is recommended that the project be funded at a level of \$80,000 per year for these years. The PI is required to maintain support for two graduate research assistants 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, 2010 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	\$80,000	\$20,000 as specified in the proposal
2 nd Year	\$80,000	\$20,000 as specified in the proposal
3 rd Year	\$80,000	\$20,000 as specified in the proposal

Appendix C.2 (continued)

Proposal 023B**Rank: 8**TITLE: *Computational Fluid Dynamics for Hydro Turbine Design Optimization*

INSTITUTION: McNeese State University

PRINCIPAL INVESTIGATOR: Ning Zhang, Ph.D.; Nikos Kiritsis, Ph.D.;

COMMENTS: The proposed research targets one type of environmental technology, hydro-technology, which creates electricity from running water by using specially designed turbines. Gulfstream Technologies, Inc., (Olney, TX) “GreenFlow Turbines” are designed to operate in rivers, streams, ocean currents and other water flow environments. To date Gulfstream Technologies has conducted all of the technical research, designing, engineering, fabrication, and construction in conjunction with strategic partners from Louisiana. The design of the turbine ensures very little impact on the environment. However, the efficiency of the current design needs to be improved to maximize electricity production. Improving efficiency will allow Gulfstream Technologies to realize a competitive advantage with the amount of electrical production a GreenFlow Turbine can achieve. Based on preliminary test and computer modeling data, the cost-efficiency is economically attractive; therefore, the probability of full commercial development is high. A major impediment to continuation of the research is the cost of building actual test turbines to test many possible efficiency-improving aspects. With the weak economy, Gulfstream is unable to further develop the process without assistance from the “Lab for Computational Fluid Dynamic Modeling” at McNeese State University and without external funding.

Although this is a well written proposal with a documented research plan, it failed to demonstrate actual industry participation. McNeese State has signed a cooperative agreement with Gulfstream Technologies and central to this agreement are the computer modeling capabilities of Dr. Zhang, who is well qualified to carry-out the proposed work. The proposal is not entirely clear as to how Dean Kiritsis will contribute to this work. The proposal is interesting and appears quite feasible.

The proposed two year budget is modest for a modest set of goals/objectives. The budget indicates an industry match of \$12,500 in year 1, and \$10,000 in year 2, although the letter of support did not specify. Prior to funding an updated letter from the industry partner must be obtained detailing its pledged support to the project. It is recommended that travel be limited to \$2,000/year, resulting in funding of \$41,368 in year 1 and \$38,668 in year 2. The PI is required to maintain support for one graduate research assistants at the level proposed in the original budget for both 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, 2010 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	\$41,368	\$12,500 as specified in the proposal
2 nd Year	\$38,668	\$10,000 as specified in the proposal

Appendix C.2 (continued)

Alternate - To Be Funded Only if one or more of the Higher-Ranked Applicants Declines an Award**Proposal 018B****Rank: 9**TITLE: *Alkene Hydration Catalysis and Related Reactions*

INSTITUTION: Louisiana State University – Baton Rouge

PRINCIPAL INVESTIGATOR: George G. Stanley, Ph.D.

COMMENTS: Preliminary results have been obtained that demonstrate alkene hydration catalysis, i.e., the reaction of alkene and water to produce oxygen-containing organic products (alcohol, aldehydes, ketones, etc.), has been accomplished using a simple nickel catalyst system. The side formation of a highly active Ni-hydride catalyst species, however, initiates a competing catalytic reaction that takes over and oligomerizes the starting 1-alkene (e.g., 1-hexene) to mainly produce linear saturated alkane products. This type of alkene oligomerization has not been observed previously and show unique selectivity and reactivity under mild conditions in the presence of water and oxygen. In fact, the alkene oligomerization will not occur without sufficient water being present. Sasol North America, whose main U.S. research center is located in Lake Charles, LA, produces alcohols and high purity alumina via Al and aluminum alkyl catalysis which are highly water and oxygen sensitive, as well as requiring high temperatures and pressures to operate. The ability to produce alcohols and other oxygen-containing organic products with high selectivity under mild environmentally friendly (i.e., “green”) conditions is of high interest to Sasol, as evidenced by their seed funding of this project.

The current proposal focuses on mechanistic studies of the catalyst, working out the complete mass balance for the catalysis, increasing the number of turnovers (& rate), and developing new catalysts that optimize production of the oxygen containing products, especially primary alcohols. The work is viewed as sound, but not particularly innovative—standard industrial chemistry. Dr. Stanley is well qualified to carry-out the proposed research. Sasol has only formally committed to a single year of support (\$33,000) although they do anticipate support for years 2 and year3.

The proposed budget appears inflated and should be reduced. The PI is required to maintain support for one graduate research assistant 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, 2010 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1. Funding should not be provided beyond the first year unless industrial support is forthcoming for subsequent years.

BUDGET	BORSF	EXTERNAL
1 st Year	\$85,000	\$33,000 as specified in the proposal
2 nd Year	\$75,000	\$33,000 as specified in the proposal
3 rd Year	\$65,000	\$34,000 as specified in the proposal

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

Note: These proposals are not listed in rank order of merit.

Proposal 003B

TITLE: *Evaluation of Ingredients and Protocol to Inhibit Melanosis in Gulf Shrimp*

INSTITUTION: Louisiana State University-Agricultural Center

PRINCIPAL INVESTIGATORS: Lucina E. Lampila, Ph.D.; Marlene Janes, Ph.D.; John Finley, Ph.D.

COMMENTS: Melanosis or “black spot” is a post harvest sensory defect in shrimp. It is caused by polyphenoloxidase, an enzyme that acts on compounds containing phenolic groups as tyrosine. Historically, melanosis was prevented by the use of sodium metabisulfite, but the compound became restricted after causing anaphylactic responses in susceptible individuals and occasionally, death. A new inhibitor, “Prawnfresh” has been shown to be effective on shrimp harvested from the North Sea but its effectiveness has not been tested in the warmer Louisiana environment. Furthermore, there are emerging markets not accepting shrimp treated with bisulfite and are reluctant to accepting shrimp that are treated with many of the approved food ingredients. Preliminary studies have shown some existing, low cost by-products and naturally occurring safe and suitable food-grade substances to be potential inhibitors to polyphenol oxidase (PPO). The objective of the proposed study is to evaluate cost effective PPO alternatives and develop on-board protocol for their use to promote Louisiana wild caught shrimp. By developing a “natural”, “chemical free” shrimp devoid of black spot, via new ingredient treatment(s), an opportunity exists to enter high value markets and bring value to the Louisiana shrimp industry.

This is a straightforward project to find an alternative to sodium metabisulfite as an inhibitor of black spot in shrimp. This would allow consumer concerns about Na metabisulfite reactions, chemical free marketing and increase the shelf life of the product. There is a currently available commercial product which appears to meet the requirements “Prawnfresh” (Xyrex-Scotland). The major problem is inexpensive, flash-frozen (which prohibits black spot) shrimp from Thailand. Furthermore, no evidence is presented that black spot has any significant effect on shrimp sales by LA shrimp producers. Given the lack of scientific originality and any evidence of economic benefit to LA, it is hard to justify funding. There is no industrial support other than a donation of Prawnfresh—the competitive product and a pledge of travel support should it be required.

Appendix C.3 (continued)

Proposal 005B

TITLE: *Complete Recycling of Chromated Copper Arsenate (CCA)-Treated Wood to Regenerate CCA-Treating Solution and Bio-Degradable Foam Insulation*

INSTITUTION: Louisiana State University – Agricultural Center

PRINCIPAL INVESTIGATORS: Hui Pan, Ph.D.; Todd F. Shupe, Ph.D.; Robert P. Gambrell, Ph.D.

COMMENTS: Despite the voluntary withdrawal of chromated copper arsenate (CCA)-treated wood from residential use at the end of 2003, CCA-treated wood continues to be used for industrial applications. About 28.8 million pounds of CCA (dry oxide concentrate basis) were consumed by the U.S. treating industry in 2004. With an expected average service life of 20-40 years, the amount of spent CCA-treated wood will expand greatly from current estimates of 3-4 million m³/year to around 12 million m³/year in the U.S. and Canada within the next 15 years. Traditionally, CCA-treated wood is primarily disposed of within construction and demolition (C&D) debris landfills. Environmental concerns have been raised regarding contamination of soil and groundwater by the heavy metals in CCA at certain landfill sites. In addition, the increasing landfill tipping fees and increasingly strict regulatory requirements result in the landfill option becoming more impractical. The objective of the proposed research is to develop a recycling method for spent CCA-treated wood waste that can reclaim both the heavy metals and the metal free wood.

The proposed research process will use large amounts of organic solvents and potentially acidic catalysts that produce large amounts of toxic metals that may or may not be reused in wood treatment. It is unclear if insulating foams produced from the stripped wood will have low enough levels of residual metals to be used in green insulation products. The private sector contribution is in-kind support for crushed treated scrap wood in year 1, with no industry support in year 2 and year 3. This is not surprising, as it is difficult to conceive of the process being either economically or environmentally desirable or feasible. It might be far better not to encourage the continuing use of CCA treatment, as the end result of the process might be to make a bad problem worse.

Proposal 007B

TITLE: *Recycling of Decommissioned CCA-Treated Wood into a Practical Value-Added Product*

INSTITUTION: Louisiana State University – Agricultural Center

PRINCIPAL INVESTIGATORS: Todd F. Shupe, Ph.D.; Cheng Piao, Ph.D.

COMMENTS: Chromated copper arsenate (CCA) continues to be widely used as a leading wood preservative for industrial applications in the U.S. Inevitably, most CCA-treated wood products are eventually removed from service and must be discarded. Landfilling of this material is becoming increasingly impractical due to negative environmental impacts and regulation, increasing liability risks, and rising tipping fees. Disposal of CCA-treated wood is a potential long-term environmental and legal liability. An ideal method to handle decommissioned CCA-treated wood is: (1) to economically convert this material into other treated products; and (2) to utilize the decommissioned material as an environmentally-friendly feedstock for other industries. Both options are particularly appealing if incorporated into an economically viable closed-loop recycling program. Both methods will extend the service life of the original treated product and reduce the amount of preservative-treated material that is landfilled.

This proposal focuses narrowly on decommissioned CCA treated guardrail posts to either produce remanufactured composite post blocks or to convert the posts to other products using technology described in proposal 005B. The two projects are similar in many respects and the reservations expressed about Proposal 005B above also apply to this one. Further, the PI's role in the research is unclear, as a research associate would be hired to do most of the work.

Appendix C.3 (continued)

Proposal 021B

TITLE: *Sodium Nitrite Therapy for Peripheral Artery Disease*

INSTITUTION: Louisiana State University Health Sciences Center – Shreveport

PRINCIPAL INVESTIGATORS: Christopher G. Kevil, Ph.D.; Mary Kim, M.D.; Tony Giordano, Ph.D.

COMMENTS: Peripheral artery disease (PAD) affects 14-16 million people in the U.S. alone. It is characterized by severe pain in the leg, with the most severe cases resulting in amputations. Currently, there is no effective means of treating the disease, the standard of care being exercise, even though patients experience pain when walking. The development of sodium nitrite as a therapy for peripheral artery disease is facilitated by the fact that it is already an Federal Drug Administration (FDA) approved drug for the treatment of cyanide poisoning, the safety profile of the drug is well established, and, from a proprietary perspective, all currently marketed formulations are for intravenous use, while TheraVasc Inc., (Cleveland, OH) is formulating the drug for oral delivery.

The overall goal of this proposal is to develop sodium nitrite as an oral drug for the treatment of peripheral artery disease. The PI claims that Na nitrite acts as a specific nitric oxide donor in ischemic tissue (leading to peripheral vasodilation). The project will carry out phase I Pharmacokinetic (PK) studies, develop formulations and analyze efficacy and toxicity in animal studies. All intellectual property (IP) is licensed to TheraVas. The compound has low direct toxicity but the author downplays the very well recognized carcinogenic colonic metabolites potential. It will be difficult for TheraVasc to profit from a commonly available inorganic compound, but the development of time release formulations could provide a mechanism for a defensible proprietary position. Dr. Kevil is certainly a well recognized expert in the area but Dr. Kim appears to have limited experience. TherVasc pledges significant in-cash and in-kind support. The major contribution is a year 3 subcontract to Dr. Kevil. Concerns must be expressed about availability of funds from a new start-up. The project seems more appropriate for external (private placement) funding. The potential conflict of interest problem with Dr. Giordano—listed as President & CEO of TheraVasc while also LSUHCS faculty is also troublesome.

Appendix C.3 (continued)

Proposal 032B

TITLE: *Private-Public Partnerships for a Disaster-Resilient Louisiana*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATORS: Ramesh Kolluru, Ph.D.; Mark Smith, Ph.D.; Shannon Strother, MPH; Michelle Valente, MBA

COMMENTS: Since 2001, the United States has attempted to improve its capacity in homeland security and emergency management at every level. Private industry owns 85% of Critical Infrastructure and Key Resources (CIKR) and drives 98% of the nation's supply chains. Unfortunately, to a large extent the private sector does not have a seat at the table at the State Emergency Operations Centers. Likewise, private sector plans do not reflect the public emergency management structure nor do they draw upon the strengths and systems for the public sector.

This project will research and develop a framework for public-private partnerships to enhance disaster resiliency in Louisiana. The National Incident Management Systems and Advanced Technologies (NIMSAT) Institute will leverage its efforts to build public-private partnerships with homeland security professionals and industry in support of the Governor's Office during hurricanes Gustav and Ike to this project, supporting the development of the proposed public-private partnership framework.

This proposal (a slightly modified resubmission) is to develop a national –scale homeland security and emergency management institute at UL-Lafayette to improve “national security and resiliency” through public-private sector partnerships. The proposal will fund the development of commercial software and training material for national distribution. Industry partner “James Lee Witt Associates” (Washington, D.C.), will provide cash and in-kind support (team of emergency management experts) although their letter does not specifically state their role. All additional private sector support (in-kind) appears to be grossly exaggerated. The proposal lacks specificity. The deliverables are described in general terms with no description of how they will be implemented. The proposal appears to be more of a public service project representing a survey and training exercise which is lacking in original research. The budget is overweighed in hefty salaries for senior staff. The multiple investigators seem to have reasonable but overlapping backgrounds, and several have very weak publication records.

Appendix C.3 (continued)

Proposal 035B

TITLE: *Hypothesis Discovery from Literature, Sequence and Other Heterogeneous Databases for NF- κ B Pathway*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATORS: Vijay Raghavan, Ph.D.; Wu Xu, Ph.D.

COMMENTS: The volume of the published literature on biology and medicine is increasing at a fast rate. The short-term objective of the proposal is to develop literature mining and data integration tools, where hypotheses can be generated to aid nuclear factor kappa-light-chain-enhancer of activated B cells (NF- κ B) research. The long-term objective of the proposal is to use these literature mining and data integration tools to understand the entire signal networks inside a cell, to inform diagnostic methods and provide prognostic indicators of the effectiveness of drugs targeting a particular pathway.

This is believed to be similar to a proposal submitted by Dr. Raghavan last year in collaboration with Araicom Life Sciences, LLC (Atlanta, GA). The industry partner has designed a computerized support platform that text mines Medline abstracts, provides the user with a conceptual map which they can explore and use to modify a so-called knowledge inference module that generates hypotheses based on the map. They will include additional components from a variety of databases of particular interest to those interested in signal pathways. This enhanced research support platform will be tested using the NF- κ B inflammatory signaling pathway. Nevertheless, there exist several commercial or public domain platforms with the ability to do the same. Hence, it is difficult to see why this proposal is either unique or likely to provide any economic advantage for LA. Dr. Raghavan has a limited number of publications (many in conferences and proceedings) which are of some relevance to the area. Dr. Xu has an impressive CV in the area of biochemistry but it does not appear relevant to the project. This proposal is not well supported by preliminary data or existing literature. Building a data platform is not considered highly innovative research.

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

Proposal 001B

TITLE: *Lipid Based Resuscitation Fluids*

INSTITUTION: Centenary College of Louisiana

PRINCIPAL INVESTIGATORS: Juan Rodriguez, Ph.D.

COMMENTS: One in ten deaths worldwide arise from trauma. Of those, thirty-nine percent are due to uncontrollable bleeding. Hemorrhagic shock is the leading cause of preventable death among U.S. soldiers in combat. A standard approach to managing severe blood loss is with infusion of crystalloid fluids, such as saline or Ringer's lactate. These fluids however, remain in the circulation only for a short time, can cause edema, and their O₂ carrying capacity is very limited. The search for efficient oxygen-carrying resuscitation fluids has focused on either modified hemoglobin or perfluorocarbons. While both of these fluids can display high oxygen carrying capacity, skepticism persists in the clinical community about these products following adverse events reported in clinical trials. Thus, the American College of Surgeons recommends treating such patients with Ringer's lactate, a volume expander, when blood is not available. Other volume expanders, such as albumin, also have limited oxygen carrying capacity. Innovative Resuscitation Technologies (IRT), a newly formed biotechnology company located in Shreveport, LA, is currently developing volume expanding fluids based on lipid emulsions that are expected to stay in the circulation longer, be better able to support gas exchange, and serve as a vehicle for delivery of lipophilic therapeutic agents.

This one year proposal serves only to support the work of IRT. The aim of the proposal is to use a mass-spectroscopic approach to simultaneously measure the O₂ and CO₂ of blood and lipid emulsions being developed by the industry partner. The proposed method uses an inert gas (helium) to purge the O₂ and CO₂ from the specimen. The carrier gas is then analyzed by mass spectroscopy. The method does not appear to be particularly innovative or unique but does depend on the apparatus and ability of the investigator. As such this is really not an academic research project but rather should be handled as a contract between IRT and Centenary College. The letter from IRT pledged support in the form of experimental cost share (i.e., samples, reagents and various emulsion concentrations and compositions). Much of the proposal deals with IRT technology (not herein reviewed). Beyond serving IRT's needs there is little to justify this proposal, as the benefit to Louisiana as a whole appears minimal.

Appendix C.4 (continued)

Proposal 004B

TITLE: *Science-based Evidence of the Health Benefits of Louisiana Oysters*

INSTITUTION: Louisiana State University – Agricultural Center

PRINCIPAL INVESTIGATORS: Jack Losso, Ph.D.; John Supan, Ph.D.; John Finley, Ph.D.

COMMENTS: For generations, oysters have had enormous cultural and economic importance to Louisiana. Millions of people around the world still love Louisiana oysters and consume them either raw or cooked. However, since Hurricane Katrina and Gustav, the oyster industry in Louisiana has suffered significant losses as oyster stocks have declined over the years. The literature is well established on the chemical composition of oysters from oyster producing regions including Japan that encourages consumers in those regions to buy and eat more oysters. However, there is little scientific evidence that Louisiana oysters can provide health benefits beyond nutrition. The decline in oyster stocks as well as the lack of supporting scientific evidence on oyster benefits as a food threatens the growth and survival of Louisiana's oyster industry. The specific hypothesis of this proposed research is that Louisiana oysters contain large amounts of health enhancing bioactive compounds including ceramides, carotenoids, and minerals and should be promoted as a food that provides health benefits beyond nutrition.

The research proposed has the ambitious goal of establishing the presence of bioactive compounds in fresh oysters that correlated to potential human health benefits. The project lacks significant industry participation in the research other than donation of oysters from Motivati Seafoods, LLC and P&J Oyster Company, Inc. Additionally, the lack of inclusion of professional vitas made evaluation of the PIs for this proposal extremely difficult and prevented it from being competitive. The PIs are encouraged to carefully ensure all proposals submitted to the ITRS program are complete.

Appendix C.4 (continued)

Proposal 006B

TITLE: *Development of Value-Added Products from Hardwood Small-Diameter Timber*

INSTITUTION: Louisiana State University – Agricultural Center

PRINCIPAL INVESTIGATORS: Cheng Piao, Ph.D.; Todd Shupe, Ph.D.; Clive Woods, Ph.D.; Michael Blazier, Ph.D.

COMMENTS: A critical challenge for the utilization of small-diameter timber harvested during thinning operations has been how to efficiently and effectively make composite products from these small, tapered, often crooked trees. Current utilization protocols have serious shortcomings with respect to profitability, scalability, productivity, and/or product quality. In the State of Louisiana the landowner income for pulpwood decreased nearly a third from 1998 to 2008 while the annual amount of pulpwood produced has remained constant. Thus, annual net losses have amounted to \$44 million. In the current research, the principal investigators propose another study on developing structural and non-structural value-added commodity products from hardwood small-diameter timber, which is much more diverse and difficult to use than southern pine small-diameter timber. The goal of the research is to develop a technology that allows massive, efficient, and economical utilization of hardwood small-diameter timber in Louisiana for value-added products.

This proposal is based on an earlier funded ITRS project that focused on softwoods [LEQSF(2008-10)-RD-B-01]. Although the proposal was fairly well written it lacked in both innovation beyond the first award and stronger industry support, which should have been developed during the first ITRS project. The match from the USDA appeared to be limited to product testing and the industry contribution appeared to be only the donation of logs for the experiments. The project would have been much stronger if it had been able to demonstrate commercialization of technology developed in the earlier project.

Proposal 013B

TITLE: *Development of a Photocatalytic Titanium Dioxide Coating for Concrete Pavement to Reduce Traffic Air Emissions in Urban Areas*

INSTITUTION: Louisiana State University – Baton Rouge

PRINCIPAL INVESTIGATOR: Marwa Hassan, Ph.D.; Tyson Rupnow, Ph.D.

COMMENTS: Air quality in many states, including Louisiana, has been linked with serious health hazards. These unhealthy conditions are caused by nitrogen oxides (NOX), and volatile organic compounds (VOC) in the air, which in turn are caused by high traffic volumes and combustors. Photocatalysis compounds such as titanium dioxide can trap and absorb particles in the air, removing harmful pollutants in the presence of ultra violet (UV) light. In spite of the aforementioned advantages, current applications of this technology are limited to building facades and gateway elements of bridges not subjected to traffic as in the case of the I-35W bridge over the Mississippi River in downtown Minneapolis. In addition, this new technology has not been introduced to Louisiana. The proposed research aims to develop a photocatalytic titanium dioxide coating that may be applied to concrete pavement, creating air purifying surfaces that can oxidize traffic emissions while providing acceptable durability, adequate service life, acceptable skid resistance, and cost effectiveness.

This proposal suggests the use of TiO₂ as a photocatalytic surface on concrete paving (which makes up 6% of U.S. roads) to aid in removing nitrogen oxides and volatile organic compounds (VOC) in the presence of solar UV. The proposed research looks at current products and assesses performance under LA environmental conditions and evaluates the use of existent technology in LA. PURETi, LLC (Rochester, MI)—a company that produces a concrete surface treatment to be studied—will contribute \$7,487 over the two year period and also pledges in-kind support (materials and consultation) although, the extent of the latter is unclear. Other industry partners referenced in the proposal (Crystal Millennium and CSG) are said to be contributing materials/employee support, but no letters were included. Dr. Hassan is very well qualified to carry-out the proposed research, and the co-PI, despite a limited publication record has a very appropriate background. The two year budget is very modest. The project appears to be mostly product testing. There is concern about the effects of environmental run-off on surfaces.

Appendix C.4 (continued)

Proposal 015B

TITLE: *A New Approach to Incorporate Titanium Dioxide Photocatalytic Properties of the Surface of Asphalt Concrete Pavements*

INSTITUTION: Louisiana State University – Baton Rouge

PRINCIPAL INVESTIGATOR: Louay Mohammed, Ph.D.; Mostafa Elseifi, Ph.D.; Ioan Negulescu, Ph.D.; Marwa Hassan, Ph.D.

COMMENTS: Photocatalysis compounds such as titanium dioxide (TiO₂) can trap and absorb organic and inorganic particles in the air, removing harmful air pollutants such as nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of UV light (sunlight). In spite of the rapid development of titanium dioxide coating, current applications of this technology are limited to concrete pavement surfaces, which only represent 6% of the national road network. Most of the road network in the U.S. is surfaced with hot-mix asphalt, which supports directing future research towards the use of titanium dioxide coating in flexible pavements. A major problem with the use of regular titanium dioxide coating in asphalt concrete pavement is that this type of cementitious layer may affect the texture properties of the surface, resulting in poor friction characteristics of the substrate. This research proposes to conceive, fabricate and characterize a new class of titanium dioxide coating that will be compatible with asphalt concrete pavement and that may perform as a photocatalysis effective in removing NO_x and selected VOC pollutants from urban infrastructures.

This proposal suggests the use of TiO₂ as a photocatalytic surface on asphalt paving to aid in removing nitrogen oxides and volatile organic compounds in the presence of solar UV. The major problem is felt to be layer adhesion; therefore, the proposal centers around the design and fabrication of TiO₂ containing coatings with appropriate binding and abrasion resistance properties that will not degrade the properties of the asphalt pavement surface. Clear evidence suggests the utility of the approach on concrete surfaces but there is limited current data on the use of coatings on hot mix asphalt pavement. A major concern is that microtextured coatings on asphalt reduce friction at low speed, resulting in hazardous driving conditions. The work proposes techniques which may be inappropriate (use of atomic force microscopy). The proposal does bring together a well-qualified interdisciplinary group to undertake this research.

Appendix C.4 (continued)

Proposal 016B

TITLE: *The Use of Warm Mix Asphalt Technology for the Sustainable Development of the Road Infrastructure in Louisiana*

INSTITUTION: Louisiana State University – Baton Rouge

PRINCIPAL INVESTIGATOR: Louay Mohammed, Ph.D.; Mostafa Elseifi, Ph.D.; Marwa Hassan, Ph.D.

COMMENTS: Warm-mix asphalt (WMA) has received considerable attention in recent years to reduce energy consumption and pollutant emissions during hot-mix asphalt (HMA) production and placement. Additive and processes with potential to reduce mixing and compaction temperatures are classified into four main categories: organic additives, chemical additives, water-bearing additives, and water-based processes. With the large number of processes and additives currently promoted to produce WMA, research is needed to characterize the mechanical and microscopic properties of the mix, identify the additives and processes that may perform adequately in Louisiana, and support the local production of these additives. Therefore, the primary goal of this research project is to quantify the performance, environmental, and economic benefits of WMA technology and to develop a framework for design, construction, and implementation of this technology in Louisiana.

The proposed research will conduct both laboratory and field testing in addition to a life-cycle cost analysis as a final component for this project. Key questions about field performance and optimal viscosity reducing additives (or devices) for use in LA still remain. It is unclear how the technology could be presumably marketed—public domain or know-how? The proposed budget is modest and the investigators are extremely well qualified to carry-out the proposed work. There is significant pledged support from a governmental agency and the private sector. However, the major negatives to this proposal are: (1) the lack of use of European data in the area and; (2) the very high level of funding the PI has from multiple sources for what looks like overlapping projects. Also noted are what appears to be identical letters of industrial support provided for the two submitted projects.

Proposal 024B

TITLE: *Novel Nanomaterials for the Environmental Decontamination of Chlorinated Hydrocarbons*

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATOR: Vijay T. John, Ph.D.; Gary L. McPherson, Ph.D.; John C. Prindle, Ph.D.

COMMENTS: The proposed research is directed towards the design of multifunctional particles that are effective in the remediation of chlorinated hydrocarbons such as trichloroethylene (TCE). These hydrocarbons form a class of dense non-aqueous phase liquid (DNAPL) contaminates in groundwater and soil that are difficult to remediate. They have a density greater than water and settle deep into the sediment, from which they gradually leach out into aquifers causing long term environmental pollution.

This proposal seeks to establish a start-up company to produce multifunctional particles from research that has been previously documented and patented (pending). Environmental water remediation is a large-scale activity. While technical viability of this remediation effort may be feasible, a convincing economic argument for why this work is better than existing technologies was not expressed. This research is appropriate for a business startup – not an industrial tie relationship. The investigative team is well-qualified, but the research work proposed was not well developed and lacks sufficient detail to predict success.

Appendix C.4 (continued)

Proposal 025B

TITLE: *Adaptation of Novel Polymerization Reaction Monitoring Approaches to Industrial Scale Reactions and Related Characterization*

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATOR: Wayne F. Reed, Ph.D.; Alina M. Alb, Ph.D.; Michael F. Drenski, M.S.

COMMENTS: The PI's group has developed Automatic Continuous Online Monitoring of Polymerization (ACOMP) reactions over the past decade with support from many private companies, BoR ITRS program and NSF. The feasibility of using ACOMP to monitor and control a very wide variety of reactions under many different chemical and engineering conditions has been very successfully demonstrated. Work to date with ACOMP has centered on laboratory based developments in instrumentation, mathematical methods, new methodologies, and wide ranging application. The objective of this proposal is to: (1) meet the challenges of adapting ACOMP to real-world industrial reactors, and (2) develop an important dimension of polymer characterization concerning very high molecular weight polymers, which is an issue in many different industrial sectors; e.g. water soluble polymers for paper-making, metallurgy, oil recovery, water treatment, etc., and natural product derived polymers.

Dr. Reed's investigative team has been extremely productive (over three dozen peer reviewed papers) and has led to collaboration with Nalco (Garyville, LA) that has pledged cash support (\$60,000) to fund a portion of a continuing effort to adopt ACOMP to their particular industrial needs. It appears that Nalco is **not** offering support for an attempt to establish a general industrial transfer paradigm. Thus the goals are believed to be adapting ACOMP to real world industrial reactors and characterizing very high molecular weight polymers, resulting in a proposed spin-off company deriving from the Tulane Center. It should be noted that a licensing arrangement with Varian, Inc., (Walnut Creek, CA) has fallen through during the course of the previous proposal. The work plan (schedule of activities) is mostly commercialization of existing ACOMP technology—a plan that is general but a reasonable approach to technology transfer. It is time for the group to seek significant funds from other sources, including SBIRs.

Appendix C.4 (continued)

Proposal 027B

TITLE: *Production of Biofuels from Algae*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Rakesh K. Bajpai, Ph.D.; Mark E. Zappi, Ph.D.; Stephen Dufreche, Ph.D.; Barbara Benson, Ph.D.

COMMENTS: Lipids are increasingly being used as renewable resources for transportation fuels. Unfortunately, the surface area productivity of agricultural crops is too low for them to be a viable source of lipids to meet transportation fuel needs of the U.S.A. Several species of algae are known to produce significant quantities of neutral lipids at productivities that can potentially meet the challenge. Still, several scientific and engineering knowledge gaps must be addressed before algae maybe commercially utilized for fuel production. These include: (a) growth rate; (b) lipid content; (c) nutritional requirements; (d) process conditions (pH, Temperature, etc.); (e) transfer rates and efficiencies of utilization of carbon dioxide and; (f) light penetration and efficiency of light utilization of the different algal species capable of producing significant quantities. The research proposed will address these scientific and engineering issues. Algal species present in native marshes and waters of Louisiana will be isolated and analyzed for their growth, lipid production, and lipid composition.

The proposal is very broad and involves strain selection and evaluation of designs for closed photobioreactors (as opposed to the more commonly used open systems). The proposed work-plan is quite detailed. However, one unique aspect is the evaluation of strains for tolerance to flue gas impurities—a suggested “free” source of high CO₂ for bioreactors. The work seems repetitive of what has been thoroughly documented at Sandia, Los Alamos and Oakridge National laboratories. The proposal would have been much stronger if the PI's could document active cooperation with the National Laboratories and adapt basic techniques to LA extensive aquaculture industry. The possibility of significant economic impact to the state appears minimal.

Proposal 029B

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

INSTITUTION: University Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Stephen Dufreche, Ph.D.; Mark E. Zappi, Ph.D.; Rakesh Bajpai, Ph.D.; John Guillory, 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 three commercial entities in the conversion of glycerol to 1,2-propanediol, as well as hydrogen production from biomass gasification. This will convert a waste product into an important precursor for the petrochemical industry. The final product can be used as a feedstock in polymer production, antifreeze, and other compounds.

The proposed research show little innovation and there is only a limited review of the scientific and patent literature. The conversion of glycerol to a high valued compound must have a cost. The hydrogen to be used in the catalytic conversion process will be produced via biomass gasification using waste wood chips; hence local biomass will be exclusively used. The proposal will optimize the syngas production for the catalytic process—and in particular look at the effects of contaminants on the catalytic process. Various grades of glycerol and their contaminants will also be evaluated to test if commercial biomass produced crude glycerol can serve as a feedstock. Economics of the catalysis reaction should be stated as well as what is the market for this monopropylene glycol? Will its market be affected by a glut of product and price depressed? Industrial support appears reasonable.

Appendix C.4 (continued)

Proposal 037B

TITLE: *Synthesis of New Classes of Antimicrobial Agents*

INSTITUTION: University of New Orleans

PRINCIPAL INVESTIGATOR: Guijun Wang, Ph.D.

COMMENTS: Many infectious diseases are becoming more and more difficult to treat and are often life-threatening. The main structural classes of existing antibiotics include the beta-lactams, glycopeptides, aminoglycosides, quinolones, and the oxazolidinones. Resistance to all of these currently available antibacterial agents is becoming common. Despite this, due to the difficulty associated with the discovery of antibacterial and antifungal agents, there are not many new families of antimicrobial agents which will become available in the near future. The proposed research seek to discover novel classes of compounds that are useful as antimicrobial agents for drug resistant microbes.

The proposal is a straightforward although not a particularly innovative attempt to perform structural activity relationship (SAR) on 5-7 ring heterocyclic compounds containing an S-6 aminomethyl-[1,3]-oxazinan-2-one core which shows antibacterial activity against Gram positive organisms. This will be done in concert with AFID Therapeutics, Inc., (Lansing, Michigan) who has pledged support of 25,000 / year in cash and 30,000 support in-kind consisting of chemical intermediates and compound testing. Preliminary studies involving the core structure show only moderate activity against two Gram positive organisms (the best being similar to that of chloramphenicol). Anti-fungal activity is claimed but no quantitative data is provided. Unfortunately, there is no toxicity data provided (based, for example, on cell culture systems) and toxicity may well be a problem. This is considered to be an extremely preliminary proposal with insufficient preliminary indications to warrant the proposed synthetic work. The lack of local testing of compounds in bacterial or eukaryotic systems leaves this as an exercise in applied organic synthesis. The PI is well qualified and has received significant funding from the National Science Foundation (NSF) and American Heart Association.

Proposal 038B

TITLE: *Development of Mild Gasification Technology to Retrofit Conventional Coal Power Plant to Achieve Significant Efficiency Enhancement with /without Carbon Capture*

INSTITUTION: University of New Orleans

PRINCIPAL INVESTIGATOR: Ting Wang, Ph.D.; T. S. Dhanasekaran, Ph.D.

COMMENTS: "Gasification" has been identified by the Department of Energy (DOE) and power industry as one of the important technologies for future coal utilization, including Integrated Gasification Combined Cycle (IGCC), Coal to Liquid (CTL), and Synthetic Natural Gas (SNG). IGCC is also the core of the DOE's FutureGen concept. Currently, almost all gasification schemes employ the "full gasification" process in which the feedstock goes through complete devolatilization, gasification, and thermal cracking process into light composition of CO, H₂, and CH₄ as the major combustible components of so called synthesis gas. This full gasification scheme is meant for future plants and would not be easily adapted by the existing pulverized coal power plants. "Mild Gasification" emphasizes preserving the heavy volatiles without further gasifying or thermally cracking the volatiles or fixed carbons into lighter components. This proposed scheme will drive out the heavy volatiles from the coal and heat it up to about 1650F to decompose the heavy volatiles and tars into a medium-weight volatiles, so it will not condense easily with a temperature above approximately 960F.

Dr. Ting Wang suggests a mild coal gasification scheme yielding heavy volatiles which are decomposed at high heat into medium weight volatiles which are desulfured through a new system. The clean gas drives a turbine and residual char is burned as pulverized coal in a conventional furnace. The PI appears to have a background in the area, although, the co-PI has limited experience. Concern is expressed about the apparent lack of output on a currently funded ITRS project involving advanced turbopump design. Furthermore, the proposal targets coal gasification that appears to be of very limited economic utility to Louisiana.

APPENDIX C.5**GENERAL STATEMENT ON PROPOSALS RANKED
PRIORITY III 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 inappropriate for the research proposed

APPENDIX D

LIST OF SUBJECT AREA REVIEWERS WHO PARTICIPATED IN PHASE 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. Michael Paul Gaus

Chairman, Technology Frontiers

Environmental Science & Technology, and Urban Design

Dr. Sam Feagley, Chair

Professor and State Soil Environmental Specialist
Department of Soil and Crop Science
Texas A & M University

Dr. Steve Stadelman

Environmental Operations Department
Novozymes North America, Incorporated

APPENDIX E

**SUMMARY OF PROPOSALS SUBMITTED TO THE
INDUSTRIAL TIES RESEARCH SUBPROGRAM (ITRS)
FY 2009-10**

**Summary of Proposals Submitted to the
Industrial Ties Research Subprogram (ITRS)
for the FY 2009-2010 Review Cycle**

Proposal#	Title	Institution/Department	Principal Investigator	Duration (Yrs)	BoRSF Money Requested
001 B-09/SCI	Lipid-Based Resuscitation Fluids	Centenary College/Department of Physics	Juan Rodriguez		
New Request			Contain Confidential/Proprietary Information? Yes	1	\$37,697
TOTAL					\$37,697
002 B-09/SCI	Purification and Characterization of Bitter Flavor Blocking Ingredient	Louisiana State University and A&M College-Agricultural Center/Department of Food Science	John W. Finley; Zhimin Xu; Charles E. Johnson		
New Request			Contain Confidential/Proprietary Information? No	1	\$142,125
				2	\$99,250
				3	\$98,625
TOTAL					\$340,000
003 B-09/SCI	Evaluation of Ingredients and Protocol to Inhibit Melanosis in Gulf Shrimp	Louisiana State University and A&M College-Agricultural Center/Department of Food Science	Lucina E. Lampila; Marlene Janes; John Finley		
New Request			Contain Confidential/Proprietary Information? No	1	\$54,700
				2	\$40,000
TOTAL					\$94,700
004 B-09/SCI	Science-Based Evidence of the Health Benefits of Louisiana Oysters	Louisiana State University and A&M College-Agricultural Center/Department of Food Science	Jack Losso; John Supan; John Finley		
New Request			Contain Confidential/Proprietary Information? No	1	\$39,500
				2	\$34,500
				3	\$34,250
TOTAL					\$108,250
005 B-09/SCI	Complete Recycling of Chromated Copper Arsenate (CCA)-treated Wood to Regenerate CCA-Treating Solution and Bio-Degradable Foam Insulation	Louisiana State University and A&M College-Agricultural Center/Calhoun Research Station	Hui Pan; Todd F. Shupe; Robert P. Gambrell		
New Request			Contain Confidential/Proprietary Information? No	1	\$63,150
				2	\$63,150
				3	\$63,150
TOTAL					\$189,450
006 B-09/SCI	Development of Value-Added Products from Hardwood Small-Diameter Timber	Louisiana State University and A&M College-Agricultural Center/Calhoun Research Station	Cheng Piao; Todd F. Shupe; Michael Blazier; Clive Woods		
New Request			Contain Confidential/Proprietary Information? No	1	\$62,015
				2	\$62,515
				3	\$61,515
TOTAL					\$186,045

Proposal#	Title	Institution/Department	Principal Investigator	Duration (Yrs)	BoRSF Money Requested
007 B-09/SCI	Recycling of Decommissioned CCA-Treated Wood into a Practical Value-Added Product	Louisiana State University and A&M College-Agricultural Center/School of Renewable Natural Resources	Todd F. Shupe; Cheng Piao		
New Request			Contain Confidential/Proprietary Information? No	1	\$89,000
				2	\$88,250
			TOTAL		\$177,250
008 B-09/SCI	Reinforced Polymer Composite Systems as Lost Circulation Control Material in Oil Drilling Industry	Louisiana State University and A&M College-Agricultural Center/School of Renewable Natural Resources	Qinglin Wu		
New Request			Contain Confidential/Proprietary Information? No	1	\$72,122
				2	\$71,122
				3	\$61,072
			TOTAL		\$204,316
009 B-09/SCI	The Effect of Agricultural Wastes or By-Products on Reducing Body Fat	Louisiana State University and A&M College-Agricultural Center/Department of Veterinary Science	Jolene Zheng; Roy Martin; John Finley; Frank J. Greenway		
New Request			Contain Confidential/Proprietary Information? No	1	\$82,822
				2	\$59,930
				3	\$58,005
			TOTAL		\$200,757
010 B-09/SCI	A Methodology to Improve Efficiency of Construction Workers	Louisiana State University and A&M College-Baton Rouge/Department of Construction Management and Industrial Engineering	Fereydoun Aghazadeh; Laura Ikuma; Isabelina Nahmens; Craig Harvey		
New Request			Contain Confidential/Proprietary Information? No	1	\$64,575
				2	\$64,575
			TOTAL		\$129,150
011 B-09/SCI	Developing a Mobile Storm Surge and Wave Monitoring Network to Improve the Prediction of Hurricane Impacts on Natural and Built Environments for Coastal Louisiana	Louisiana State University and A&M College-Baton Rouge/Department of Civil and Environmental Engineering	Qui Jim Chen; Robert Twilley; Joseph Suhayda		
New Request			Contain Confidential/Proprietary Information? No	1	\$95,764
				2	\$84,429
				3	\$76,203
			TOTAL		\$256,396
012 B-09/SCI	Fabrication of Ultra-Tall High Aspect Ratio Microstructures Using Novel Epoxy Laminate Resists for Medical and Precision Mechanical Application	Louisiana State University and A&M College-Baton Rouge/CAMD	Jost Goettert		
New Request			Contain Confidential/Proprietary Information? No	1	\$124,938
				2	\$104,938
			TOTAL		\$229,876

Proposal#	Title	Institution/Department	Principal Investigator	Duration (Yrs)	BoRSF Money Requested
013 B-09/SCI	Development of a Photocatalytic Titanium Dioxide Coating for Concrete Pavement to Reduce Traffic Air Emissions in Urban Areas	Louisiana State University and A&M College-Baton Rouge/Department of Construction Management and Industrial Engineering	Marwa Hassan; Tyson Rupnow		
				New Request	Contain Confidential/Proprietary Information? No
				TOTAL	\$84,989
014 B-09/SCI	Novel Vaccine Against Bovine Respiratory Coronavirus	Louisiana State University and A&M College-Baton Rouge/Department of Pathobiological Sciences	Konstantin G. Kousoulas; Vladimir Chouljenko; Frederick Enright; Arun Iyer		
				New Request	Contain Confidential/Proprietary Information? No
				TOTAL	\$165,000
015 B-09/SCI	A New Approach to Incorporate Titanium Dioxide Photocatalytic Properties of the Surface of Asphalt Concrete Pavements	Louisiana State University and A&M College-Baton Rouge/Department of Civil and Environmental Engineering	Louay Mohammad; Marwa Hassan; Mostafa Elseifi; Ioan Negulescu		
				New Request	Contain Confidential/Proprietary Information? No
				TOTAL	\$180,555
016 B-09/SCI	The Use of Warm Mix Asphalt Technology for the Sustainable Development of the Road Infrastructure in Louisiana	Louisiana State University and A&M College-Baton Rouge/Department of Civil and Environmental Engineering	Louay Mohammad; Mostafa Elseifi; Marwa Hassan		
				New Request	Contain Confidential/Proprietary Information? No
				TOTAL	\$189,040
017 B-09/SCI	A Novel Construction Methodology for Sustainable Homebuilding	Louisiana State University and A&M College-Baton Rouge/Department of Construction Management and Industrial Engineering	Isabelina Nahmens; Laura Ikuma; Marwa Hassan		
				New Request	Contain Confidential/Proprietary Information? No
				TOTAL	\$100,429
018 B-09/SCI	Alkene Hydration Catalysis and Related Reactions	Louisiana State University and A&M College-Baton Rouge/Department of Chemistry	George G. Stanley		
				New Request	Contain Confidential/Proprietary Information? No
				TOTAL	\$300,000

Proposal#	Title	Institution/Department	Principal Investigator	Duration (Yrs)	BoRSF Money Requested	
019 B-09/SCI New Request	Novel Red Mud-based Geopolymers for Environmental and Civil Infrastructure Applications	Louisiana State University and A&M College-Baton Rouge/Department of Civil and Environmental Engineering	Guoping (Gregg) Zhang; Robert P. Gambrell			
				Contain Confidential/Proprietary Information? No	1	\$90,441
					2	\$89,515
					3	\$88,641
				TOTAL	\$268,597	
020 B-09/SCI New Request	Development of a Novel Drug Eluting Stent with Improved Efficacy, Safety and Biocompatibility	Louisiana State University Health Sciences Center-Shreveport/ Department of Pharmacology, Toxicology and Neuroscience	Tammy R. Dugas; Elysse Orchard; John D. Foley; Meghan Lund			
				Contain Confidential/Proprietary Information? No	1	\$131,686
					2	\$99,530
					3	\$99,530
				TOTAL	\$330,746	
021 B-09/SCI New Request	Sodium Nitrite Therapy for Peripheral Artery Disease	Louisiana State University Health Sciences Center-Shreveport/ Department of Pathology	Christopher G. Kevil; Mary Kim; Tony Giordano			
				Contain Confidential/Proprietary Information? Yes	1	\$150,000
					2	\$100,000
					3	\$100,000
				TOTAL	\$350,000	
022 B-09/SCI New Request	A Distributed Online Broadcast System	Louisiana Tech University/Department of Computer Science	Mike O'Neal			
				Contain Confidential/Proprietary Information? No	1	\$98,835
					2	\$98,835
					3	\$98,835
				TOTAL	\$296,505	
023 B-09/SCI New Request	Computational Fluid Dynamics for HydroTurbine Design Optimization	McNeese State University/Department of Engineering	Ning Zhang; Nikos Kiritsis			
				Contain Confidential/Proprietary Information? No	1	\$41,868
					2	\$39,168
024 B-09/SCI New Request	Novel Nanomaterials for the Environmental Decontamination of Chlorinated Hydrocarbons	Tulane University/Department of Chemical and Biomolecular Engineering	Vijay T. John; Gary L. McPherson; John C. Prindle			
				Contain Confidential/Proprietary Information? Yes	1	\$80,000
					2	\$80,000
					3	\$80,000
				TOTAL	\$240,000	

Proposal#	Title	Institution/Department	Principal Investigator	Duration (Yrs)	BoRSF Money Requested
025 B-09/SCI	Adaptation of Novel Polymerization Reaction Monitoring Approaches to Industrial Scale Reactions and Related Characterization	Tulane University/Department of Physics and PolyRMC	Wayne F. Reed; Alina M. Alb; Michael F. Drenski		
	Continuation		Contain Confidential/Proprietary Information? No	1	\$85,274
				2	\$73,665
	LEQSF(2007-10)-RD-B-05			3	\$65,413
				TOTAL	\$224,352
026 B-09/SCI	Drug-Coated Glaucoma Drainage Devices	Tulane University Health Sciences Center/Department of Biochemistry	Diane A. Blake; Ramesh S. Ayyala; Vijay John		
	New Request		Contain Confidential/Proprietary Information? No	1	\$88,297
				2	\$87,694
				3	\$50,676
				TOTAL	\$226,667
027 B-09/SCI	Production of Biofuels from Algae	University of Louisiana at Lafayette/ Department of Chemical Engineering	Rakesh K. Bajpai; Stephen Dufreche; Mark E. Zappi; Barbara Benson		
	New Request		Contain Confidential/Proprietary Information? No	1	\$128,990
				2	\$98,960
				3	\$99,701
				TOTAL	\$327,651
028 B-09/SCI	An Adaptive Low Cost In Situ Processing of Hydrocarbon-bearing Formations with Reconfigurable Frequency Heating	University of Louisiana at Lafayette/ Department of Petroleum Engineering	Fathi Boukadi; Ali Ghalambor		
	New Request		Contain Confidential/Proprietary Information? No	1	\$82,908
				2	\$78,234
				3	\$79,613
				TOTAL	\$240,755
029 B-09/SCI	Production of Propylene Glycol via Biomass-Based Feedstocks Using Hydrogen-Induced Catalysis	University of Louisiana at Lafayette/ Department of Chemical Engineering	Stephen Dufreche; Mark E. Zappi; Rakesh Bajpai; John Guillory		
	New Request		Contain Confidential/Proprietary Information? No	1	\$86,716
				2	\$65,761
				3	\$70,825
				TOTAL	\$223,302
030 B-09/SCI	Mitigation and Prevention of Asphaltene Deposition in Louisiana Oil Wells	University of Louisiana at Lafayette/ Department of Petroleum Engineering	Ali Ghalambor; Fathi Boukadi		
	New Request		Contain Confidential/Proprietary Information? No	1	\$89,711
				2	\$89,314
				3	\$91,538
				TOTAL	\$270,563

Proposal#	Title	Institution/Department	Principal Investigator	Duration (Yrs)	BoRSF Money Requested
031 B-09/SCI	Development of a Technique for Locating Water and Gas Producing Zones in Horizontal Oil Wells Using DTS Data	University of Louisiana at Lafayette/ Department of Petroleum Engineering	Boyun Guo; Zhongqi Pan, Ali Ghalambor		
New Request			Contain Confidential/Proprietary Information? No	1	\$131,333
				2	\$67,755
				3	\$69,448
			TOTAL		\$268,536
032 B-09/NON-SCI	Public-Private Partnerships for a Disaster-Resilient Louisiana	University of Louisiana at Lafayette/NIMSAT	Ramesh Kolluru; Mark Smith; Shannon Strother; Michelle Valente		
New Request			Contain Confidential/Proprietary Information? No	1	\$146,929
				2	\$97,191
				3	\$97,881
			TOTAL		\$342,001
033 B-09/SCI	High Density Polyethylene (HDPE)-Clay Nanocomposites with High Fracture Toughness via Cryomilling and Melt Compounding	University of Louisiana at Lafayette/ Department of Chemical Engineering and Center for Structural and Functional Materials	Devesh K. Misra		
New Request			Contain Confidential/Proprietary Information? No	1	\$90,155
				2	\$90,155
				3	\$90,155
			TOTAL		\$270,465
034 B-09/SCI	Ultrafine-Grained Advanced High Strength Microalloyed Steels Resistant to Stress-Induced Cracking	University of Louisiana at Lafayette/ Department of Chemical Engineering and Center for Structural and Functional Materials	Devesh K. Misra		
New Request			Contain Confidential/Proprietary Information? No	1	\$90,155
				2	\$90,155
				3	\$90,155
			TOTAL		\$270,465
035 B-09/SCI	Hypothesis Discovery from Literature, Sequence and other Heterogeneous Databases for NF- κ B Pathway	University of Louisiana at Lafayette/ Center for Advanced Computer Studies	Vijay Raghavan; Wu Xu		
New Request			Contain Confidential/Proprietary Information? No	1	\$56,925
				2	\$58,843
				3	\$60,354
			TOTAL		\$176,122
036 B-09/SCI	Development of PC-Based Distributed System Real Time Simulator (PC-DRTS) for Robust Design and Operation of Louisiana Electric Grid	University of New Orleans/Department of Electrical Engineering	Parviz Rastgoufard; Ittiphong Leevongwat		
New Request			Contain Confidential/Proprietary Information? No	1	\$73,400
				2	\$71,638
				3	\$73,138
			TOTAL		\$218,176

Proposal#	Title	Institution/Department	Principal Investigator	Duration (Yrs)	BoRSF Money Requested
037 B-09/SCI	Synthesis of New Classes of Antimicrobial Agents	University of New Orleans/Department of Chemistry	Guijun Wang		
New Request			Contain Confidential/Proprietary Information? No	1	\$100,000
				2	\$100,000
				3	\$100,000
				TOTAL	\$300,000
038 B-09/SCI	Development of Mild Gasification Technology to Retrofit Conventional Coal Power Plant to Achieve Significant Efficiency Enhancement with/without Carbon Capture	University of New Orleans/Energy Conversion and Conservation Center College of Engineering	Ting Wang; T.S. Dhanasekaran		
New Request			Contain Confidential/Proprietary Information? No	1	\$100,000
				2	\$100,000
				3	\$80,000
				TOTAL	\$280,000

**SUMMARY OF PROPOSALS SUBMITTED TO THE
INDUSTRIAL TIES RESEARCH SUBPROGRAM (ITRS) FOR FY 2009-2010 REVIEW CYCLE**

TOTAL NUMBER OF PROPOSALS SUBMITTED	TOTAL FIRST-YEAR FUNDS REQUESTED	TOTAL FUNDS REQUESTED	TOTAL FIRST-YEAR FUNDS AVAILABLE
38	\$3,306,855	\$8,379,839	\$585,000