Successfully Getting Your Work Funded

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Strategic Initiatives and Proposal Development

Three Phases of Funding Success

1. Capture Planning
2. Proposal Planning
3. Proposal Development

Capture Planning

"Capture Planning is the process of identifying opportunities, assessing the competitive environment, and devising winning strategies oriented towards winning a specific funding opportunity." (Shipley Associates Capture Guide v. 3.0, 2014)

Capture Planning is doing your homework to understand funding sources/agencies and your potential competitors, and coming up with ways to make your time and effort investment worthwhile.

Identify Funding Opportunities

Pivot Funding Database

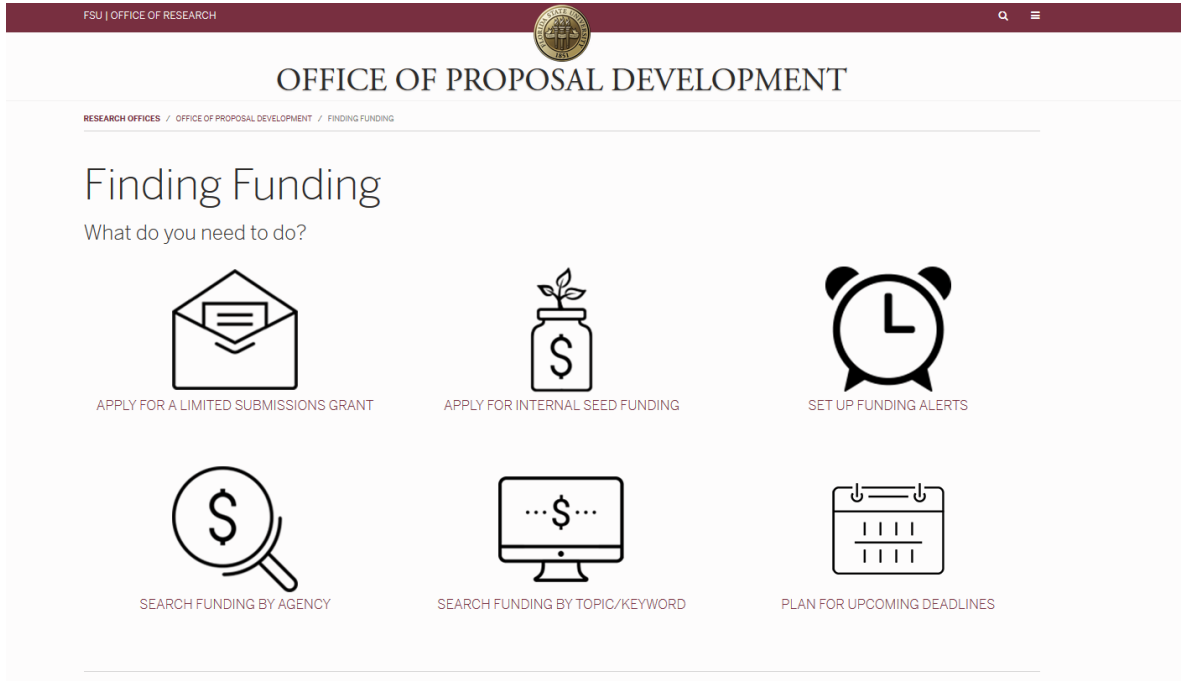
- Database of funding opportunities
- Access using @fsu.edu email address
- Works exactly like any journal database

Other Ways to Find Funding

Colleagues/Strength of Weak Ties

Agency Newsletters

Google



Understand Funding Opportunities and Funding Agencies

The goal of a funding opportunity is to help a funding agency achieve it's mission

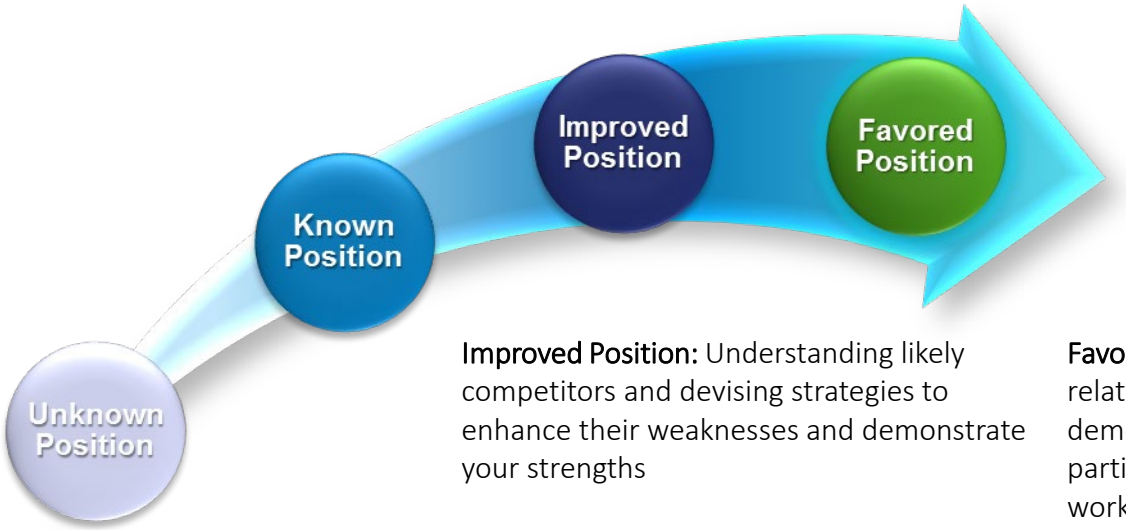
To be successfully funded, your interests and the funding agency's mission must align

In order to ensure a match you must study:

- Funder's Website (About Us, Priorities, History, etc.)
- Strategic or Annual Reports
- Speeches/Presentations by Top Officials
- Previous Awards or Awardees
- The Funding Opportunity Announcement

Build a relationship with Program Officers! They can provide invaluable insight into the fit and competitiveness of your projects.

Why Bother with Capture Planning?



Unknown Position: Finding an opportunity and submitting a proposal

Known Position: Aligning your goals with the funders, and connecting with funding agency representatives

Improved Position: Understanding likely competitors and devising strategies to enhance their weaknesses and demonstrate your strengths

Favored Position: Building long-term relationships with funding agencies by demonstrating successful projects and participating in strategic planning workshops.

The goal of Capture Planning is to improve a seller's position with buyers, making a proposal more likely to be funded

Proposal Planning

Read and “Shred” the Funding Opportunity

Establish a proposal writing schedule

Identify Features, Benefits, and Discriminators, and develop proposal themes

Develop a Proposal Outline and draft content

Read the Request For Proposals

Understand EXACTLY what is required

Read the RFP (or FOA, Solicitation, Announcement, etc.)

Re-read the RFP

“Shred” the RFP by reading line by line developing a checklist of each requirement

Every question, every request for description, every “shall”, “will”, “must”, ”should” gets its own checklist item.

Developing this checklist is the best way to ensure that you address every requirement

Establish a Proposal Schedule

Work backwards from proposal due date to establish a timeline

Using the proposal checklist, develop a list of specific tasks for the project, and establish start and end dates for those tasks

Work around “hard” deadlines first (e.g. Sponsored Research 3-Day Rule, IRB, etc.)

Be realistic in your estimates!

Do not count weekends, holidays, etc. as working days (this is your contingency time)

Plan time for reviews and feedback

Developing and sticking to a proposal schedule decreases stress and anxiety, increases your ability to ask for help, and ultimately increases proposal quality.

Identify Features, Benefits and Proposal Themes

Features: Separate aspects of your proposed project (i.e. methodology, research direction, etc.)

Benefits: The ways in which your Feature solves a problem that the buyer cares about

*Discriminators: Features that you have, that no one else has

Proposal Themes: Statements that specifically connect a feature with a benefit

Themes convey the most important information to reviewers

Funders buy benefits, not features

Focus on identifying and specifying your features and benefits, and communicate them via the theme

Draft Proposal Outline and Content

If an agency (or RFP) specifies or suggests an outline, you MUST follow that outline

If none is specified, try to find a successful example proposal and follow that outline

If all else fails, follow Heilmeier's Catechism:

- What are you trying to do?
- How is it done today, and what are the limitations of current practice?
- What's new in your approach, and why do you think it will be successful?
- Who cares? What difference will this make?
- What are the risks?
- What are the mid-term and final checks for success?

Why Bother with Proposal Planning?

Having a plan saves time and effort, and increases the quality of your proposal

Planning is **critical** for collaborative and team projects

Proposal Development

Proposal Development = Proposal Writing

Project Description

I. Overview and Significance of the Proposed Project

Research: The development of solid electrolytes for all solid-state rechargeable Li/Na-ion batteries faces a few major challenges, including high interfacial resistance, low electrochemical and thermal stability, microstructure-induced short-circuit, and poor mechanical properties. Glass-ceramics, with significant advantages over conventional glass or ceramic alkaline-ion electrolytes (Fig. 1), have emerged recently as a new solution to address these challenges[1-6]. Glass-ceramics combine the benefits of high ionic conductivity, absence of inter-particle transfer resistance, and good stability. However, the properties of glass-ceramics are highly dependent on structures, phase compositions, and ion dynamics in these two-phase composites. The optimization of these parameters largely relies on the trial-and-error approach at this stage. In addition, current glass-ceramic electrolytes are limited to Na superionic conductor (NASICON)-based structures. **This proposed work aims to understand the dynamic structure -property-performance relationships of glass-ceramic electrolytes with in situ synthesis and in operando characterizations**. The objective of the *in situ* synthesis is to achieve predictive and controlled synthesis of glass-ceramics with high Li/Na ion mobility and to expand the variety of suitable glass-ceramics beyond NASICON-based structures. The tools for *in situ* synthesis include the high-temperature high-resolution NMR facility set up by the PI's group at the National High Magnetic Field Laboratory (NHMFL), complemented by *in situ* synchrotron-based X-ray and neutron diffraction at national user facilities. The combination of NMR and diffraction techniques allows probing both long- and short-range structures, which is particularly useful for glass-ceramics containing both ordered ceramic particles and amorphous glass phase. NMR is capable of determining both structure and ion dynamics simultaneously, which permits real-time structure-ion mobility correlation and fast screening of kinetically stable phases for good ion conductors. In addition, first principles calculations will be carried out, in conjunction with experiments, to ensure accurate structure determination with property prediction of ion conduction. The objective of the proposed *in operando* characterizations is to determine suitable structural and compositional characteristics of glass-ceramics for fast ion conduction, low interfacial resistance, and good stability when they are used in all-solid-state batteries. *In operando* characterizations will be mainly performed at the NHMFL with NMR/MRI, complemented by high-resolution transmission electron microscopy (TEM) and X-ray photoelectron spectroscopy (XPS). With these tools, the structure, composition, and homogeneity will be non-invasively probed in the bulk of the glass-ceramic electrolytes and the electrolyte/electrode interface during battery operation and will be correlated with the changing interfacial resistance and long-term stability. The new knowledge in the real-time relationships between structure/composition/homogeneity and conductivity/stability, obtained from *in situ* and *in operando* characterizations, will facilitate the development of high-performance Li/Na glass-ceramic electrolytes for the next-generation all-solid-state Li/Na rechargeable batteries.

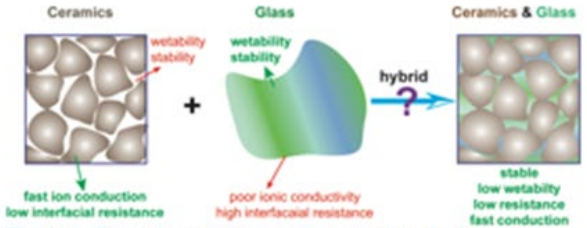


Figure 1. Ceramic and glass oxide electrolytes have intrinsic limitations to fulfill the requirements for all-solid-state batteries. Glass-ceramic composites are a promising solution, but fundamental research is critical to gain necessary knowledge regarding their synthesis, processing, and in device performance.

Education: The proposed educational activities are derived from the proposed research component and the outcomes of the educational plan will in turn support the research. The objectives of the educational component are to engender self-sufficiency, to promote broad participation in scientific research, and to enhance critical thinking skills of the participants. The first proposed activity is to train young scientists national wide how to make, modify, and repair probes for NMR/MRI. This activity is motivated by two realities: i) almost every institution has at least one NMR facility or is in the processing of acquiring one; ii) the monopoly of the NMR probe market by a single vendor, the limited permission from the NMR vendor for modifying the probe, and the high-cost, long waiting time for repair. Probe workshops will be organized

Bold, *italicize,* and/or underline key points

CREST Center for Complex Materials Design (*CoManD*) for Multidimensional Additive Processing

Project Description

A. Rationale for Center: The aim of the *CREST Center for Composite Materials Design* (***CoManD***) *for Multidimensional Additive Processing* is to promote additive manufacturing of conventional and novel device structures, with an effort towards ab-initio fundamental understanding of material-property relationships that govern the working forces behind high-rate applications for bio, energy and production of light-weight structures. Additive processing holds great promise towards reduction of costs and will help solve key manufacturing challenges to fabricate materials of interest [1-5]. The PI's at **Florida Agricultural & Mechanical University (FAMU)** individually are experts in their fields, and are funded to investigate the chemistry, physics, and engineering of soft materials in the areas of organized structures at the mesoscale (Ramakrishnan, Mateeva), energy and electronic devices (Dickens) and biomedical research (Sachdeva, Dev). It is our goal in *CoManD* to combine the expertise of the faculty at FAMU to develop an integrated research and education program on additive manufacturing which not only meets the technological demands of the 21st century but also trains the next generation of minority scientists and engineers. ***As a result of the CoManD we expect to produce 15-20 African American PhD's, directly impact 30-40 undergraduates and have an influence on ~ 100 graduate students and ~ 300 undergraduates through research collaborations and coursework***. This would be a significant increase in FAMU PhD's and would help to assist them in exceeding expectations of the Florida University System. Collaborations with Florida State University (FSU), the National High Magnetic Lab (NHMFL), Harvard, MIT, Argonne National Lab (ANL), and the Air Force Research Labs (AFRL), will allow *CoManD* scholars to benefit from the opportunity to carry out research and be educated by leaders in their fields, thus building a sustainable education and mentoring network for FAMU faculty and students.

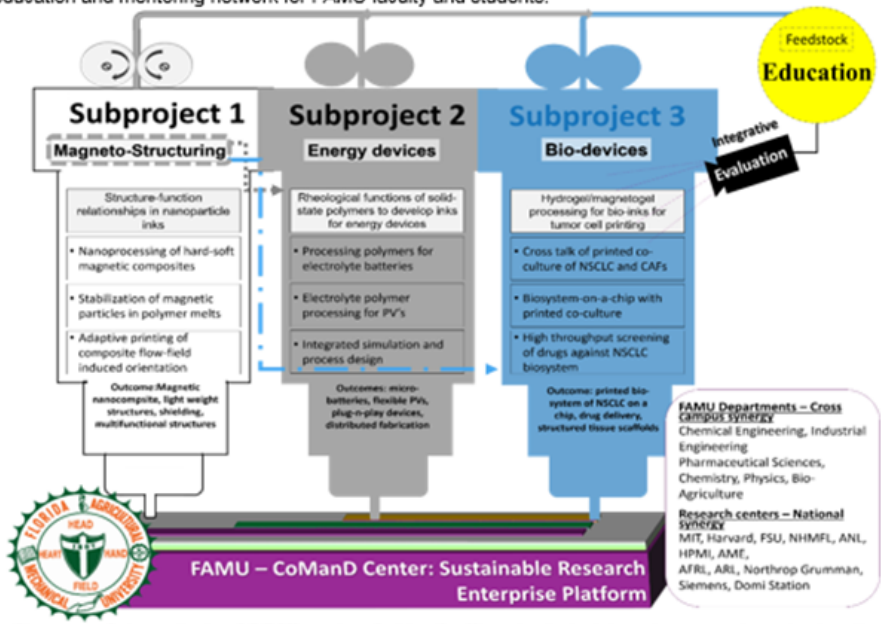


Figure 1: Schematic for CREST center ***CoManD***– The aim is to integrate research and education to produce novel materials/devices for different applications using additive processing and at the same time get a fundamental understanding of the manufacturing process.

B. Description of the Research Objectives of the Center: The ability to pattern multiple materials (on micrometer length scales) in three dimensions is critical for several technological applications including composites, microfluidics, photonics, and tissue engineering, which are of interest to the different federal directorates and technology areas. Several challenges occur in the processing of these structures that inhibit overall performance, which will ultimately decide the direction of future applications[2,7,8]. One key challenge is to combine different materials and to control the minimum feature size down to the submicrometer lengths scales (e.g. feature sizes down to 1-10μm are critical for creating interdigitated microbattery architectures or biocompatible scaffolds). ***It is our aim in the CoManD Center to assemble novel materials (by self-assembly) and further control assembly from the micro to macro scale by field induced (flow, electric and mag fields) assembly and additive manufacturing***. In addition to manufacturing it is also of interest to address fundamental issues of how different materials are assembled into useful structures resulting in interesting macroscopic properties. Such fundamental studies will result in novel design rules for materials processing. A schematic of our center is given in Figure 1. Through the CREST center we will: a) continue to strengthen our collaborations with NSF funded centers/programs at NHFML/FSU, Harvard University (MRSEC), MIT, ANL and AFRL to further integrate research and education for STEM minorities and women and b) enhance investment in the research and educational infrastructure at FAMU, a historically black college/university (*HBCU*) with 90% African-American students. We intend to recruit, retain and train a highly skilled and prepared female demographic workforce for skills essential to re-stocking America's academic, federal research and scientific institutions. The demographics of FAMU is predominantly 65% female, however, the population of STEM is only ~5%. The *CoManD Center* is committed to a strong concerted effort to attract this minority pool as the feedstock for a successful educational research and training program at FAMU.

The proposed research of CoManD will be greatly aided by the recent **securing of a Department of Defense Equipment (Defense University Research Instrumentation Program – DURIP) grant (~ 340K) for a high end 3D printer for manufacture of materials** of interest to the department of defense (Air Force). The nScrypt 3Dn series is a digital manufacturing platform with the ability to host up to five printing heads or devices to print on curved surfaces, build 3D structures, pick and place a component, and micro-milling/drilling. Performance is achievable with a motion control accuracy of ±5 microns and repeatability of ±2 microns in XY. The 3Dn-HP series uses a high precision platform with motion control accuracy of ±1.5 microns and repeatability of ±0.5 microns. This enhanced precision of the 3Dn-HP series provides the capability for high precision/accuracy material placement when very fine feature size and spacing as needed. The patented SmartPump™100 is a micro-dispensing pump manufactured by nScrypt that has a volume control of dispensed materials of 100 picoliters, this includes low viscosity (a few cP) to high viscosity (more than 1,000,000 cP) materials. In addition, the patented pen tip shape allows extreme viscosities to be dispensed utilizing small orifices (as small as 12.5um) at significantly lower pressures. The patent pending nFD™ has the ability to print thermoplastics and composite thermoplastics with temperatures ranging from room temperature up to 400C. The compact designed process view camera system provides close up real time viewing of the printing process. **It is our aim in the CREST center to *leverage* this equipment grant and use the printer to fabricate materials of technological interest and in answering fundamental science questions.** In addition to the equipment grant, *PI S. Ramakrishnan spent his NSF funded sabbatical (spring 2016) at Harvard University (MRSEC) and MIT in developing materials of interest related to bio-, structural material and energy related devices.* This equipment however does not come with a biosafety hood and other accessories to do biological work and hence for subproject 3, a request for an additional Bioprinter has been made.

Targeted AIMs/ Center Research Subprojects (CRS): ***Our aim in all three subproject areas*** is to (1) gain a fundamental understanding of the materials assembly and processing through a combination of experiments, simulations and theory. (2) Develop and use novel characterization tools for the proposed materials/devices and (3) use additive manufacturing to make these structures/devices. ***It is our goal to develop this framework for the three different subprojects mentioned in this wor***k. We feel such an integrated effort will help in developing design rules for processing of a wide variety of materials. In fact, the fundamental experiments/simulations developed for energy materials will help build better biomaterials and even structural magnetic materials (synergistic efforts). There is significant synergy in the projects proposed since synthesis, characterization and processing tools developed in one subproject will be used in the others for defined end points. For example, a fundamental understanding of nanoparticle/polymer

Present Your Ideas Simply

The more simply an idea is presented, the more understandable and credible it is to readers. “Big” Words obscure meaning and increase the mental resources necessary for reading comprehension.

Examples of “Big” Words and Phrases:

“ This project will elucidate the theory of science”

“education activity allows students to experience visual impressions of a working lab”

“At the present moment in time we would like to call attention to the fact that”

“More specifically,…”

Always define acronyms on first use, and remind the reader periodically!

Avoid Grandiose Language

Grandiose language is hard to support, and is often subjectively applied.

Instead, be as specific as possible about expected outcomes.

Examples of Grandiose Language:

"The proposed project will revolutionize the field of science"

"The proposed research represents a total paradigm shift"

"This research will solve climate change and end world hunger"

"This project will be the most important work in physics since the days of Einstein"

"With this single $100k grant, I will…(lists tasks that would require $1M)"

Avoid Run-on Sentences

Each sentence should present a single idea.

- Acquaintance with ongoing research projects at FSU related to electric ship technologies, superconducting power systems, and cryogenic systems, as well as the development efforts in collaboration with many Navy contractors, provide opportunities for the students in the Program to connect their individual research efforts to powerful future superconducting ship technologies, and prepare them for future engineering careers in these fields which are rapidly expanding due to the needs of a 21st century Navy which is faced with evolving geopolitical threats.

- This book takes as its point of departure the simple thesis that surveillance as we know it in contemporary American culture is both unimaginable and unintelligible without a critical appreciation of the work of a network of corporate leaders, moral crusaders, and ideological policemen, motivated by preserving a specifically Protestant way of life, who helped build the machinery of private and public surveillance that simultaneously sustains and challenges the public sphere as we understand it today.

Avoid Walls of Text

Walls of Text are easy to get lost in, and lead to lower retention of detail.

BAD

The Florida Department of Agriculture and Consumer Services (FDACS), Office of Energy, and Office of Agricultural Water Policy, will establish the Farm Renewable and Efficiency Development (FRED) program, an innovative approach/incentive program to promote the adoption of technologies and practices that increase energy and water efficiency, as well as renewable energy use in Floridian agriculture. Florida's 47,500 farms produce nearly 300 different commodities on more than 9 million acres of land. Florida's agriculture industry employs 2 million people and contributes more than $104 billion to the state's economy each year. Currently, FDACS (in a partnership with NRCS, the University of Florida, the Florida Farm Bureau, and numerous Florida counties and private partners) operates the Mobile Irrigation Lab (MIL) program, which provides to farmers free, site specific, evaluations of irrigation systems and opportunities for water conservation. MILs are made up of one or more trained irrigation specialists who evaluate the performance of a farm's irrigation system through measurement and observation. MIL teams use these observations to develop site specific irrigation water management plans. 16 MILs operate in 66 Florida counties, and have proven to be highly successful; since 2004, MILs have conducted 6,300 evaluations on 247,000 acres of land saving an estimated 10 billion gallons of water per year, with the potential to save 24 billion gallons per year if all recommendations were implemented. The proposed program will expand the capabilities of the MILs and create Mobile Efficiency Labs (MEL) that will conduct on-farm evaluations of the potential for energy and water efficiency as well as renewable energy upgrades. After participating in an evaluation, farmers will immediately be eligible for financial assistance for the implementation of the MELs recommendations. Outreach to farmers fitting the criteria for historically underserved producers (as defined by 7 CFR 1466) will be a priority. Finally, FDACS will conduct a study on the effectiveness of the program, and the future energy and water needs of agricultural producers in Florida. To promote the adoption of energy and water efficiency best management practices in the Florida agricultural industry, particularly amongst historically underserved producers, through the use of the Mobile Efficiency Labs. To stimulate the implementation of energy/water efficiency and renewable energy technology that will benefit individual farmers by decreasing energy and water costs and increasing productivity and efficient use of resources. To study the impact of the FRED program on participating agricultural producers, and to identify future energy/water needs and areas for improvement. The FRED program will be comprised of three phases: MEL teams of trained energy and water specialists will target EQIP eligible farmers to conduct an evaluation of their energy and water usage through observation and measurement. Based on this evaluation, the team will provide a report recommending ways to improve the performance and efficiency of the farm's energy and water systems. This report will consist of best management practices for water and energy, as well as recommendations for specific infrastructure upgrades intended to maximize efficiency, which may include the utilization of on-farm renewable energy generation (solar, wind, biomass, etc.). Whether or not the farmer chooses to make the recommended upgrades, the increased knowledge of their energy and water usage, combined with the best management practices, will likely result in a change of behavior resulting in greater efficiency. This benefits the farmer, in terms of costs reduced and production increased, and the environment, in terms of reduced water usage and reduction of environmental pollutants. After receiving their evaluation report, farmers will be eligible to immediately apply for up to $25,000 (with 20% cost share) in funding to implement recommended energy/water efficiency and renewable energy upgrades. Applications will be accepted on a rolling basis until funds designated for implementation are expended. The immediate eligibility will result in a dramatic reduction in the lag time between when a farmer

1

GOOD

A. Project Background:

The Florida Department of Agriculture and Consumer Services (FDACS), Office of Energy, and Office of Agricultural Water Policy, will establish the Farm Renewable and Efficiency Development (FRED) program, an innovative approach/incentive program to promote the adoption of technologies and practices that increase energy and water efficiency, as well as renewable energy use in Floridian agriculture. Florida's 47,500 farms produce nearly 300 different commodities on more than 9 million acres of land. Florida's agriculture industry employs 2 million people and contributes more than $104 billion to the state's economy each year. Currently, FDACS (in a partnership with NRCS, the University of Florida, the Florida Farm Bureau, and numerous Florida counties and private partners) operates the Mobile Irrigation Lab (MIL) program, which provides to farmers free, site specific, evaluations of irrigation systems and opportunities for water conservation. MILs are made up of one or more trained irrigation specialists who evaluate the performance of a farm's irrigation system through measurement and observation. MIL teams use these observations to develop site specific irrigation water management plans. 16 MILs operate in 66 Florida counties, and have proven to be highly successful; since 2004, MILs have conducted 6,300 evaluations on 247,000 acres of land saving an estimated 10 billion gallons of water per year, with the potential to save 24 billion gallons per year if all recommendations were implemented. The proposed program will expand the capabilities of the MILs and create Mobile Efficiency Labs (MEL) that will conduct on-farm evaluations of the potential for energy and water efficiency as well as renewable energy upgrades. After participating in an evaluation, farmers will immediately be eligible for financial assistance for the implementation of the MELs recommendations. Outreach to farmers fitting the criteria for historically underserved producers (as defined by 7 CFR 1466) will be a priority. Finally, FDACS will conduct a study on the effectiveness of the program, and the future energy and water needs of agricultural producers in Florida.

B. Project Objectives:

Objective One: To promote the adoption of energy and water efficiency best management practices in the Florida agricultural industry, particularly amongst historically underserved producers, through the use of the Mobile Efficiency Labs.

Objective Two: To stimulate the implementation of energy/water efficiency and renewable energy technology that will benefit individual farmers by decreasing energy and water costs and increasing productivity and efficient use of resources.

Objective Three: To study the impact of the FRED program on participating agricultural producers, and to identify future energy/water needs and areas for improvement.

C. Project Methods:

The FRED program will be comprised of three phases:

Phase One: MEL On-Farm Evaluations
MEL teams of trained energy and water specialists will target EQIP eligible farmers to conduct an evaluation of their energy and water usage through observation and measurement. Based on this evaluation, the team will provide a report recommending ways to improve the performance and efficiency of the farm's energy and water systems. This report will consist of best management practices for water and energy, as well as recommendations for specific infrastructure upgrades intended to maximize efficiency, which may include the utilization of on-farm renewable energy generation (solar, wind, biomass, etc.). Whether or not the farmer chooses to make the recommended upgrades, the increased knowledge of their energy and water usage, combined with the best management practices, will likely result in a change of behavior resulting in greater efficiency. This benefits the farmer, in terms of costs reduced and production increased, and the environment, in terms of reduced water usage and reduction of environmental pollutants.

Phase Two: Farm Renewable and Efficiency Development (FRED) Grant Program
After receiving their evaluation report, farmers will be eligible to immediately apply for up to $25,000 (with 20% cost share) in funding to implement recommended energy/water efficiency and renewable energy upgrades. Applications will be accepted on a rolling basis until funds designated for implementation are expended. The immediate eligibility will result in a dramatic reduction in the lag time between when a farmer has an evaluation conducted, and the installation of their chosen upgrades, leading to greater enthusiasm for the adoption of the recommended efficient and renewable technologies. MEL teams will provide assistance to applicants in the development of their proposals, and FDACS will review and approve applications. The choice of which, if any, technologies to adopt will be left up to the individual farmer.

Phase Three: Economic Impact Study
The Office of Energy will procure a qualified contractor to perform an economic analysis of the impacts of the FRED program. Emphasis will be placed on the evaluation/ upgrades effect on the net revenue, net cost, yield variability, and other measures of economic risk and impact. The study will consist of data collection and evaluation, as well as case studies of the individual projects. All recipients of funds will be required to provide information on the impact of the project on their farms. The study will aid FDACS and other stakeholders in the development of future programs and policies. Information from the study will also be used to produce pamphlets promoting water and energy best management practices, citing real world examples.

Be Specific

Do not leave room for interpretation, because it might not be what you meant

BAD

1. “Based on this prior research, the next step is obvious.”
2. “Once Process A has been completed, we will then begin work on Process C”
3. “The results of Process A are shown in Table 1.”
4. “We expect our work to yield important results.”
5. “We will work with our partners to complete the project”

GOOD

1. “Based on this prior research the next step is (state the next step)”
2. “Once Process A is complete, we will begin Process B, which leads to Process C.”
3. “The results of Process A are shown in Table 1. These results mean…”
4. “We expect our work to yield important results. (specifically state the important results).”
5. “We will work with our partners to complete the project. Specifically, we will conduct process A, they will conduct process B, and we will collaborate on Process C.”

Use Graphics Appropriately

Graphics draw readers attention, and increase their understanding and retention of content

- Charts show relationships/flow between ideas
- Graphs show data correlations, trends, comparisons, etc.
- Photos show realism, or tangibility
- Illustrations convey specific features/details while removing confusing details
- Maps/drawings show relationships and scale
- Tables emphasize the absolute value of numbers.

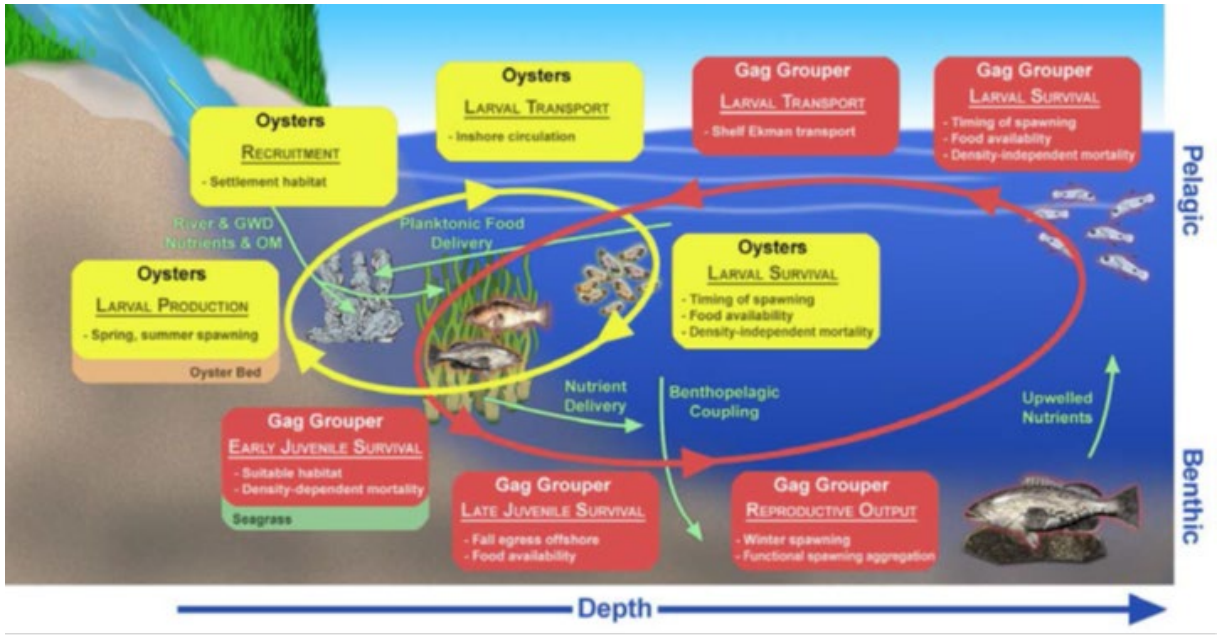


Figure 1. Schematic of interactive pathways of abiotic and biotic factors of fish in the Gulf of Mexico

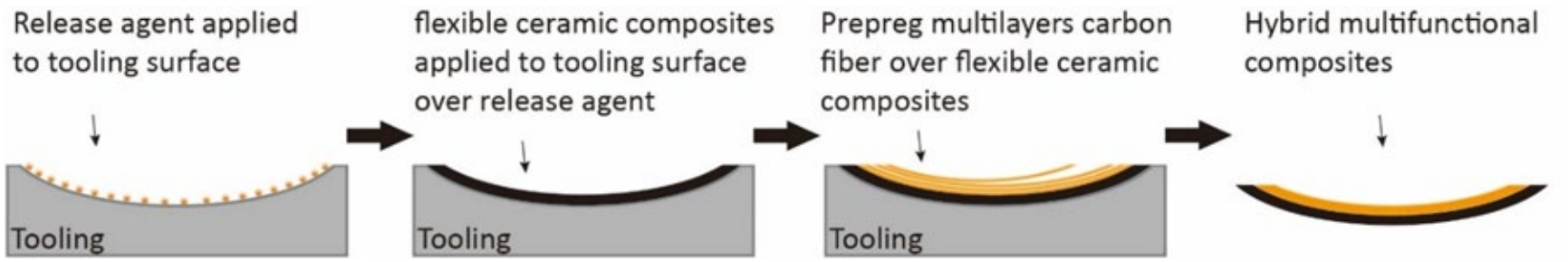
Don’t Use Graphics JUST to Use Graphics

Figure 1. The Gulf of Mexico

Figure 1. Advanced Aeronautical Applications

Use Captions Instead of Labels

Captions interpret the visual and provide the connection between the features and benefits



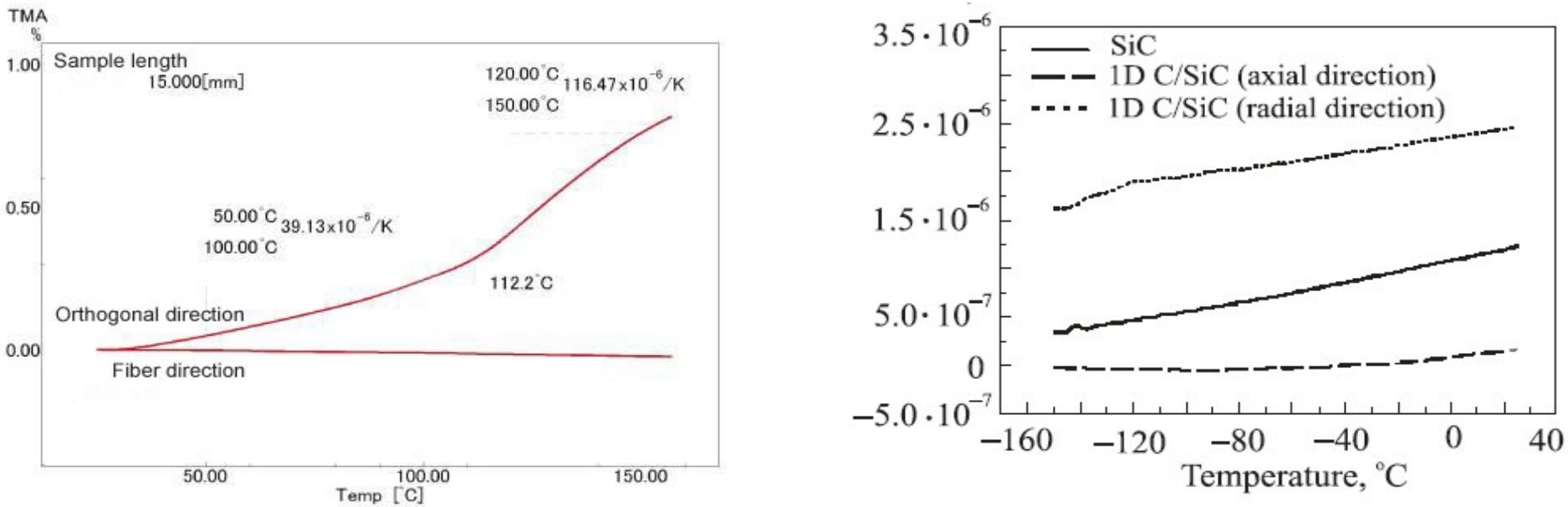
Label

Figure 1. The proposed co-curing lay-up procedure

Caption

Figure 1. The co-curing lay-up procedure bonds a ceramic composite layer to the outside surface of CFRP composites. This results in stronger, yet lighter, structural components for use in advanced aeronautical applications

Use Captions Instead of Labels



Label

Figure 1. The Coefficient of thermal expansion (CTE) for CFRP Composites (left) vs SiC composites (right).

Caption

Figure 1. The Coefficient of thermal expansion (CTE) for CFRP Composites (left) vs SiC composites (right). Our CFRP composite demonstrates a lower CTE, resulting in less expansion at high temperatures. Materials with low CTE are necessary to enable next-generation supersonic aircraft.

Proposal Structure

Emphasize the future

Science was first studied by the Ancient Greeks, and since then has evolved to……

(long explanation of the field of science with many citations)

The proposed project will add to the field of science by….

The proposed project will add to the field of science by….

This is an important advancement in the field of science because…

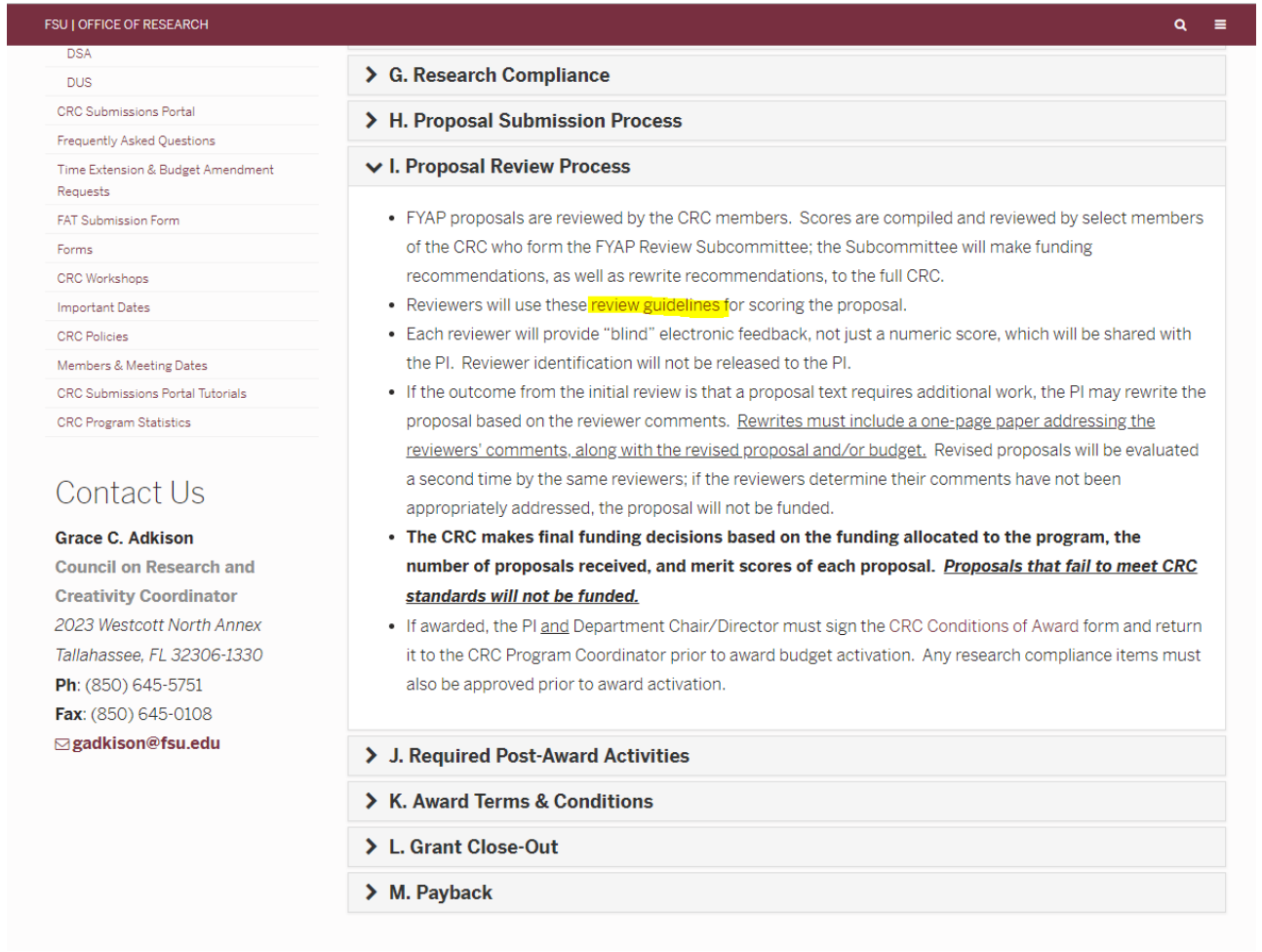
Science was first studied by the Ancient Greeks, and since then has evolved to……

(**Concise*** explanation of the field of science with most important and relevant citations)

(*enough to let them know that you know what you are talking about, and that what you are proposing to do is supported by prior research)

People tend to best remember the FIRST and LAST things they read.

The proposal should state within the first paragraph exactly what you are proposing to do.



Write Specifically to Review Criteria

Keep in mind that each section of the proposal text should be written in clear, concise language so that reviewers from any discipline will be able to understand what is being stated.

Always read and understand the proposal review criteria before you start writing

Example 1: Project/Issue and Goals

- Reviewer Criteria:
  - “Is the project/issue the project will address important/significant in the PI’s area of research?”
- Your Proposal:
  - “(Insert topic) is an important area of research in (PI’s field) because….”

Example 2:

- Reviewer Criteria:
  - Are the research methods and/or creative activities appropriate in light of the goals/objectives of the project?

- Your Proposal:
  - “The proposed methodology was selected because…”
  - “These methods are appropriate to address the project goals because…”

Write Specifically to Review Criteria

Keep in mind that each section of the proposal text should be written in clear, concise language so that reviewers from any discipline will be able to understand what is being stated.

Example 3: Broader Impacts

- Reviewer Criteria:
  - “Is the project clearly related to the PI’s long-term research goals?
- Your Proposal:
  - “ The PI’s long-term research goals are……This proposed project helps to fulfill those goals by….”

Example 2: Differentiation from Dissertation Research:

- Reviewer Criteria:
  - Is the proposed project a substantive departure from or modification of the PI’s dissertation work?

- Your Proposal:
  - “ This proposal represents a substantive departure from my dissertation by….”
  - My dissertation (title of dissertation) focused on X. The proposed project focuses on Y (or X+1).”

Write Specifically to Review Criteria

Keep in mind that each section of the proposal text should be written in clear, concise language so that reviewers from any discipline will be able to understand what is being stated.

Budget Development

Ask for EXACTLY what you need

If you “pad” the budget with extra expenses, reviewers will call you on it

If you ask for too little, reviewers will question if you can accomplish your tasks

Make sure to budget for all tasks

“How are they going to do it if they don’t have any money?”

Work with your department/college financial staff to complete the budget according to the funding opportunity’s instructions.

A Complete Proposal

Proposals also require additional documentation beyond the project narrative

Biosketches/CV's, letters of support, equipment and facilities descriptions, data management plans, post-doc mentoring plans, etc.

These will take longer than you think to collect and format

Not completing these as instructed can get you rejected without review

Questions?

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