LOUISIANA BOARD OF REGENTS
BOARD OF REGENTS SUPPORT FUND

RESEARCH & DEVELOPMENT PROGRAM

REVIEW OF COMPETITIVE PROPOSALS SUBMITTED FOR FUNDING CONSIDERATION IN THE PROOF-OF-CONCEPT/PROTOTYPING (PoC/P) INITIATIVE

FY 2021-22 COMPETITION

March 2022

LOUISIANA BOARD OF REGENTS SUPPORT FUND

PROOF-OF-CONCEPT/PROTOTYPING (PoC/P) INITIATIVE

FINAL PANEL REPORT

FY 2021-22

BACKGROUND INFORMATION

Twelve (12) research proposals requesting a total of $473,906 were submitted for funding consideration during fiscal year (FY) 2021-22 under the Proof-of-Concept/Prototyping (PoC/P) Initiative of the Board of Regents Support Fund (BoRSF). Of the twelve proposals submitted, one contained information of a confidential or proprietary nature. A two-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 twelve proposals were reviewed by out-of-state experts for scientific and technical merit, commercialization opportunity, and potential for success. The experts included reviewers in each of the following four targeted industry sectors: Advanced Materials and Manufacturing; Life Sciences and Bioengineering; Digital Media and Enterprise Software; and Clean Technology and Energy. Each subject-area reviewer assessed and prepared an in-depth evaluation form for each assigned proposal in the subject area. No proposals were submitted in the Coastal and Water Management targeted area.

All evaluation forms completed by out-of-state experts who participated in Phase I of the review process were available for each member of the final panel ("Panel"), along with all proposals submitted. Each member of the Panel read and studied each proposal and each evaluation prior to the Panel's meeting.

Phase II: Final Panel Review

Three out-of-state experts participated in Phase II of the review process and served on the Panel. The group convened on March 8, 2022, to discuss Phase I subject-area evaluations, prioritize proposals, and develop funding recommendations. The Panel considered each of the twelve proposals extensively and based its recommendations on the following criteria:

A. Scientific and technical merit;

B. Commercial opportunity; and

C. Potential for success.

The Panel was informed that a maximum of $220,000 would be available for new PoC/P research projects. As a result of the Panel's deliberations, three proposals were recommended for funding totalling $119,998. These three Priority One proposals are listed in **Appendix A**, immediately following the narrative section of this report. The final rankings and selections for award were based upon individual ratings of the external reviewers (Phase I) and the Panel's consensus evaluation (Phase II).

Nine proposals were considered insufficiently developed in one or more areas to be worthy of funding at this time (Priority III); these are listed in **Appendix B**. The Panel believes that the investigators should carefully review the Panel's comments and revise and resubmit the proposals in the future, with the prospect that improvements in proposal content could ultimately lead to an award.

The Panel recommends that the Board of Regents commit funding for each Priority One proposal at the level requested for a period of one year and found that none of the remaining proposals should be funded in the current cycle. Remaining PoC/P funds would be better used to support high-quality proposals submitted in other BoRSF R&D programs.

Summary statements are provided in **Appendix C** applicable to the three Priority One proposals listed in **Appendix A**. Summary statements for the nine PoC/P proposals that were insufficiently developed are provided in **Appendix D.** Summaries include the following information for each proposal:

1. Proposal number and title;

2. Strengths and weaknesses of the proposal; and

3. Commercial opportunity or potential for success.

<u>General Comments for Funded Projects</u>

No reduction in the scope of work plans of projects recommended for funding shall be allowed.

Cost sharing and matching commitments are binding. As a condition of funding, types and amounts of institutional matching commitments as stated in the proposal shall be maintained <u>in full</u>.

The project activation date is June 1, 2022 and the termination date is no later than June 30, 2023. No-cost extensions may be requested but are generally discouraged considering the goals of the PoC/P Initiative and must be limited to one (1) year.

Debriefing

Subject-area evaluations for each PoC/P proposal will be available to the applicant in July 2022.

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

APPENDIX A
PoC/P PROPOSALS HIGHLY RECOMMENDED FOR FUNDING
(PRIORITY ONE) (3)

Rank	Proposal No.	Institution	Funds Requested	Funds Recommended
1	004D	LSU A&M	$ 39,998	$ 39,998
2	001D	LSU A&M	40,000	40,000
3	002D	LSU A&M	40,000	40,000
TOTAL			$ **119,998**	**$ 119,998**

Note: The Panel's comments on these proposals are provided in Appendix C. The subject-area review for each proposal will be provided to the applicant in July 2022.

APPENDIX B
PoC/P PROPOSALS NOT RECOMMENDED
(PRIORITY THREE) (9)

003D 008D
005D 009D
006D 010D
007D 011D
012D

Note: These proposals are not recommended for funding as currently submitted. The Panel's comments on these proposals are provided in Appendix D. Subject-area reviews for the proposals will be provided to the applicants in July 2022.

APPENDIX C
PROPOSALS HIGHLY RECOMMENDED FOR FUNDING
(PRIORITY ONE)

Proposal No. 004D **Rank: 1**

Principal Investigator: Rui Zhang, Ph.D.

Institution: Louisiana State University and A&M College

Title: Volumetric Modulated Arc Therapy-Computed Tomography

Comment: The goal of this study is to generate an imaging tool that can provide the patient's anatomy and dose information during VMAT (volume modulated arc therapy) without introducing additional radiation dosages or elevating treatment costs. This is accomplished during VMAT using novel image processing and reconstruction methods and patient-specific information. VMAT CT is said to be advantageous because there is no additional imaging dose prior to therapy; the therapeutic beam is used and can, in theory, provide patient information during therapy. Two tasks are outlined: increasing computational speed and comparing VMAT to other techniques via 50 image pairs. Much of the proposal involves the generation of new and improved algorithms and complex computational tasks with the goal of improving image quality and reducing image reconstruction time to within one minute. This approach is dependent on the availability of parallel computing. The exact hardware requirements are unclear, although it is stated that results can be immediately available to the clinic. The method will be evaluated through the use of phantoms (both rigid and deformable), which will allow evaluation of the effects of movement during therapy and comparison with traditional imaging, as is explained in excellent detail in the proposal. A strong positive is the inclusion of letters from three companies in the field (one in Louisiana) expressing interest in the technology. The PI has current funding, an appropriate CV, and a good list of publications. The budget appears appropriate. Although the pathway to use of the technology in a clinical setting is likely to be long, this project provides an excellent first step. This is a very good proposal that is highly recommended for funding.

FUNDS REQUESTED: $39,998 **FUNDS RECOMMENDED: $39,998**

APPENDIX C (continued)

Proposal No. 001D **Rank: 2**

Principal Investigator: James Dorman, Ph.D.

Institution: Louisiana State University and A&M College

Title: Controlled Depolymerization of Waste Plastics

Comment: This proposal focuses on the demonstration of a process that utilizes RF (radio frequency) induction heating to break down common plastics (polyethylene, polypropylene, polystyrene), which account for a majority of plastic waste. A unique characteristic of the proposed technology is that it can target specific plastics in a waste mixture, allowing for a low-cost, energy-efficient process and eliminating or reducing the need for costly plastic separation. The PI proposes the development of a multistage reactor, with each stage targeted to a specific plastic and modification of commercial catalysts to address common deactivation issues (coking/poisoning) that are likely to occur in the presence of commercial plastics. The proposed process would generate short-chain olefins that could be reprocessed into commercial plastics. This would reduce net energy consumption for the upcycling of waste plastic. The PI has provided laboratory data in support of the process including extensive preliminary data based on catalyst type, plastic type, product output, and temperature. The PI has had NSF funding for research in this area and this proposed work would leverage that research, seeking to move the controlled depolymerization technology towards commercialization. A ~25 kg/day unit, which incorporates a multistage depolymerization reactor, will be constructed in order to demonstrate the technology. It is stated that the ability to meet this minimum plastic processing goal without having to separate the waste streams is the first step in attracting potential commercial partners to license the technology. This is a very good proposal that is highly recommended for funding.

FUNDS REQUESTED: $40,000 **FUNDS RECOMMENDED: $40,000**

APPENDIX C (continued)

Proposal No. 002D **Rank: 3**

Principal Investigator: Hunter Gilbert, Ph.D.

Institution: Louisiana State University and A&M College

Title: Omnidirectional Impact Absorption for Helmets

Comment: The objective of this proposal is to develop a prototype helmet with novel omni-directional shock absorption for rotational movements. A more intelligent design approach is proposed to tune the elastic dampening for both straight line and rotational impact. The PI's team has already developed mathematical models, designed a tunable impact-absorbing structure, and manufactured a custom-designed impact testing apparatus. Once the prototype is completed, the PI plans to assess its performance in comparison with existing state-of-the-art football helmets. It is anticipated that the shock metrics HIC and DAMAGE will be reduced by 30%. It is not mentioned what current levels exist in the marketplace, or how a 30% decrease will make a difference, but such a change should be measurable. The proposal notes that initial simulations show significant improvement over existing technology, but the research plan fails to explain any comparison. The HPS score achieved is 0.7 and is said to be transformative, but competitors' scores were not given. The Panel questioned what the "transformative" descriptor actually indicates. A good market analysis is provided. The PI has assembled an Engineering Advisory Board, an Athletic Training & Equipment Advisory Board, and a Medical Advisory Board in support of this project and has accomplished some preliminary work on simulations and device testing. The PI is a roboticist who studies soft materials, and is well positioned for success in this area. A collaborator has recently worked on welding thermoplastics and does have some experience in composite molding. A second collaborator is a rheological fluids expert working on damping fluids. The team is well assembled for the work as described. The tasks are clearly defined, with the ultimate goal to produce a complete helmet to be submitted for testing according to NFL protocols. The development of the football helmet is in collaboration with Noble Plastics, Inc., and has received financial support from LSU. Noble Plastics has previously supported this work with a prototype, but no cash or in-kind support is included in this proposal. This is a very good proposal that is highly recommended for funding.

FUNDS REQUESTED: $40,000 **FUNDS RECOMMENDED: $40,000**

APPENDIX D

PoC/P PROPOSALS
NOT RECOMMENDED FOR FUNDING (PRIORITY III)

Proposal No. 003D

Principal Investigator: Amirhosein Jafari, Ph.D.

Institution: Louisiana State University and A&M College

Title: A WiFi-Based Privacy-Preserving Contact Tracing System for Commercial Buildings

Comment: This proposal focuses on prototyping a system to use WiFi positioning in developing an automated privacy-preserving contact tracing system (CTS) for use in commercial buildings. It is stated that such a system would be cost-effective in commercial buildings with a centralized WiFi infrastructure, such as office workplaces and university campuses. The PI plans to use a graduate student office on the LSU campus as a test space for the prototype. The main feature of the invention is locating a person's smartphone without the requirement that an app be installed. By not requiring an app, the proposal claimed, privacy can be preserved. Since MAC addresses for the smartphones are required in order to trace people in the office, it is unclear exactly how privacy is being preserved. It is also unclear how some aspects of contact tracing will be conducted. Several issues deserve more consideration. The Panel had several questions, including: (1) Is the spatial resolution of the system adequate to perform contact tracing; (2) How will information (the medical status and MAC address) of persons found to be infected with COVID be entered into the system; (3) How can medical status information be expected to be entered in a timely manner; (4) Does entering the health status of an infected person into the CTS comply with HIPAA; and (5) How are guests/visitors handled? It is not clear how people will be tracked once they leave the WiFi coverage environment (e.g., go home). Although this CTS may represent an interesting computer science problem, it does not appear to be practical and would not replace current activities that constitute contact tracing. It is hard to see a viable commercial opportunity for this product.

APPENDIX D (continued)

Proposal No. 005D

Principal Investigator: Hamzeh Bardaweel, Ph.D.

Institution: Louisiana Tech University

Title: Green Power Module for Portable Electronics and Self-Sustained IoT Enabled Sensor Nodes

Comment: The primary focus of this project is developing a novel low-frequency, tunable, enhanced electromagnetic vibration energy harvesting system as a power module for operating portable electronics and body-worn devices. The ability of the power module to charge a smartphone from human body motion will be demonstrated. Two tasks – building the device and demonstrating its usefulness – are noted, with a goal of providing 10mV. The overall device is explained in detail and the probability of success for the system is high. Unfortunately, the need for such a system and the bulkiness of the package make its commercialization prospects low. The PI argues that the technology can be seen as a replacement for all types of chemical batteries, but the argument is not persuasive. The size of the energy harvesting device appears to be at least twice the size of a cell phone, so it does not seem reasonable to assume it can replace a cell phone's battery. The proposed system depends on movement (such as human body motion), which obviously is not available in static locations; hence, at best such a device would be useable only under very limited circumstances. The Panel notes the current availability of small crank powered generators for hand-held lights and efficient portable solar-powered systems combined with storage banks that provide sufficient power for a variety of electronic devices. It is difficult, then, to see any real utility for the proposed device. It is not clear who would be interested as a commercial partner. Motion-driven power generation has been used for decades to power mechanical devices (predominantly wrist watches) and the PI has been working in vibration harvesting for quite some time with many small grants in similar areas since about 2016. The PI has demonstrated the ability to produce the power module, but the amount of potential sustained power output is not indicated. The ideas driving this project are not novel, yet no means of commercialization has been developed.

APPENDIX D (continued)

Proposal No. 006D

Principal Investigator: Joan Lynam, Ph.D.

Institution: Louisiana Tech University

Title: High Value Natural Clay Nanotube Infused Wood for Enhanced Strength, Insect Resistance, and Flame Retardance

Comment: The project focuses on the introduction of halloysite clay nanotubes into microporous wood surfaces, positing that the introduction of clay nanotubes will strengthen wood by forming a ceramic skeleton, which would also stabilize the wood's shape during drying. The proposal suggests that insect/microbe resistance and flame retardancy could be increased by loading the nanotubes with insect repelling/antimicrobial and/or phosphorus flame-retardant agents. The PI plans to make samples and evaluate the performance of those samples. The primary question revolves around cost versus performance. The current cost of wood products is extremely high and it is hard to see that any improvement in the product would justify an increase in cost. It is not clear that infusing nanotubes with insect repelling, anti-microbial substances offers any logical improvement to simply treating the timber. The use of silver treated nanotubes raises questions of both cost and safety. Surface application is suggested, which raises the questions of adherence and penetration. It appears that the PI needs to develop a clear method to effectively apply the loaded nanotubes to flakeboard and plywood sample surfaces. If the coating is to be applied by spray, then why is this technology not being developed as a paint rather than as a coated-wood product? Dr. Lvov has been working on clay nanotubes for many years and has some current BoRSF funding in the same area. The two PIs complement each other in terms of the probability of success in areas of extraction and enhancement of wood products, but the current project raises more questions than it answers.

APPENDIX D (continued)

Proposal No. 007D

Principal Investigator: David Mills, Ph.D.

Institution: Louisiana Tech University

Title: Metalized Ceramic Nanotube Composite Filtration Systems

Comment: The PI proposes to metalize halloysite nanotubes using copper, gold, silver, and zinc, and to use the metalized nanotubes as part of 3D printed fibers for the purpose of producing antimicrobial filaments for use in the production of various filters. The technique for metalizing the nanotubes has been patented and this one-year project appears effectively to redo previous work. Completion of all the tasks detailed in the proposal timeline over a one-year period is unlikely. There are a variety of relatively inexpensive filters which are effective in excluding bacteria. The problem is more in the application (e.g., to a classroom air supply) than the effectiveness of the material. The use of the proposed material, particularly in PPE, raises questions of safety: (1) Will the fibers shed into the airflow; and (2) Is the respiration of metal-coated clay microfibers hazardous? Certainly, silica fibers are fibrotic in human lungs. Much of the proposed evaluation is aimed at bacteria, though currently airborne viruses are the pathogens of greatest concern. It is unknown if the metal ions are effective in inactivating viruses (as opposed to bacteria). Viral trapping depends on charge in N95 masks. Little is said about antiviral testing, which is a very difficult technology when applied to airborne virions. The proposal gives little support to its contention that the proposed material will have any advantage as an antiviral. The proposal was not carefully prepared. No CV was included, making evaluation of the investigator's background difficult.

APPENDIX D (continued)

Proposal No. 008D

Principal Investigator: David Mills, Ph.D.

Institution: Louisiana Tech University

Title: Nanoenhanced Platelet-Rich Fibrin with Anti-Bacterial and Osteogenic Properties

Comment: The primary goal of this work is to test the antimicrobial and osteogenic properties of Magnesium/Strontium-coated halloysite nanotubes [HNTs] as potential adjuvants, in combination with platelet-rich fibrin [PRF], for bone regeneration in dental implants. The project is in an early stage and the argument for its potential clinical use is based on structural data along with *in-vitro* cytotoxicity and osteogenesis testing. Although the use of metal ions to enhance bone growth is supported to some extent by the literature, it is unclear that using metal-coated halloysite nanofibers will yield improvement. Introduction of metal- or antibiotic-loaded clay nanotubes might well provoke a foreign body response, leading to granuloma formation at the wound site and impeding healing and osteogenesis. Lack of cytotoxicity measured using *in-vitro* testing does not speak to this, although there are *in-vitro* tests which might have helped answer the question. The *in-vitro* studies are appropriate for very preliminary analysis of pro-osteogenic properties in a cell culture system, but do not answer the question of the advantages provided by the nanotubes. There is no evidence that this is necessary. The proposal was not carefully prepared, with several errors and a line inserted from another proposal. This is a very long-term research project not suitable for PoC/P funding, as it will not provide proof of concept of potential utility of the innovation for clinical use.

APPENDIX D (continued)

Proposal No. 009D

Principal Investigator: Shengnian Wang, Ph.D.

Institution: Louisiana Tech University

Title: Producing Valuable Products by Upcycling Plastic Waste

Comment: The project proposes to develop a process to convert waste plastics into high-value luminescent carbon quantum nanodots (CD) and aromatics using zeolites with appropriate textural and acidic features. The PI hypothesizes that CDs with strong quantum yield may be obtained from common plastic wastes. Claims are made concerning the yields of CDs per reactor volume (>99%) and the reduction of facility and operating costs, but without supporting data. The PI has stated that he plans to spin off a startup company based on this technology. Potential licensees of the technology are identified but have not yet been approached. In general, the proposal is vague concerning the process that will be employed to convert the plastic waste. A parametric laboratory study treating several plastics (polyethylene, polypropylene, polyethylene terephthalate, polystyrene, polycarbonate, polymethyl methacrylate, and polyamide) individually with several zeolite catalysts over a wide range of polymer-to-catalyst ratios is proposed. The reactions of these mixtures will also be studied over a wide range of temperatures. The addition of heteroatoms, such as nitrogen and sulfur, will also be investigated. The addition of lignin will be studied to determine whether it has a synergistic effect on the conversion of plastic waste to alkylated aromatics. The stated goal of the work is process development rather than process demonstration. A wide range of studies are proposed to consider the use of zeolites for the production of CDs from waste plastics, the catalytic cracking of waste plastics using zeolites, the co-conversion of lignin/waste plastic mixtures using zeolites, and the hydrogenation of aromatics using zeolites. As presented, this appears to be a research project rather than a proof-of-concept/prototyping project. The PI should consider reducing his focus to the definition of his core technology and demonstration of its feasibility.

APPENDIX D (continued)

Proposal No. 010D

Principal Investigator: William Hollerman, Ph.D.

Institution: University of Louisiana at Lafayette

Title: Developing the Next Generation Proof-of-Concept LabKit

Comment: The purpose of this project is to develop a prototype for a second-generation LabKit, expanding its characterization capabilities by incorporating new methods of analysis. The first LabKit was manufactured in 2013 and the proposal states that only five LabKits have been sold since 2015, with the current market being "somewhat niche." The company that currently manufactures the LabKit, EMCO, is located in Tennessee. There is little incentive to support an upgrade of the extant kit. If the initial kit was an economic success, its sales should have driven the development of an upgrade. The requirement for an oscilloscope and a cost of $10,000 (it is unclear if this is for the new kit) are unlikely to drive sales. The travel budget appears excessive, and supplies should be provided by the company selling the original kit. The consultant appears to pose a conflict of interest and should be disallowed. Ultimately, the Panel views this proposal as proprietary research for the benefit of a single company and thus not appropriate for PoC/P funding.

APPENDIX D (continued)

Proposal No. 011D

Principal Investigator: Mohammad Khattak, Ph.D.

Institution: University of Louisiana at Lafayette

Title: Self-Healing and Self-Sensing Smart Hot Mix Asphalt Mixtures

Comment: This proposal focuses on the development of multifunctional and high-performance hot mix asphalt (HMA) mixtures possessing the smart characteristics of multistage self-healing and self-sensing. The self-healing aspect of HMA mixtures will be enabled through the development of capsules, containing carbon nanotubes and a rejuvenating agent, which will be distributed throughout the asphalt mixture. It is postulated that properly dispersed capsules will provide a maltene fraction to the asphalt at the vicinity of microcracks, thus gluing surfaces together. Subsequently, the carbon nanofibers will stitch together the two crack surfaces through a crack bridging mechanism. The research plan includes the development of the capsules and parametric studies varying both carbon nanofiber/rejuvenating agent ratios and the concentration of capsules added to the asphalt mixture. The resultant asphalt mixtures will be subjected to dynamic shear fatigue testing to evaluate the potential for self-healing. It is not clear how the study levels for the parameters to be varied have been determined. The work described appears to place the proposed project in the class of a research project rather than proof-of-concept/prototyping. Based on the commercialization plan provided in the proposal, the work appears to be intended primarily to provide preliminary data that will be used to develop research proposals for several state and federal granting agencies. No commercial partners (actual or potential) have been identified. There is no mention of a product to be developed over the near term.

APPENDIX D (continued)

Proposal No. 012D

Principal Investigator: Uttam Chakravarty, Ph.D.

Institution: University of New Orleans

Title: An Innovative Method for Harvesting RF Energy with High Efficiency in Regions with Low RF Power

Comment: The objective of this proposal is to foster an innovative method for harvesting broadband radio frequency (RF) energy with high rectenna conversion efficiency to overcome the current limitations of energy harvesting in regions with low RF power (<< 1mW). The proposed methodology covers a wide spectrum of input RF power densities and will extend the scope of RF energy harvesting with high efficiency from the existing frequency bands to future 5G networks. The proposal argues that this will be of particular use where power outages are expected, e.g., Louisiana and the Gulf of Mexico region. The performance of the energy harvester will be explored both theoretically and numerically. Laboratory experiments will be conducted with the proposed configuration of the energy harvester to identify the maximum possible power output and efficiency. The numerical models will be validated by comparing them with experimental results. This appears to be a research project rather than a proof-of-concept or prototyping project. Most of the proposed tasks as described should have been accomplished prior to applying for PoC/P funding (e.g., Task 1 is a literature search concerning the technology). The design must be well underway in order to provide proof of concept or build a prototype within the short time frame of this funding program. It appears that this has been accomplished with the design of the rectenna, but the proposal timeline does not agree. It is not known how much RF energy will be available in the event of a disaster. Indeed, if RF sources are available, it seems likely that there is power available to produce. The project as described will involve an extensive literature search and theoretical design, with much use being made of computational studies. It seems unlikely that a demonstrable model can be produced within the grant period, although there is discussion of testing a model based on the theoretical circuit. The project's theoretical expectations are not made clear. Partner Advano also collaborated on previous attempts at energy harvesting that used mechanical means for energy, so the relationship is established.

APPENDIX E

LIST OF SUBJECT-AREA AND FINAL PANEL REVIEWERS WHO PARTICIPATED IN THE REVIEW PROCESS

LIFE SCIENCES AND BIOENGINEERING

Dr. Radu Marches
Associate Research Scientist
The Jackson Laboratory for Genomic Medicine
Farmington, CT

CLEAN TECHNOLOGY AND ENERGY

Dr. Russell D. Ostermann
Associate Chair
Department of Chemical and Petroleum Engineering
University of Kansas

DIGITAL MEDIA AND ENTERPRISE SOFTWARE

Dr. John M. Usher
Professor and Head
Department of Industrial Engineering
Mississippi State University

ADVANCED MATERIALS AND MANUFACTURING

Dr. Mathew Schaefer
Associate Professor
Department of Mechanical & Industrial Engineering
Milwaukee School of Engineering

Appendix E (continued)

PoC/P FINAL PANEL

Dr. James A. Rice (Chair)
Associate Professor
Department of Mechanical and Industrial Engineering
Marquette University

Dr. Howard Reisner
Professor
School of Medicine
Department of Pathology
University of North Carolina at Chapel Hill

Michael E. Prudich, Ph.D.
Professor and Chairman
Department of Chemical Engineering
Ohio University

Proposals Submitted to the Research and Development Program - Proof-of-Concept/Prototyping (PoC/P) Initiative
for the FY 2021-22 Review Cycle

Proposal #	PI Name	Category	Institution	Project Title	Amount Requested
001D-22	Prof. James Dorman	Clean Technology and Energy	Louisiana State University and A & M College	Controlled Depolymerization of Waste Plastics	$40,000
002D-22	Dr. Hunter Gilbert	Advanced Materials and Manufacturing	Louisiana State University and A & M College	Omnidirectional Impact Absorption for Helmets	$40,000
003D-22	Dr. Amirhosein Jafari	Advanced Materials and Manufacturing	Louisiana State University and A & M College	A WiFi-Based Privacy-Preserving Contact Tracing System for Commercial Buildings	$40,000
004D-22	Dr. Rui Zhang	Digital Media and Enterprise Software	Louisiana State University and A & M College	Volumetric modulated arc therapy-computed tomography	$39,998
005D-22	Dr. Hamzeh Bardaweel	Clean Technology and Energy	Louisiana Tech University	Green power module for portable electronics and self-sustained IoT enabled Sensor nodes	$40,000
006D-22	Dr. Joan Lynam	Advanced Materials and Manufacturing	Louisiana Tech University	High Value Natural Clay Nanotube Infused Wood for Enhanced Strength, Insect Resistance, and Flame Retardance	$40,000
007D-22	Dr. David Mills	Advanced Materials and Manufacturing	Louisiana Tech University	Metalized Ceramic Nanotube Composite Filtration Systems	$37,756
008D-22	Dr. David Mills	Life Sciences and Bioengineering	Louisiana Tech University	Nanoenhanced platelet-rich fibrin with anti-bacterial and osteogenic properties	$36,153
009D-22	Prof. Shengnian Wang	Clean Technology and Energy	Louisiana Tech University	Producing valuable products by upcycling plastic waste	$39,999
010D-22	Dr. William Hollerman	Advanced Materials and Manufacturing	University of Louisiana at Lafayette	Developing the Next Generation Proof-of-Concept LabKit	$40,000
011D-22	Dr. Mohammad Khattak	Advanced Materials and Manufacturing	University of Louisiana at Lafayette	Self-Healing and Self-Sensing Smart Hot Mix Asphalt Mixtures	$40,000
012D-22	Prof. Uttam Chakravarty	Clean Technology and Energy	University of New Orleans	An Innovative Method for Harvesting RF Energy with High Efficiency in Regions with Low RF Power	$40,000

Total Number of Proposals Submitted	12
Total Funds Requested	$473,906