

**REPORT OF THE FINAL PANEL**  
**BOARD OF REGENTS SUPPORT FUND**  
**INDUSTRIAL TIES RESEARCH SUBPROGRAM**  
**FY 2007-08**

**BACKGROUND INFORMATION**

Thirty-four research proposals requesting a total of \$2,860,457 for the first year of work were submitted for funding consideration during fiscal year (FY) 2007-08 in the Industrial Ties Research Subprogram (ITRS) component of the Board of Regents Support Fund (BORSF). Of the thirty-four proposals submitted three contained information of a confidential or proprietary nature. A three-phase evaluation process conducted exclusively by out-of-state experts was used to review these proposals.

**REVIEW PROCESS**

Phase I: In Depth Mail Review

The thirty-four 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 14-15, 2008, to discuss Phase I and II subject area evaluations, prioritize awards, and develop funding recommendations. The final panel considered each of the thirty-four proposals extensively and based its recommendations on the following criteria:

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

The panel was informed that a maximum of \$559,641 would be available in first-year funds for new research projects in the ITRS in FY 2007-08, 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, nine proposals and one alternate (in the event that one of the higher-ranked applicants declines an award) were recommended for funding. These nine 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.

Five 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).

Four 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 fifteen 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 nine 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 nine 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 proposals 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) proposal. 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 nine 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 2008.

#### **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 2007-08 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, 2008, for the required first-year matching commitment; by March 31, 2009, for the required second-year match; and by March 31, 2010, 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 <sup>st</sup> Year Funds | Recommended BORSF 2 <sup>nd</sup> Year Funds | Recommended BORSF 3 <sup>rd</sup> Year Funds |
|------------------|--------------|-------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|
| 1                | 003B         | LSU-AG      | \$ 63,000                                    | \$ 64,500                                    | \$ -----                                     |
| 1                | 016B         | LAT         | 48,909                                       | 48,909                                       | 48,909                                       |
| 1                | 017B         | PENNINGTON  | 129,478                                      | 71,045                                       | 72,894                                       |
| 1                | 024B         | ULL         | 44,000                                       | 44,000                                       | 44,000                                       |
| 1                | 022B         | TULANE      | 51,791                                       | 50,595                                       | 48,758                                       |
| 1                | 032B         | UNO         | 46,178                                       | 43,678                                       | -----                                        |
| 1                | 009B         | LSU-BR      | 79,000                                       | 64,136                                       | -----                                        |
| 1                | 011B         | LSU-BR      | 45,456                                       | 45,456                                       | 40,956                                       |
|                  | 034B         | UNO         | <u>50,656</u>                                | <u>49,000</u>                                | <u>47,356</u>                                |
| 1                |              |             |                                              |                                              |                                              |
|                  |              |             | <b>\$ 558,468</b>                            | <b>\$ 481,319</b>                            | <b>\$ 302,873</b>                            |
| <b>TOTAL</b>     |              |             |                                              |                                              |                                              |
| <b>ALTERNATE</b> |              |             |                                              |                                              |                                              |
| 10               | 013B         | LSUHSC-S    | 81,625                                       | 56,700                                       | 61,675                                       |

## APPENDIX B

MERITORIOUS ITRS PROPOSALS RANKED PRIORITY ONE BY THE SUBJECT AREA PANELS  
AND CONSIDERED BY THE FINAL PANEL BUT NOT RECOMMENDED FOR FUNDING (5)

002B  
006B  
007B  
019B  
027B

*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 2008.

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

**PRIORITY TWO\***

|      |      |
|------|------|
| 004B | 028B |
| 021B | 029B |

**PRIORITY THREE\***

|      |      |
|------|------|
| 001B | 018B |
| 005B | 020B |
| 008B | 023B |
| 010B | 025B |
| 012B | 026B |
| 014B | 030B |
| 015B | 031B |
|      | 033B |

*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 2008.

## 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, 2008, 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, 2009, 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, 2010, 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 003B****Rank: 1**

**TITLE:** *Development of Novel Technologies to Utilize Small-Diameter Timber for Value-Added Laminated Composites*

**INSTITUTION:** Louisiana State University-Agricultural Center (Calhoun Research Station)

**PRINCIPAL INVESTIGATOR:** Cheng Piao, Ph.D., Michael Blazier, Ph.D., Todd Shupe, Ph.D.

**COMMENTS:** A critical challenge for the utilization of small-diameter timber (SDT) harvested during thinning operations has been how to efficiently and effectively make composite products from these small, tapered and crooked trees. Traditionally, SDT utilization has primarily consisted of using these trees for pulpwood. Other options include chips, posts, or as a raw material for dimensional lumber. Current utilization protocols have suffered from serious shortcomings with respect to profitability, scalability, productivity, and product quality. The State of Louisiana has 14 million acres of forest, which represents 53% of the state's total land area. Forest lands are managed to produce a variety of wood and fiber products. Louisiana's well-developed forest products industry is the second largest industry in the state and the third largest employer. The pulp and paper sector traditionally has been the largest employer of the wood products industry in the state. However, the demand for pulpwood has decreased in the South with the increase in recycled fibers and imported pulp (Perkins and others 2005, Hodges and others 2005). The landowner income for pulpwood has decreased nearly one third from 1998 to 2005, while the amount of pulpwood that is produced has remained constant.

The major objectives of this research include: (1) engineering SDT into high-valued laminated composites; (2) development of computerized industrial manufacturing processes; and (3) economical potential of manufacturing poles and beams from SDT. Additionally, the project proposes to provide a profitable outlet for SDT, enhance rural economics, create new jobs, reduce wildfire, and provide new product options for forest management. The proposed research is innovative with solid research and reasonable objectives. The proposal addresses a serious issue in forest management and the economics of timber utilization—what to do with understory trees? Lamination of such may have positive economic and ecological benefits. Major partners for this project include LSU-Agricultural Center Calhoun Research Station, LSU-Agricultural Center at Homer, LSU-Agricultural Center School of Renewable Natural Resources, private contributors Mr. Cade M. Smith, of Jonesboro, LA and Dis-Tran Company in Pineville, LA. The PI and co-PI are well qualified and appear to have synergistic abilities with reasonable publication records. This project has good institutional support, although industry support is perceived as modest at best considering the potential impact on Louisiana's economy. A revised budget should be submitted that limits BoRSF travel support to \$1,500/year.

**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, 2008 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.**

| <b>BUDGET</b>        | <b>BORSF</b> | <b>EXTERNAL</b>                       |
|----------------------|--------------|---------------------------------------|
| 1 <sup>st</sup> Year | \$63,000     | \$22,000 as specified in the proposal |
| 2 <sup>nd</sup> Year | \$64,500     | \$23,000 as specified in the proposal |

Appendix C.2 (continued)

**Proposal 016B****Rank: 1**

TITLE: *Commercialization of Metal Nanostructures for Biomass Fuel Conversion*

INSTITUTION: Louisiana Tech University

PRINCIPAL INVESTIGATORS: Chester Wilson, Ph.D.

COMMENTS: Two significant existing industries in Louisiana are timber and oil. As a consequence, a multitude of companies currently exist in Louisiana with strong expertise in forestry products and oil refining/chemical processing and distribution. On the forestry side, business is often described as poor, because pulp and paper prices are low, so there is a very weak demand for wood chips. On the oil side, business is great, because oil prices are high, and trending higher. However, America as a country is currently importing over half its oil. Since reserves in our country and Louisiana are declining, the economic picture is unlikely to improve. Louisiana Tech, in partnership with Avoyelles Renewable Fuels, Inc.; Hunt Guillot and Associates, LLC and WPS Industries of Ruston, LA; Southeast Texas Industries; and Mississippi Ethanol, LLC a Starksville, MS based company, proposes to develop new, inexpensive metal nano-structures for biomass fuel conversion reactors. Initial results show this catalyst under heat and pressure converts syngas, which is produced from wood chips, into diesel. This has been done in existing Fisher-Tropsch catalytic reactors; however, in conventional reactors the catalyst is consumed. The catalyst developed in this work is nanostructured and bound in place on the reactor wall, allowing for an in-situ cleaning cycle and improved selectivity.

The proposed research is innovative and has yielded significant results in the pilot scale. However, the project could benefit by attracting a chemist with expertise in catalysis since the PIs' background is limited to nano-fabrication. The method appears to be patented and licensed but there may be problems with disposal of wastes from the cleaning cycle, but such is likely soluble. There exists a discrepancy between the industrial support (all in-kind) listed in the proposal when compared to the budget/justification. Therefore, prior to funding, a clarification of these discrepancies must be provided as well as an additional cash match pledge of \$10,000 for each year of the project. Furthermore, the principal investigator is required to maintain support for a graduate research assistant at the level proposed in the original budget in all three years of the project. An updated letter from each industrial partner must be provided on company letterhead prior to funding, documenting the support that each partner will provide with the estimated value.

**As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal/specified by the consultants should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2008 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.**

| BUDGET               | BORSEF   | EXTERNAL                                                  |
|----------------------|----------|-----------------------------------------------------------|
| 1 <sup>st</sup> Year | \$48,909 | \$145,800 as specified in the proposal plus \$10,000 cash |
| 2 <sup>nd</sup> Year | \$48,909 | \$145,800 as specified in the proposal plus \$10,000 cash |
| 3 <sup>rd</sup> Year | \$48,909 | \$145,800 as specified in the proposal plus \$10,000 cash |

Appendix C.2 (continued)

**Proposal: 017B****Rank: 1**

TITLE: *Reprogramming Mesenchymal Stem Cells*

INSTITUTION: Pennington Biomedical Research Center

PRINCIPAL INVESTIGATORS: Kenneth J. Eilertsen, Ph.D.; Jeffery Gimble, M.D., Ph.D.;  
Barbara Kozak, Ph.D.

COMMENTS: With the birth of the first mammal born by somatic cell nuclear transfer (SCNT, or cloning) 10 years ago, came the realization that a fully differentiated, adult cell could be returned to a point where it could once again undergo embryonic and fetal development. That is, an adult cell could be *reprogrammed* to a point where all development and differentiation capacity was restored. This reprogrammed state referred to as *totipotent* has inspired the development of strategies other than SCNT to restore *pluripotential (the ability to differentiate into all tissues of a body) to cells growing in culture*. These strategies have included fusion of differentiated cells with embryonic stem cells (ESCs) or pluripotent carcinoma cells and, more recently, brute force expression of defined pluripotency genes in somatic cells. These approaches elicit some reprogramming of nuclear function by modifying epigenetic components that regulate the expression of genes and include altering patterns of DNA methylation and histone modifications. All these methods have limitations, but each depends on changing the epigenetic signature of a somatic cell toward that of a pluripotent state. The objective of this proposal is to develop a novel source of pluripotent cells that can be used for cell therapy application.

The proposed research is obviously in an area of great interest. The advantage of mesenchymal derived stem cells relates to ready availability. Consequently, these cells are a very reasonable target for these studies. However, the approach used is not particularly innovative (although the specific compounds being tested are believed to be unique). The initial work-characterizing epigenetic gene and protein expressions of pluripotent related genes has been a popular area. Genes associated with pluripotent characteristics have recently been identified and used to reprogram adult cells to a pluripotent state. Hence, some of the more exciting areas of this proposal have strong competition. Nevertheless, the research team is very well qualified with excellent publication and grant support records. The principal investigator is the co-founder of the industry partner, NuPotential, LLC. Their contribution of in-kind support for four (4) scientist has no value associated and three of the four scientist are not named. The proposed budget has quite substantial scientific and supplies support which could have been provided partially by an active industry sponsor. Therefore, prior to funding, an updated letter from the industrial partner must be provided documenting their support, including the estimated value as well a cash match pledge of \$20,000 for each year of the project.

**As a condition of funding, the types and amounts of the institutional and external matching commitments as stated in the proposal/specified by the consultants should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2008 of updated documentation showing support at the levels indicated in the original proposal/specified by the consultants and as required in Appendix C.1.**

| BUDGET               | BORSF     | EXTERNAL                                                 |
|----------------------|-----------|----------------------------------------------------------|
| 1 <sup>st</sup> Year | \$129,478 | \$42,405 as specified in the proposal plus \$20,000 cash |
| 2 <sup>nd</sup> Year | \$71,045  | \$43,678 as specified in the proposal plus \$20,000 cash |
| 3 <sup>rd</sup> Year | \$72,894  | \$44,988 as specified in the proposal plus \$20,000 cash |

Appendix C.2 (continued)

**Proposal 024B****Rank: 1**

TITLE: *Development and Optimization of Molecular Ecology Techniques for Oil Industry-related Applications*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATORS: Andrei Chistoserdov, Ph.D.

COMMENTS: Microorganism mediate several biogeochemical processes which have economic importance for the oil and gas producing industry. Sulfate reducing prokaryotes (SRPs) are known for their production of sulfide, a highly corrosive agent for metal parts of drilling equipment and pipelines. Other bacteria, i.e. those oxidizing sulfide, can prevent formation of sulfide by oxidizing it back to sulfate. The third group of bacteria is responsible for production of organic acids, another important corrosion agent. The goal of the project is to identify and characterize the bacteria involved in biocorrosion and then develop an array of techniques for quantitative detection of the most important groups. The project targets the oil industry, one of the most important components of Louisiana's economy. The principal investigator will employ quantitative polymerase chain reaction (PCR) as a primary tool, and compare it with techniques used by the industry. The developed techniques will be first optimized and validated and then offered to Multi-Chem Group, LLC (industry partner) for industrial adaptation and marketing. Currently, Multi-Chem Group, LLC, based in New Iberia, LA is funding a pilot project, which is carried out at UL-L, to develop a quantitative PCR based technique for detection of sulfate reducing prokaryotes.

The principal investigator has a modest publication and grant record. The research plan appears sound and innovative. The proposed budget is considered modest when compared to the work to be accomplished. Nevertheless, travel support should be limited to \$1,500 per year. Additionally, the principal investigator 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. Prior to funding, an updated letter from the industrial partner must be provided documenting their support including estimated value.

**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, 2008 of updated documentation showing support at the levels indicated in the original proposal/specified by the consultants and as required in Appendix C.1.**

| BUDGET               | BORSF    | EXTERNAL                              |
|----------------------|----------|---------------------------------------|
| 1 <sup>st</sup> Year | \$44,000 | \$24,730 as specified in the proposal |
| 2 <sup>nd</sup> Year | \$44,000 | \$29,119 as specified in the proposal |
| 3 <sup>rd</sup> Year | \$44,000 | \$24,580 as specified in the proposal |

Appendix C.2 (continued)

**Proposal 022B**

**Rank: 1**

TITLE: *Microcapillary Video Imaging of Ionic Liquid Interfacial Phenomena*

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATOR: Kyriakos Papadopoulos, EngScD.

COMMENTS: Ionic liquids have unique properties that render them promising “green” catalytic media for a multitude of reactions and processes responsible for a vast array of industrial and consumer products. Video microcapillary imaging is a method for quantitatively visualizing microscopic phenomena by taking advantage of the restriction of the freedom of movement of microscopic objects when the latter are placed in the confined space of a cylindrical thin-walled capillary. It is proposed that similar technology can be used to study interfacial reaction catalyzed by ionic liquids more specifically: (i) the miscibility and rate of solubilization of ionic liquids in organic media, (ii) corrosive wear of metal alloys by ionic liquids, (iii) the oligomerization of olefins, and the (iv) alkylation of aromatics. This research is an outgrowth of a long standing collaboration between Tulane University and Chevron Energy Technology Company using microcapillary video imaging to study marine lubricants.

Proposals 021B and 022B were both submitted by the principal investigator with the same budget request, same level of industry support, and appear to be very closely related. However, proposal 022B to upgrade the system to allow similar imaging with Raman spectroscopy is more appealing. Understanding interfacial phenomena is critical in developing ionic liquids as “green” solvents, a problem of national significance. The Chevron letter offers both cash and in-kind support including excellent consulting personnel. **It is also noted that the same proposal was submitted to the National Science Foundation (NSF). If funded, LEQSF funding should not be provided.** The principal investigator has a good publication and grant record. The Principal Investigator is required to maintain support for one graduate research assistant at the levels proposed in the original budget for each year of the project. Additionally, any BoRSF request for equipment funds requires a minimum cash match of 25%. Therefore, a cash match of \$1,500 must be provided in year one to purchase the proposed equipment and travel support should be limited to \$1,500 for year two and year three.

**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, 2008 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             | \$51,791 | \$12,759, as specified in the proposal |
| 2nd Year             | \$50,595 | \$13,125, as specified in the proposal |
| 3 <sup>rd</sup> Year | \$48,758 | \$13,116, as specified in the proposal |

Appendix C.2 (continued)

**Proposal 032B****Rank: 1**

TITLE: *Development of Flowable Material Injection Procedure for Adjustment of In-place TriDyne Precast Road Panels on Multiple Occasions*

INSTITUTION: University of New Orleans

PRINCIPAL INVESTIGATOR: Norma Jean Mattei, Ph.D.

COMMENTS: Construction and repair of roads can cause traffic congestion and lost time to the driving public. Construction and repair time can be minimized through the use of precast panels that can be fabricated off site and placed on the prepared roadbed, as opposed to the usual onsite construction methodology. There are a few precast systems available today, but none offer the ability to easily adjust the roadway should settlement occur. Roads in southeastern Louisiana are particularly vulnerable to subsidence due to soil, geology, and water table conditions. Tri-Dyn Tele-Pier, L.L.C located in New Orleans has a unique system that can allow for in-place adjustment of each panel without the removal of the panel by injection of filler material through existing ports in the panel. However, there is no standard for selection of the adjustment material or procedure for injection.

The University of New Orleans, in collaboration with Tri-Dyn Tele-Pier, L.L.C, seeks to identify the most suitable material and procedure for Tri-Dyne roadway adjustments, more specifically material that will allow for subsequent adjustments throughout the lifetime of the roadway. The research is very important and innovative in the area of road construction and repair and is particularly applicable post-Hurricane Katrina. Additionally, the potential is underestimated, considering that subsidence is also a major problem in building foundations on clay soils. Nonetheless, the work plan appears reasonable and the proposed budget is modest, yet appropriate. The pledge match by the industry partner is substantial but all in-kind. Therefore, prior to funding an additional a cash match pledge of \$8,000 for each year of the project must be provided. The principal investigator is also required to maintain support for (1) graduate research assistant at the levels 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/ specified by the consultants should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2008 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.**

| BUDGET               | BORSF    | EXTERNAL                                                   |
|----------------------|----------|------------------------------------------------------------|
| 1 <sup>st</sup> Year | \$46,178 | \$51,000 as specified in the proposal plus \$8,000 in cash |
| 2 <sup>nd</sup> Year | \$43,678 | \$51,000 as specified in the proposal plus \$8,000 in cash |

Appendix C.2 (continued)

**Proposal 009B****Rank: 1**

TITLE: *Metal-based Microchannel Heat Exchange System Technology for Power Electronics Cooling*

INSTITUTION: Louisiana State University-Baton Rouge

PRINCIPAL INVESTIGATOR: Wen Jin Meng, Ph.D.

COMMENTS: Technologies capable of improving heat transfer and energy efficiency in an economical fashion have immense application potential for microelectronics, automobiles, home appliances, and defense. Limited cooling capacity for microelectronic modules has become a bottleneck to their reliable operation, and metal-based, microchannel heat exchange systems (MHESs) technology is a leading candidate for solving this problem. With significant energy uncertainties, automotive manufacturers around the world, GM included, are committed to partial or total electrification of the automobile. Removing high heat flux from power electronic modules within hybrid and fuel cell vehicles is likewise critical to their safe and reliable operation. LSU Department of Mechanical Engineering and General Motors Advanced Technology Vehicle (GM ATV) Center focus on developing low-cost, metal-based, MHESs for power electronics cooling.

This proposal is well written from a proven researcher and appears to be a new thrust for the principal investigator. The timeline for the proposed work is well documented but a great deal depends upon year one results. GM ATV is a limited partner for a very generic problem. The supportive budget is excessive with additional funding to be provided by the industry partner. There are potential problems with mold behavior under compression and mold wearing with industrial scale fabrication. The technology appears to be very demanding; however, the researcher is an expert. Prior to funding an additional an in-kind match pledge of \$25,000 for each year of the project must be provided. The principal investigator is also required to maintain support for graduate research assistants at the levels proposed in the original budget for each year of the project.

**As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal/ specified by the consultants should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2008 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.**

| BUDGET               | BORSF    | EXTERNAL                                                    |
|----------------------|----------|-------------------------------------------------------------|
| 1 <sup>st</sup> Year | \$79,000 | \$25,000 as specified in the proposal plus \$25,000 in-kind |
| 2 <sup>nd</sup> Year | \$64,136 | \$25,000 as specified in the proposal plus \$25,000 in-kind |

Appendix C.2 (continued)

**Proposal 011B****Rank: 1**

TITLE: *Combining Technologies for Enhanced Oyster Production and Safety*

INSTITUTION: Louisiana State University-Baton Rouge

PRINCIPAL INVESTIGATOR: John Supan, Ph.D.

COMMENTS: Outbreaks of Vibrio illness from the consumption of Gulf of Mexico (GoM) oysters served raw or undercooked have been an ongoing problem in the region and have greatly affected the Louisiana oyster industry. Post-harvest treatment (PHT) processes are effective and come with high market preference and demand. Recent technologies involving ultra-high pressure processing (UHP) and cryo-freezing have addressed the Vibrio problem, but Gulf oysters that are harvested during the summer months do not command the price of the winter crop due to poor summertime meat condition and yield. This inhibits economic incentive for the additional preventative post-harvest treatment of the summer product. LSU, in collaboration with Motivait Seafoods, Inc. of Houma, LA, will seek to improve oyster genetics, hatchery technology with innovative materials handling and advances in post-harvest treatment that can produce a safer, higher quality oyster with greater market appeal.

The proposed research is straightforward and appears to have a reasonable chance of success with a reasonable work plan supported by preliminary data. The principal investigator has a modest publication record without recent publication in this area. The proposal does have potential economic value but the industrial support is modest and all in-kind (albeit necessary for the project). The Principal Investigator is required to maintain support for (1) graduate research assistant at the levels proposed in the original budget for each year of the project.

**As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2008 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.**

| BUDGET               | BORSF    | EXTERNAL                              |
|----------------------|----------|---------------------------------------|
| 1 <sup>st</sup> Year | \$45,456 | \$37,520 as specified in the proposal |
| 2 <sup>nd</sup> Year | \$45,456 | \$37,520 as specified in the proposal |
| 3 <sup>rd</sup> Year | \$40,956 | \$37,520 as specified in the proposal |

Appendix C.2 (continued)

**Proposal 034B****Rank: 1**

TITLE: *Novel Solar Cells: Fabrication of Core Shell Nanowires for Solar Energy Harvesting*

INSTITUTION: University of New Orleans

PRINCIPAL INVESTIGATOR: Weilie Zhou, Ph.D.; Charles J. O'Conner, Ph.D.

COMMENTS: Solar energy is a clean, abundant, widespread and renewable source that can be used to increase electricity generating capacity. For a number of key renewable energy applications, to achieve highly efficient conversion from solar energy to electricity is a desirable goal. The proposed research will use physical and wet chemistry methods to fabricate III-V and II-VI core-shell quantum nanowires for efficient solar energy harvesting. This research is a collaboration between the Advanced Materials Research Institute (AMRI) at UNO, National Renewable Energy Laboratory (NREL), and NanoPrism Technologies, Inc., located in New Orleans, LA.

The proposal is well written but the nanofabrication involved in making a functioning photocell is complex. Greater industry support would help validate the approach. This is an important area of research with a large upside for future funding opportunities. Although the competition is quite strong, the project is innovative and has great economic potential. The principal investigators are well qualified to conduct the proposed research, and the budget is modest but appropriate for the project. The principal investigators are required to maintain support for one graduate research assistant at the level proposed in the original budget for each year of the project.

**As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2008 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.**

| BUDGET               | BORSF    | EXTERNAL                             |
|----------------------|----------|--------------------------------------|
| 1 <sup>st</sup> Year | \$50,656 | \$9,600 as specified in the proposal |
| 2 <sup>nd</sup> Year | \$49,000 | \$9,600 as specified in the proposal |
| 3 <sup>rd</sup> Year | \$47,356 | \$9,600 as specified in the proposal |

Appendix C.2 (continued)

**Alternate - To Be Funded Only if one of the Higher-Ranked Applicants Declines an Award****Proposal 013B****Rank: 10**

TITLE: *Development of an Oncolytic Adenovirus Virotherapy Agent for Breast Cancer*

INSTITUTION: Louisiana State University Health Sciences Center -Shreveport

PRINCIPAL INVESTIGATOR: J. Michael Mathis, Ph.D.; Amartya Basu, Ph.D.; Benjamin Li, M.D.; Deborah Wilson, Ph.D.

COMMENTS: Despite advances in treatments, survival from advanced cancers remains unlikely. Thus, alternative treatment approaches are necessary. Using oncolytic adenoviruses designed to divide in and specifically kill tumor cells is a promising new virotherapy approach. Ideally, cancer specific replication of oncolytic adenoviruses results in viral-mediated destruction of infected tumor cells and release of virus progeny, further propagating in surrounding tumor tissue but not in normal tissues, which would be refractory to replication. Preliminary studies have exploited a novel cancer-specific control of mRNA translation initiation to achieve enhanced replicative specificity of an oncolytic adenovirus. Initial, in-vitro and in-vivo studies demonstrate strong proof-of-principle that this oncolytic adenovirus, utilizing a heterologous mRNA translational control element, retains anti-tumor potency. The objective of this proposal is to continue efforts in optimizing the oncolytic adenovirus with enhanced tumor infectivity. The proposed study is a collaboration between LSUHSC-S and Qyntessa Biologics located in Baton Rouge, LA.

The innovative aspect of the proposal is the use of a cancer specific control of viral mRNA translation to achieve better tumor specificity. This is combined with the more commonly used strategies of infectivity enhancement and transcriptional control. The use of an altered serotype (Ad5 switched to Ad3) may be insufficient to prevent relative resistance. Immunologically mediated phenomena as well as a lack of Ad viral receptor is a potential problem. Biosafety issues are paramount as Ad virus infection and tumor lysis might well produce cytokine storm like reactions (and issues of potential infectivity to non-tumor tissue/hosts is also of concern). The use of transcription factor eIF4E for targeting is clever and there are both theoretical reasons (and experimental data) supporting elevated levels in tumors. The use of CXCR4 promoters (expressed in the liver) are of great concern.

Nevertheless, the principal investigator is very well qualified, has a distinguished publication record and is one of those who have patented the technology.

**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, 2008 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1. The subcontract with Qyntessa seems to provide very little to the project that is not paid for in the submitted budget and therefore should be disallowed. If funded, the budget should be revised eliminate the subcontract and the intellectual properties status of inventions should also be clarified.**

| BUDGET               | BORSF    | EXTERNAL                               |
|----------------------|----------|----------------------------------------|
| 1 <sup>st</sup> Year | \$81,625 | \$99,813 as specified in the proposal  |
| 2 <sup>nd</sup> Year | \$56,700 | \$152,313 as specified in the proposal |
| 3 <sup>rd</sup> Year | \$61,675 | \$41,063 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.

Appendix C.3 (continued)

**Proposal 002B**

TITLE: *Assessment of a Reverse Supply Chain Approach for Recycling Decommissioned Preservative – Treated Wood: The Case of Utility Pole Crossarms*

INSTITUTION: Louisiana State University-Agricultural Center

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

COMMENTS: Chromated copper arsenate (CCA), creosote, and pentachlorophenol (penta) continue to be widely used as preservatives of wood for industrial uses in the U.S. Current practices for disposing decommissioned preservative-treated wood include landfilling and incineration, which are increasingly impractical due to environmental impacts. The proposed research seeks to explore the technical feasibility and commercial potential of a reverse supply chain approach to recycling decommissioned preservative-treated wood into value-added products, more specifically, utility pole crossarms. The specific objectives are (1) to characterize the flow of materials to better understand the absolute reach of the end-of-life treated wood from Louisiana; (2) to assess lamination of decommissioned treated wood; (3) to determine the mechanical performance of laminated composites; and (4) to characterize the economic feasibility of manufacturing crossarms from decommissioned wood.

Proposals 002B and 003B were submitted by the same principal investigators and appear to have considerable overlap in that both projects seek to investigate lamination of such materials. With that in mind proposal 003B (recommend for funding) is considered the better project. The proposed research plan in proposal 002B is questionable, in that it is not feasible to complete the proposed work plan in 12 months.

Appendix C.3 (continued)

**Proposal 006B**

TITLE: *Processing and Integration of 3D Interconnects*

INSTITUTION: Louisiana State University-Baton Rouge

PRINCIPAL INVESTIGATORS: John C. Flake, Ph.D.; Francisco R. Hung, Ph.D.

COMMENTS: Stacking multiple microchips with three-dimensional 3D interconnects has several advantages over other multi-chip packaging methods, including highly integrated signal processing, faster signal transmission rates, lower power consumption, and decreased system sizes. At present there is significant interest in developing 3D interconnects for highly integrated devices or massively parallel computing devices, although implementation of 3D interconnects is limited by several 3D processing challenges. Primary among these issues are processes needed to create through-wafer vias (>100 micrometers deep) and to integrate multiple chips into a 3D stack. This proposal focuses on developing novel processes capable of efficiently producing dense arrays of through-wafer vias and 3D integration of stacked assemblies.

Although this research proposal was ranked highly by the subject area reviewers the research area has a high degree of competition from semiconductor manufactures and the approach of did not seem particularly innovative. Dr. Flake recently joined the LSU faculty with a number of patents but a weak publication record. Dr. Hung is a recent Ph.D. graduate with a reasonable publication record but no funding support. His role as co-principal investigator was unclear and his research background did not appear to be consistent with the research project. Approximately 33% of the equipment budget is requested from the ITRS although the remainder is charges to the industry partner (ATMI) located in Tempe, AZ. The industry support pledged is considerable (\$150,000/year) and dependent on the intellectual property agreement with ATMI.

Appendix C.3 (continued)

**Proposal 007B**

TITLE: *Development of a Commercial Mass Care and Sheltering Support System*

INSTITUTION: Louisiana State University-Baton Rouge

PRINCIPAL INVESTIGATORS: Craig M. Harvey, Ph.D.; Ashok Darisipudi, Ph.D.; Fereydoun Aghazadeh, Ph.D.; Gerald Knapp, Ph.D.

COMMENTS: Two years have passed since Hurricanes Katrina and Rita devastated the US Gulf Coast. Readiness for any future catastrophe is still very much suspect as indicated in the September 6, 2007 report by the US Government Accounting Office (GAO) to the Senate Homeland Security and Government Affairs Committee. In an earlier report (July 31, 2007) the GAO identified several critical areas in need of improved capability: (1) situation assessment and awareness; (2) emergency communications; (3) evacuations; (4) search and rescue; (5) logistics; and (6) mass care and shelter. Louisiana State University and Louisiana Hudson Initiative small business, First Responder Systems and Technology, Inc. (FiRST), propose the development of a system that would support mass care and shelter agencies for the planning and execution of mass care facilities.

The proposal details information that is already known but failed to discuss international disaster control systems that are available from the World Health Organization (WHO) and the US and foreign military which should be examined in depth. The principal investigators claim the system not to be dependent on a particular technology but rather to be based on a web interface and Microsoft smart client (which allegedly adapt to available local resources). The lack of power and trained staff during the time of disaster makes web based-high tech systems likely to fail. It is unlikely that the American Red Cross (ARC) will buy outside systems. Absent support from the potential user base (none of which is evident) the likelihood of success is considered minimal by the review panel. The salary budget appeared excessive, with support requested for each principal investigator, post-doc and a graduate research assistant. Additionally, the proposal failed to demonstrate an impact on the LA economy.

Appendix C.3 (continued)

**Proposal 019B**

TITLE: *Development of Wood/Polymer/Clay Nanocomposites*

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATORS: Daniel DeKee, Ph.D.; Tony Poloso, M.Sc.

COMMENTS: Wood-Polymer Composites (WPCs) has been a rapidly growing industry over the last several years. The industry has grown to over \$1 billion per year and is expected to double in size over the next five years. The low maintenance and resistance to insects and moisture damage are responsible for the growing popularity of the material. Most of the volume in this market is used for wood decking replacement. Other uses such as playground equipment, docks, fencing and various millwork products are also growing. There are drawbacks to WPCs, however, which have kept them from entering even larger markets. Currently, major concerns associated with WPCs include: relatively low bending modulus and strength, low notched impact resistance, relatively large thermal expansion, and creep. Improvement in the development of wood polymer composites are of particular interest to Louisiana's economy, as forestry and wood industries are the largest land-based industries in the state, and Louisiana ranks second in the nation in the production of polymer resins. Tulane University, in collaboration with ExxonMobil, plans to use nanoclay to enhance the thermal and mechanical properties of wood/polyethylene composites via nanoclay inclusion and compatibilization of wood surfaces which could expand potential markets.

The principal investigator has a good publication record and is well qualified to conduct the proposed research. However, the PI is currently funded by another LEQSF-ITRS grant that appears to be very similar to the proposed research. The collaboration with ExxonMobil is excellent and there exists some market potential for wood-plastic clay composites. The cost of the wood modification process remains in question, since no cost analysis was provided other than stating that increases in cost should be offset by performance increases.

Appendix C.3 (continued)

**Proposal 027B**

TITLE: *Development and Micromanufacturing of Application-Specific Acoustic Sensors*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATORS: Mohammad R. Madani, Ph.D.; Hongyi Wu, Ph.D.; Nian-Feng Tzeng, Ph.D.

COMMENTS: Sand production occurs in oil/gas piping when fields have relatively low formation strength. Sand in production piping results in not only substantial removal costs and maintenance expenditures but also possible equipment erosion. Early detection of sand is very critical for production optimization and cost production. Quantitative sand monitoring is also essential in verifying the effectiveness of sand control procedures and in providing a key input to erosion and sand settling predictions. General-purpose acoustic sensors available commercially may be applied to different applications, but they often exhibit three shortcomings: (1) steep price tags; (2) sub-optimized response performance for a given application; and (3) high operational power supplies (of typically 24V DC). This project targets developing and micromanufacturing application-specific acoustic sensors with high response performance and low cost. More specifically, it seeks a sensor application system developed for the petroleum industry and acoustic sensor arrays micromanufactured on-chip for various applications.

Although all principal investigators are clearly qualified to conduct the proposed research, the utility in prototyping a system with off the shelf components is of great concern. More enthusiasm was shared on the wafer design but there was a lack of discussion about aspects of this part of the proposal. The role of each principal investigator was unclear, and required further clarification regarding the roles of Dr. Tzeng and Dr. Wu.

## APPENDIX C.4

**SUMMARIES OF MERITORIOUS PROPOSALS  
NOT RECOMMENDED FOR FUNDING AT THIS TIME  
(PRIORITY TWO)**

Appendix C.4

**Proposal 004B**

TITLE: *Development of Sensor-Based Automated Water Quality Monitoring System*

INSTITUTION: Louisiana State University-Baton Rouge

PRINCIPAL INVESTIGATORS: Zhi-Qiang Deng, Ph.D.; Martin Feldman, Ph.D.

COMMENTS: Sensor-based water quality monitoring has been increasingly employed to replace conventional labor-intensive and time-consuming grab sampling for efficient management of water quality. Although significant environmental fluxes occur across the water-sediment interface such as hyporheic zones and riparian zones, no single environmental sensing systems are capable of providing information about water quality variation across the transition zones with a multi-parameter sensor sonde. Such a capability is vital to the widespread application of sensor technology in water quality monitoring. The goal of this research is to develop an automated water quality monitoring system (WaterWatch) that combines water quality sampling and sensing of both surface water and subsurface water across the water-sediment interface.

This proposal suffers from a lack of attention to detail. For example, what is the economic cost of placing and maintaining the lines which connect the sampling station to the ex situ sonde? How will such lines be placed to minimize ecosystem disruption? Clogging and local disturbance in the hyporheic and riparian zones are to be expected. The intake at the sampling head is likely to alter sediment distribution around the head and possibly contribute to filter plugging. These are NOT trivial points. Nevertheless, even with these caveats the proposal does have appealing aspects and with careful rewriting to include many of the above points might be attractive based on relative sensors versus proposed device cost. Additionally, there was very limited industry support (all in-kind) from an out-of-state sensor company.

Appendix C.4 (continued)

**Proposal 021B**

TITLE: *Emulsion/Demulsification and Aeration/Foaming in Lubricants*

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATORS: Kyriakos Papadopoulos; EngScD.

COMMENTS: Lubricant manufacturing is extensive in Louisiana, with several chemical companies heavily involved in lubricant base oils and lubricant additive feedstocks. Competition is keen among companies to improve their lubricant formations so that they will last longer, make the engines perform better, and protect the engines and help them have a longer life. At the same time, the advent of new kinds of engines, e.g., hybrid automobiles will further necessitate new types of lubricants. The proposed research aims to use capillary video-microscopy, as well as the newly proposed video-borescopy setup, in order to study some phenomena (foaming/de-foaming and emulsification/demulsification), considered key for the improvement of engine lubricants.

Proposals 021B and 022B were submitted by the same principal investigator with essentially the same experimental methodology. The search for parameters to be manipulated is not well defined. Research efforts could be better presented instead of highlighting a novel measurement technique developed by the PI.

**Proposal 028B**

TITLE: *Design and Development of Ultrahigh Strength Microalloyed Steels Immune to Stress-Induced Intergranular Cracking*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATORS: Devesh K. Misra, Ph.D.

COMMENTS: Louisiana's economy continues to revolve around its wealth of natural resources, in particular, oil and gas. The oil and gas industry is facing challenges because of the rising costs of natural gas and its transportation. Ultrahigh strength steels make great contributions to energy conservation and cost reduction as well as transportation efficiency, as they allow transportation of crude oil and gas under high pressure through pipes of significant reduction in wall thickness and thereby reduced weight. The proposed research seeks to develop an ultrahigh strength steel by adopting a unique approach that combines the advantages offered by the microalloying element, niobium (for fine grain size, precipitation hardening, bainite microstructures and absence of grain boundary segregation), together with an accelerating cooling approach. The proposed research is targeted to the chemical and mechanical industries in the state that use a large volume of steel of varying strengths for pipelines and a number of other structural applications (e.g. welded beams).

The proposal provided limited documentation of end user need although several companies were mentioned; therefore, the potential impact seems overstated. The reduction in steel volume/unit cost was never addressed. The principal investigator has a good publication and grant record and is currently funded by an ITRS grant that extends through 2010. Additionally, the principal investigator was funded by a company (CBMM, US) through 2007 for what appears to be related research.

## Appendix C.4

**Proposal 029B**

TITLE: *High Density Polyethylene (HDPE)-Clay Nanocomposites with High Fracture Toughness via Cryomilling and Melt Compounding*

INSTITUTION: University of Louisiana at Lafayette

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

COMMENTS: Polymers are considered Louisiana's most important contributions to the US economy. It is understood that every hour of every day a railcar full of polyethylene leaves just one of many polyethylene plants that account for 40% of beverage containers. There is, however, a large gap between producing raw materials and manufacturing high-valued finished products. The proposed research seeks to develop polymer nanocomposites by adopting an innovative approach of cryomilling and melt-compounding of HDPE with nanoclay to decrease the susceptibility to agglomeration and increase the homogeneity of dispersion.

Proposals 028B and 029B were submitted by the same principal investigator and are similar to a currently funded ITRS project. Dr. Misra is heavily dependent on LEQSF and should seek additional funding sources. Nevertheless, issues for development are well documented but little if any discussion was given to nano-particle size, shape, distribution, even though this issue is noted as important. The experimental design analysis is weak—a good experimental design would quickly focus this research.

**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  
The Camelina Company

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

**Biotechnology and Health Care**

**Dr. Karl A. Koehler, Chair**  
Indian Economic Development Corporation  
Indian 21<sup>st</sup> Century Research & Technology Fund

**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 2007-08**

**Summary of Proposals Submitted to the  
Industrial Ties Research Subprogram(ITRS)  
for the FY 2007-2008 Review Cycle**

| <b>Prop#<br/>Discipline</b>      | <b>Title</b>                                                                                                                               | <b>Institution/Department</b>                                                                                   | <b>Principal Investigator(s)</b>                                              | <b>Duration<br/>(Years)</b> | <b>BoRSF<br/>Money Requested</b> |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------|----------------------------------|
| <b>001B-08<br/>SCI</b>           | Development of Competitive Biodiesel Feedstocks for Louisiana                                                                              | Louisiana State University And A&M College - Agricultural Center (School of Plant, Environ. and Soil Sciences); | Gary Breitenbeck; Donald Boquet; Sterling Blanche;                            | <b>1</b>                    | <b>\$ 68,250</b>                 |
|                                  |                                                                                                                                            |                                                                                                                 |                                                                               | <b>2</b>                    | <b>\$ 69,850</b>                 |
|                                  |                                                                                                                                            |                                                                                                                 |                                                                               | <b>3</b>                    | <b>\$ 71,750</b>                 |
|                                  |                                                                                                                                            |                                                                                                                 |                                                                               | <b>Total</b>                | <b>\$ 209,850</b>                |
| Proposal is a <b>New Request</b> |                                                                                                                                            |                                                                                                                 | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |
| <b>002B-08<br/>SCI</b>           | Assessment of A Reverse Supply Chain Approach for Recycling Decommissioned Preservative - Treated Wood: The Case of Utility Pole Crossarms | Louisiana State University And A&M College - Agricultural Center (Calhoun Research Station);                    | Cheng Piao; Todd Shupe;                                                       | <b>1</b>                    | <b>\$ 60,000</b>                 |
|                                  |                                                                                                                                            |                                                                                                                 |                                                                               | <b>Total</b>                | <b>\$ 60,000</b>                 |
| Proposal is a <b>New Request</b> |                                                                                                                                            |                                                                                                                 | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |

SCI=Scientific or Engineering Discipline

NON=Nonscientific or Nonengineering Discipline

| <b>Prop#<br/>Discipline</b>      | <b>Title</b>                                                                                                         | <b>Institution/Department</b>                                                                                   | <b>Principal Investigator(s)</b>                                               | <b>Duration<br/>(Years)</b>           | <b>BoRSF<br/>Money Requested</b>                                                    |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------|
| <b>003B-08<br/>SCI</b>           | Development of Novel Technologies to Utilize Small-Diameter Timber for Value-Added Laminated Composites              | Louisiana State University And A&M College - Agricultural Center (Calhoun Research Station);                    | Cheng Piao; Michael Blazier; Todd Shupe;                                       | <b>1</b><br><b>2</b><br>.             | <b>\$ 65,200</b><br><b>\$ 66,700</b><br><hr/> <b>\$ 131,900</b>                     |
| Proposal is a <b>New Request</b> |                                                                                                                      |                                                                                                                 | Does this proposal contain confidential or proprietary information? <b>Yes</b> |                                       |                                                                                     |
| <b>004B-08<br/>SCI</b>           | Development of Sensor-based Automated Water Quality Monitoring System                                                | Louisiana State University And A&M College - Baton Rouge (Department of Civil and Environmental Engineering);   | Zhi-Qiang Deng; Martin Feldman;                                                | <b>1</b><br><b>2</b><br><b>3</b><br>. | <b>\$ 77,754</b><br><b>\$ 75,035</b><br><b>\$ 74,967</b><br><hr/> <b>\$ 227,756</b> |
| Proposal is a <b>New Request</b> |                                                                                                                      |                                                                                                                 | Does this proposal contain confidential or proprietary information? <b>No</b>  |                                       |                                                                                     |
| <b>005B-08<br/>NON</b>           | The Politics of Literacy Instruction: An Historical Case Study of Elementary Literacy Programming at the Local Level | Louisiana State University And A&M College - Baton Rouge (Department of Educational Theory, Policy & Practice); | Margaret-Mary Sulentic Dowell;                                                 | <b>1</b><br><b>2</b><br>.             | <b>\$ 51,193</b><br><b>\$ 45,059</b><br><hr/> <b>\$ 96,252</b>                      |
| Proposal is a <b>New Request</b> |                                                                                                                      |                                                                                                                 | Does this proposal contain confidential or proprietary information? <b>No</b>  |                                       |                                                                                     |

| <b>Prop#<br/>Discipline</b>      | <b>Title</b>                                                                                                | <b>Institution/Department</b>                                                                                                | <b>Principal Investigator(s)</b>                                              | <b>Duration<br/>(Years)</b>      | <b>BoRSF<br/>Money Requested</b> |
|----------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------|----------------------------------|
| <b>006B-08<br/>SCI</b>           | Processing and Integration of 3D Interconnects                                                              | Louisiana State University And A&M College - Baton Rouge (Department of Chemical Engineering);                               | John C. Flake; Francisco R. Hung;                                             | <b>1</b>                         | <b>\$ 75,000</b>                 |
|                                  |                                                                                                             |                                                                                                                              |                                                                               | <b>2</b>                         | <b>\$ 75,000</b>                 |
|                                  |                                                                                                             |                                                                                                                              |                                                                               | <b>3</b>                         | <b>\$ 75,000</b>                 |
|                                  |                                                                                                             |                                                                                                                              |                                                                               | <b>Total</b>                     | <b>\$ 225,000</b>                |
| Proposal is a <b>New Request</b> |                                                                                                             |                                                                                                                              | Does this proposal contain confidential or proprietary information? <b>No</b> |                                  |                                  |
| <b>007B-08<br/>SCI</b>           | Development of a Commerical Mass Care and Sheltering Support System                                         | Louisiana State University And A&M College - Baton Rouge (Department of Construction Management and Industrial Engineering); | Craig M. Harvey; Ashok Darisipudi; Fereydoun Aghazadeh; Gerald Knapp;         | <b>1</b>                         | <b>\$ 149,168</b>                |
|                                  |                                                                                                             |                                                                                                                              |                                                                               | <b>2</b>                         | <b>\$ 158,816</b>                |
|                                  |                                                                                                             |                                                                                                                              |                                                                               | <b>Total</b>                     | <b>\$ 307,984</b>                |
|                                  |                                                                                                             |                                                                                                                              |                                                                               | Proposal is a <b>New Request</b> |                                  |
| <b>008B-08<br/>SCI</b>           | Natural Disaster Rebuilding Efforts: A Case Study of Katrina and Rita's Impact on the Construction Industry | Louisiana State University And A&M College - Baton Rouge (Department of Construction Management & Industrial Engineering);   | Craig M. Harvey; Emerald Roider; L. Leslie Rosso;                             | <b>1</b>                         | <b>\$ 66,990</b>                 |
|                                  |                                                                                                             |                                                                                                                              |                                                                               | <b>2</b>                         | <b>\$ 70,399</b>                 |
|                                  |                                                                                                             |                                                                                                                              |                                                                               | <b>Total</b>                     | <b>\$ 137,389</b>                |
|                                  |                                                                                                             |                                                                                                                              |                                                                               | Proposal is a <b>New Request</b> |                                  |

| <b>Prop#<br/>Discipline</b>      | <b>Title</b>                                                                          | <b>Institution/Department</b>                                                                    | <b>Principal Investigator(s)</b>                                              | <b>Duration<br/>(Years)</b> | <b>BoRSF<br/>Money Requested</b> |
|----------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------|----------------------------------|
| <b>009B-08<br/>SCI</b>           | Metal-based Microchannel Heat Exchange System Technology for Power Electronic Cooling | Louisiana State University And A&M College - Baton Rouge (Department of Mechanical Engineering); | Wen Jin Meng;                                                                 | <b>1</b>                    | <b>\$ 103,995</b>                |
|                                  |                                                                                       |                                                                                                  |                                                                               | <b>2</b>                    | <b>\$ 89,136</b>                 |
|                                  |                                                                                       |                                                                                                  |                                                                               | <b>Total</b>                | <b>\$ 193,131</b>                |
| Proposal is a <b>New Request</b> |                                                                                       |                                                                                                  | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |
| <b>010B-08<br/>SCI</b>           | Component Based Multi-Agent Framework for Plant Monitoring and Supervision            | Louisiana State University And A&M College - Baton Rouge (Department of Chemical Engineering);   | Jose A. Romagnoli;                                                            | <b>1</b>                    | <b>\$ 122,311</b>                |
|                                  |                                                                                       |                                                                                                  |                                                                               | <b>2</b>                    | <b>\$ 101,454</b>                |
|                                  |                                                                                       |                                                                                                  |                                                                               | <b>3</b>                    | <b>\$ 101,996</b>                |
| <b>Total</b>                     | <b>\$ 325,761</b>                                                                     |                                                                                                  |                                                                               |                             |                                  |
| Proposal is a <b>New Request</b> |                                                                                       |                                                                                                  | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |
| <b>011B-08<br/>SCI</b>           | Combining Technologies for Enhanced Oyster Production and Safety                      | Louisiana State University And A&M College - Baton Rouge (Office of Sea Grant Development);      | John Supan;                                                                   | <b>1</b>                    | <b>\$ 45,456</b>                 |
|                                  |                                                                                       |                                                                                                  |                                                                               | <b>2</b>                    | <b>\$ 45,456</b>                 |
|                                  |                                                                                       |                                                                                                  |                                                                               | <b>3</b>                    | <b>\$ 40,956</b>                 |
| <b>Total</b>                     | <b>\$ 131,868</b>                                                                     |                                                                                                  |                                                                               |                             |                                  |
| Proposal is a <b>New Request</b> |                                                                                       |                                                                                                  | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |

| <b>Prop#<br/>Discipline</b>                                                | <b>Title</b>                                                                                      | <b>Institution/Department</b>                                                                                          | <b>Principal Investigator(s)</b>                                                 | <b>Duration<br/>(Years)</b> | <b>BoRSF<br/>Money Requested</b> |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------|----------------------------------|
| <b>012B-08<br/>SCI</b>                                                     | High Performance Robust<br>Controller Design and its<br>Applications                              | Louisiana State University And<br>A&M College - Baton Rouge<br>(Department of Electrical and<br>Computer Engineering); | Kemin Zhou;                                                                      | <b>1</b>                    | <b>\$ 101,908</b>                |
|                                                                            |                                                                                                   |                                                                                                                        |                                                                                  | <b>2</b>                    | <b>\$ 89,408</b>                 |
|                                                                            |                                                                                                   |                                                                                                                        |                                                                                  | <b>3</b>                    | <b>\$ 89,893</b>                 |
|                                                                            |                                                                                                   |                                                                                                                        |                                                                                  | .                           |                                  |
|                                                                            |                                                                                                   |                                                                                                                        |                                                                                  | <b>Total</b>                | <b>\$ 281,209</b>                |
| Proposal is a <b>New Request</b>                                           |                                                                                                   |                                                                                                                        | Does this proposal contain confidential<br>or proprietary information? <b>No</b> |                             |                                  |
| <b>013B-08<br/>SCI</b>                                                     | Development of an Oncolytic<br>Adenovirus Virotherapy Agent for<br>Breast Cancer                  | Louisiana State University Health<br>Sciences Center - Shreveport<br>(Department of Cellular Biology &<br>Anatomy);    | J. Michael Mathis; Amartya Basu;<br>Benjamin Li; Deborah Wilson;                 | <b>1</b>                    | <b>\$ 156,625</b>                |
|                                                                            |                                                                                                   |                                                                                                                        |                                                                                  | <b>2</b>                    | <b>\$ 106,700</b>                |
|                                                                            |                                                                                                   |                                                                                                                        |                                                                                  | <b>3</b>                    | <b>\$ 86,675</b>                 |
|                                                                            |                                                                                                   |                                                                                                                        |                                                                                  | .                           |                                  |
|                                                                            |                                                                                                   |                                                                                                                        |                                                                                  | <b>Total</b>                | <b>\$ 350,000</b>                |
| Proposal is a <b>New Request</b>                                           |                                                                                                   |                                                                                                                        | Does this proposal contain confidential<br>or proprietary information? <b>No</b> |                             |                                  |
| Note: Year 3 funds reduced to reflect maximum funding allowable \$350,000. |                                                                                                   |                                                                                                                        |                                                                                  |                             |                                  |
| <b>014B-08<br/>SCI</b>                                                     | Development of an In Vitro<br>Model to Study the Accumulation<br>of Metals in Aquatic Food Chains | Louisiana State University And<br>A&M College - Shreveport<br>(Department of Biological<br>Sciences);                  | Stephen W. Banks; Dalton R.<br>Gossett;                                          | <b>1</b>                    | <b>\$ 24,095</b>                 |
|                                                                            |                                                                                                   |                                                                                                                        |                                                                                  | .                           |                                  |
|                                                                            |                                                                                                   |                                                                                                                        |                                                                                  | <b>Total</b>                | <b>\$ 24,095</b>                 |
| Proposal is a <b>New Request</b>                                           |                                                                                                   |                                                                                                                        | Does this proposal contain confidential<br>or proprietary information? <b>No</b> |                             |                                  |

| <b>Prop#<br/>Discipline</b>                                  | <b>Title</b>                                                                | <b>Institution/Department</b>                                    | <b>Principal Investigator(s)</b>                                              | <b>Duration<br/>(Years)</b> | <b>BoRSF<br/>Money Requested</b> |
|--------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------|----------------------------------|
| <b>015B-08<br/>SCI</b>                                       | An Avenue to the Future                                                     | Louisiana Tech University<br>(Department of Civil Engineering);  | Aziz Saber;                                                                   | <b>1</b>                    | <b>\$ 74,289</b>                 |
|                                                              |                                                                             |                                                                  |                                                                               | <b>2</b>                    | <b>\$ 71,289</b>                 |
|                                                              |                                                                             |                                                                  |                                                                               | <b>3</b>                    | <b>\$ 71,289</b>                 |
|                                                              |                                                                             |                                                                  |                                                                               | <b>.</b>                    |                                  |
|                                                              |                                                                             |                                                                  |                                                                               | <b>Total</b>                | <b>\$ 216,867</b>                |
| Proposal is a <b>New Request</b>                             |                                                                             |                                                                  | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |
| Note: Corrected to reflect actual funds requested \$216,867. |                                                                             |                                                                  |                                                                               |                             |                                  |
| <b>016B-08<br/>SCI</b>                                       | Commercialization of Metal<br>Nanostructures for Biomass Fuel<br>Conversion | Louisiana Tech University (Institute<br>for Micromanufacturing); | Chester Wilson;                                                               | <b>1</b>                    | <b>\$ 59,777</b>                 |
|                                                              |                                                                             |                                                                  |                                                                               | <b>2</b>                    | <b>\$ 59,777</b>                 |
|                                                              |                                                                             |                                                                  |                                                                               | <b>3</b>                    | <b>\$ 59,777</b>                 |
|                                                              |                                                                             |                                                                  |                                                                               | <b>.</b>                    |                                  |
|                                                              |                                                                             |                                                                  |                                                                               | <b>Total</b>                | <b>\$ 179,331</b>                |
| Proposal is a <b>New Request</b>                             |                                                                             |                                                                  | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |
| Note: Corrected to reflect actual funds requested \$179,331. |                                                                             |                                                                  |                                                                               |                             |                                  |
| <b>017B-08<br/>SCI</b>                                       | Reprogramming Meseuchymal<br>Stem Cells                                     | Pennington Biomedical Research<br>Center (Stem Cell Biology);    | Kenneth J. Eilertsen; Barbara<br>Kozak; Jeffrey Gimble;                       | <b>1</b>                    | <b>\$ 149,478</b>                |
|                                                              |                                                                             |                                                                  |                                                                               | <b>2</b>                    | <b>\$ 91,045</b>                 |
|                                                              |                                                                             |                                                                  |                                                                               | <b>3</b>                    | <b>\$ 92,894</b>                 |
|                                                              |                                                                             |                                                                  |                                                                               | <b>.</b>                    |                                  |
|                                                              |                                                                             |                                                                  |                                                                               | <b>Total</b>                | <b>\$ 333,417</b>                |
| Proposal is a <b>New Request</b>                             |                                                                             |                                                                  | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |

| <b>Prop#<br/>Discipline</b>                                  | <b>Title</b>                                                                             | <b>Institution/Department</b>                                                                 | <b>Principal Investigator(s)</b>                                              | <b>Duration<br/>(Years)</b> | <b>BoRSF<br/>Money Requested</b> |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------|----------------------------------|
| <b>018B-08<br/>SCI</b>                                       | Design, Development, and Control of an Autonomous Digger for Ship Stevedoring Operations | Southeastern Louisiana University (Department of Computer Science and Industrial Technology); | Shunmugham R. Pandian; Ho-Hoon Lee; Theresa Beaubouef;                        | <b>1</b>                    | <b>\$ 70,645</b>                 |
|                                                              |                                                                                          |                                                                                               |                                                                               | <b>2</b>                    | <b>\$ 70,154</b>                 |
|                                                              |                                                                                          |                                                                                               |                                                                               | <b>Total</b>                | <b>\$ 140,799</b>                |
| Proposal is a <b>New Request</b>                             |                                                                                          |                                                                                               | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |
| <b>019B-08<br/>SCI</b>                                       | Development of wood/polymer/clay nanocomposites                                          | Tulane University (Department of Chemical and Biomolecular Engineering);                      | Daniel De Kee; Tony Poloso;                                                   | <b>1</b>                    | <b>\$ 64,003</b>                 |
|                                                              |                                                                                          |                                                                                               |                                                                               | <b>2</b>                    | <b>\$ 64,519</b>                 |
|                                                              |                                                                                          |                                                                                               |                                                                               | <b>3</b>                    | <b>\$ 65,050</b>                 |
| <b>Total</b>                                                 | <b>\$ 193,572</b>                                                                        |                                                                                               |                                                                               |                             |                                  |
| Proposal is a <b>New Request</b>                             |                                                                                          |                                                                                               | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |
| Note: Corrected to reflect actual funds requested \$193,572. |                                                                                          |                                                                                               |                                                                               |                             |                                  |
| <b>020B-08<br/>SCI</b>                                       | Optimization of Energy Utilization in the Paper Industry                                 | Tulane University (Payson Center for International Development);                              | Shieh-Tsing Hsieh; Sergey V. Drakunov; William E. Bertrand;                   | <b>1</b>                    | <b>\$ 122,186</b>                |
|                                                              |                                                                                          |                                                                                               |                                                                               | <b>2</b>                    | <b>\$ 97,913</b>                 |
|                                                              |                                                                                          |                                                                                               |                                                                               | <b>Total</b>                | <b>\$ 220,099</b>                |
| Proposal is a <b>New Request</b>                             |                                                                                          |                                                                                               | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |

| <b>Prop#<br/>Discipline</b>                                  | <b>Title</b>                                                                                                                 | <b>Institution/Department</b>                                                    | <b>Principal Investigator(s)</b>                                                 | <b>Duration<br/>(Years)</b> | <b>BoRSF<br/>Money Requested</b> |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------|----------------------------------|
| <b>021B-08<br/>SCI</b>                                       | Emulsion/Demulsification and<br>Aeration/Foaming in Lubricants                                                               | Tulane University (Department of<br>Chemical and Biomolecular<br>Engineering);   | Kyriakos Papadopoulos;                                                           | <b>1</b>                    | <b>\$ 52,792</b>                 |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | <b>2</b>                    | <b>\$ 51,095</b>                 |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | <b>3</b>                    | <b>\$ 49,258</b>                 |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | .                           |                                  |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | <b>Total</b>                | <b>\$ 153,145</b>                |
| Proposal is a <b>New Request</b>                             |                                                                                                                              |                                                                                  | Does this proposal contain confidential<br>or proprietary information? <b>No</b> |                             |                                  |
| Note: Corrected to reflect actual funds requested \$153,145. |                                                                                                                              |                                                                                  |                                                                                  |                             |                                  |
| <b>022B-08<br/>SCI</b>                                       | Microcapillary Video Imaging of<br>Ionic Liquid Interfacial Phenomena                                                        | Tulane University (Department of<br>Chemical and Biomolecular<br>Engineering);   | Kyriakos Papadopoulos;                                                           | <b>1</b>                    | <b>\$ 51,792</b>                 |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | <b>2</b>                    | <b>\$ 51,095</b>                 |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | <b>3</b>                    | <b>\$ 50,278</b>                 |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | .                           |                                  |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | <b>Total</b>                | <b>\$ 153,165</b>                |
| Proposal is a <b>New Request</b>                             |                                                                                                                              |                                                                                  | Does this proposal contain confidential<br>or proprietary information? <b>No</b> |                             |                                  |
| Note: Corrected to reflect actual funds requested \$153,165. |                                                                                                                              |                                                                                  |                                                                                  |                             |                                  |
| <b>023B-08<br/>SCI</b>                                       | Biofuels from Shrimp Waste -<br>Reaction Kinetics of Esterification<br>by Primary Alcohols under<br>Supercritical Conditions | University of Louisiana at Lafayette<br>(Department of Chemical<br>Engineering); | Rakesh K. Bajpai; Mark E. Zappi;                                                 | <b>1</b>                    | <b>\$ 103,993</b>                |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | <b>2</b>                    | <b>\$ 76,255</b>                 |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | <b>3</b>                    | <b>\$ 78,630</b>                 |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | .                           |                                  |
|                                                              |                                                                                                                              |                                                                                  |                                                                                  | <b>Total</b>                | <b>\$ 258,878</b>                |
| Proposal is a <b>New Request</b>                             |                                                                                                                              |                                                                                  | Does this proposal contain confidential<br>or proprietary information? <b>No</b> |                             |                                  |

| <b>Prop#<br/>Discipline</b>      | <b>Title</b>                                                                                       | <b>Institution/Department</b>                                                | <b>Principal Investigator(s)</b>                                              | <b>Duration<br/>(Years)</b> | <b>BoRSF<br/>Money Requested</b> |
|----------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------|----------------------------------|
| <b>024B-08<br/>SCI</b>           | Development and Optimization of Molecular Ecology Techniques for Oil Industry-related Applications | University of Louisiana at Lafayette (Department of Biology);                | Andrei Chistoserdov;                                                          | <b>1</b>                    | <b>\$ 46,500</b>                 |
|                                  |                                                                                                    |                                                                              |                                                                               | <b>2</b>                    | <b>\$ 46,500</b>                 |
|                                  |                                                                                                    |                                                                              |                                                                               | <b>3</b>                    | <b>\$ 46,500</b>                 |
|                                  |                                                                                                    |                                                                              |                                                                               | <b>Total</b>                | <b>\$ 139,500</b>                |
| Proposal is a <b>New Request</b> |                                                                                                    |                                                                              | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |
| <b>025B-08<br/>SCI</b>           | In Situ Sediment Stabilization and Treatment Device                                                | University of Louisiana at Lafayette (Department of Civil Engineering);      | Donald F. Hayes; Terrence Chambers;                                           | <b>1</b>                    | <b>\$ 150,000</b>                |
|                                  |                                                                                                    |                                                                              |                                                                               | <b>2</b>                    | <b>\$ 100,000</b>                |
|                                  |                                                                                                    |                                                                              |                                                                               | <b>3</b>                    | <b>\$ 100,000</b>                |
|                                  |                                                                                                    |                                                                              |                                                                               | <b>Total</b>                | <b>\$ 350,000</b>                |
| Proposal is a <b>New Request</b> |                                                                                                    |                                                                              | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |
| <b>026B-08<br/>SCI</b>           | An Integrated System for Gene Automation                                                           | University of Louisiana at Lafayette (Center for Advanced Computer Studies); | Rasiah Loganantharaj;                                                         | <b>1</b>                    | <b>\$ 97,623</b>                 |
|                                  |                                                                                                    |                                                                              |                                                                               | <b>2</b>                    | <b>\$ 95,064</b>                 |
|                                  |                                                                                                    |                                                                              |                                                                               | <b>3</b>                    | <b>\$ 86,822</b>                 |
|                                  |                                                                                                    |                                                                              |                                                                               | <b>Total</b>                | <b>\$ 279,509</b>                |
| Proposal is a <b>New Request</b> |                                                                                                    |                                                                              | Does this proposal contain confidential or proprietary information? <b>No</b> |                             |                                  |

| <b>Prop#<br/>Discipline</b>      | <b>Title</b>                                                                                                                       | <b>Institution/Department</b>                                                                                            | <b>Principal Investigator(s)</b>                                                 | <b>Duration<br/>(Years)</b> | <b>BoRSF<br/>Money Requested</b> |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------|----------------------------------|
| <b>027B-08<br/>SCI</b>           | Development and<br>Micromanufacturing of<br>Application-Specific Acoustic<br>Sensors                                               | University of Louisiana at Lafayette<br>(Department of Electrical &<br>Computer Engineering);                            | Mohammad R. Madani; Hongyi<br>Wu; Nian-Feng Tzeng;                               | <b>1</b>                    | <b>\$ 80,000</b>                 |
|                                  |                                                                                                                                    |                                                                                                                          |                                                                                  | <b>2</b>                    | <b>\$ 82,500</b>                 |
|                                  |                                                                                                                                    |                                                                                                                          |                                                                                  | <b>3</b>                    | <b>\$ 85,500</b>                 |
|                                  |                                                                                                                                    |                                                                                                                          |                                                                                  | <b>Total</b>                | <b>\$ 248,000</b>                |
| Proposal is a <b>New Request</b> |                                                                                                                                    |                                                                                                                          | Does this proposal contain confidential<br>or proprietary information? <b>No</b> |                             |                                  |
| <b>028B-08<br/>SCI</b>           | Design and Development of<br>Ultrahigh Strength Microalloyed<br>Steels Immune to Stress-Induced<br>Intergranular Cracking          | University of Louisiana at Lafayette<br>(Center for Structural and<br>Functional Materials and Chemical<br>Engineering); | Devesh K. Misra;                                                                 | <b>1</b>                    | <b>\$ 79,384</b>                 |
|                                  |                                                                                                                                    |                                                                                                                          |                                                                                  | <b>2</b>                    | <b>\$ 80,592</b>                 |
|                                  |                                                                                                                                    |                                                                                                                          |                                                                                  | <b>3</b>                    | <b>\$ 81,863</b>                 |
|                                  |                                                                                                                                    |                                                                                                                          |                                                                                  | <b>Total</b>                | <b>\$ 241,839</b>                |
| Proposal is a <b>New Request</b> |                                                                                                                                    |                                                                                                                          | Does this proposal contain confidential<br>or proprietary information? <b>No</b> |                             |                                  |
| <b>029B-08<br/>SCI</b>           | High Density Polyethylene<br>(HDPE)-clay Nanocomposites with<br>High Fracture Toughness via<br>Cryomilling and Melt<br>Compounding | University of Louisiana at Lafayette<br>(Department of Chemical<br>Engineering);                                         | Devesh K. Misra;                                                                 | <b>1</b>                    | <b>\$ 71,384</b>                 |
|                                  |                                                                                                                                    |                                                                                                                          |                                                                                  | <b>2</b>                    | <b>\$ 72,592</b>                 |
|                                  |                                                                                                                                    |                                                                                                                          |                                                                                  | <b>3</b>                    | <b>\$ 73,863</b>                 |
|                                  |                                                                                                                                    |                                                                                                                          |                                                                                  | <b>Total</b>                | <b>\$ 217,839</b>                |
| Proposal is a <b>New Request</b> |                                                                                                                                    |                                                                                                                          | Does this proposal contain confidential<br>or proprietary information? <b>No</b> |                             |                                  |

| <b>Prop#<br/>Discipline</b>      | <b>Title</b>                                                                                                                               | <b>Institution/Department</b>                                                | <b>Principal Investigator(s)</b>                                               | <b>Duration<br/>(Years)</b>      | <b>BoRSF<br/>Money Requested</b> |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------|----------------------------------|
| <b>030B-08<br/>SCI</b>           | Design, Preparation and Biological Testing of CAY-1 Based Synthetic Saponins as Potent Antifungal Agents                                   | University of New Orleans (Department of Chemistry);                         | Branko S. Jursic;                                                              | 1                                | \$ 121,366                       |
|                                  |                                                                                                                                            |                                                                              |                                                                                | 2                                | \$ 93,116                        |
|                                  |                                                                                                                                            |                                                                              |                                                                                | 3                                | \$ 93,116                        |
|                                  |                                                                                                                                            |                                                                              |                                                                                | .                                |                                  |
|                                  |                                                                                                                                            |                                                                              |                                                                                | <b>Total</b>                     | <b>\$ 307,598</b>                |
| Proposal is a <b>New Request</b> |                                                                                                                                            |                                                                              | Does this proposal contain confidential or proprietary information? <b>Yes</b> |                                  |                                  |
| <b>031B-08<br/>SCI</b>           | Development of Synthetic Methodology and Biological Testing of Magnesidin and its Analogs as Bio-preservatives and Oral Anti-Plaque Agents | University of New Orleans (Department of Chemistry);                         | Branko S. Jursic;                                                              | 1                                | \$ 121,366                       |
|                                  |                                                                                                                                            |                                                                              |                                                                                | 2                                | \$ 93,116                        |
|                                  |                                                                                                                                            |                                                                              |                                                                                | 3                                | \$ 93,116                        |
|                                  |                                                                                                                                            |                                                                              |                                                                                | .                                |                                  |
|                                  |                                                                                                                                            |                                                                              |                                                                                | <b>Total</b>                     | <b>\$ 307,598</b>                |
| Proposal is a <b>New Request</b> |                                                                                                                                            |                                                                              | Does this proposal contain confidential or proprietary information? <b>Yes</b> |                                  |                                  |
| <b>032B-08<br/>SCI</b>           | Development of Flowable Material Injection Procedure for Adjustment of In -place TriDyne Precast Road Panels on Multiple Occasions         | University of New Orleans (Department of Civil & Environmental Engineering); | Norma Jean Mattei;                                                             | 1                                | \$ 54,178                        |
|                                  |                                                                                                                                            |                                                                              |                                                                                | 2                                | \$ 51,678                        |
|                                  |                                                                                                                                            |                                                                              |                                                                                | .                                |                                  |
|                                  |                                                                                                                                            |                                                                              |                                                                                | <b>Total</b>                     | <b>\$ 105,856</b>                |
|                                  |                                                                                                                                            |                                                                              |                                                                                | Proposal is a <b>New Request</b> |                                  |

| <b>Prop#<br/>Discipline</b> | <b>Title</b>                                                                                           | <b>Institution/Department</b>                                     | <b>Principal Investigator(s)</b>          | <b>Duration<br/>(Years)</b> | <b>BoRSF<br/>Money Requested</b> |
|-----------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------|-----------------------------|----------------------------------|
| <b>033B-08<br/>SCI</b>      | Improving Energy Efficiency of Louisiana Industrial Plants by Reactive Power and Co-Generation Control | University of New Orleans (Department of Electrical Engineering); | Parviz Rastgoufard; Ittiphong Leevongwat; | 1                           | \$ 70,000                        |
|                             |                                                                                                        |                                                                   |                                           | 2                           | \$ 70,000                        |
|                             |                                                                                                        |                                                                   |                                           | 3                           | \$ 70,000                        |
|                             |                                                                                                        |                                                                   |                                           | <b>Total</b>                | <b>\$ 210,000</b>                |

Proposal is a **New Request**

Does this proposal contain confidential or proprietary information? **No**

|                        |                                                                                    |                                                                    |                                   |              |                   |
|------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------|--------------|-------------------|
| <b>034B-08<br/>SCI</b> | Novel Solar Cells: Fabrication of Core Shell Nanowires for Solar Energy Harvesting | University of New Orleans (Advanced Materials Research Institute); | Weilie Zhou; Charles J. O'Conner; | 1            | \$ 51,756         |
|                        |                                                                                    |                                                                    |                                   | 2            | \$ 50,106         |
|                        |                                                                                    |                                                                    |                                   | 3            | \$ 48,456         |
|                        |                                                                                    |                                                                    |                                   | <b>Total</b> | <b>\$ 150,318</b> |

Proposal is a **New Request**

Does this proposal contain confidential or proprietary information? **No**

| <b>Summary of Proposals Submitted to the Industrial Ties Research Subprogram(ITRS) for the FY 2007-2008 Review Cycle</b> |                                         |                              |                                         |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------------------------|-----------------------------------------|
| <b>Total Number of Proposals Submitted</b>                                                                               | <b>Total First-Year Funds Requested</b> | <b>Total Funds Requested</b> | <b>Total First-Year Funds Available</b> |
| <b>34</b>                                                                                                                | <b>\$ 2,860,457</b>                     | <b>\$ 7,109,525</b>          | <b>\$</b>                               |