



Wearable Technologies



University of Puerto Rico  
Central Administration  
Rio Piedras: (787) 765-5170  
ext. 2117  
Mayaguez: (787) 832-4040  
ext. 3766

**IRG 2 EXPLORATORY FUNDS COMPETITION**  
**FY 2021-2022**  
**SUBMISSION DEADLINE: JANUARY 12, 2022**

## INTRODUCTION

The objective of the exploratory research grants within CAWT IRG2 is to provide seed funding for the development of novel and innovative ideas in the area of energy harvesting and storage for wearable technologies. Specifically, they are intended to:

- 1) Leverage on collaborations within the CAWT/IRGs, other jurisdiction researchers and CAWT facilities.
- 2) Be catalytic in seeking competitive (federal) funding.
- 3) Translate to high-risk/high-payoff research work.
- 4) Be within the scope of the NSF cooperative agreement.
- 5) Lead to tangible outcomes targeted at power needs of wearable devices.
- 6) Capitalize on existing CAWT resources.

The participation and inclusion of IRG2 members is encouraged, but not necessary. Evaluation priority will be given to those proposals that also contain at least one junior faculty (defined as a faculty member that does not possess a rank of full professor). Four-year college faculty are encouraged to apply. An investigator may serve as Principal Investigator (PI) on only one proposal and two as participant.

### **For YEAR 3, the exploratory funds in IRG2 will be targeted at:**

- Developing all solid-state miniaturized energy storage for medical devices. This includes Li-ion and Li-S batteries, but other options will be considered if suitable for the task.
- Developing energy harvesting devices targeted at the power needs of wearable devices. This includes photovoltaic and piezoelectric devices, but other options will be considered if suitable for the task.

## CONTENT

### FORMAT:

The proposal should not be more than 3 pages. Document should be formatted using a 1.0 inch margin and Arial 11 font. The 3 pages should only include the project description, innovation, summary from previous exploratory funds (if any), IRG2 relevance statement, group description, research plan, outcomes, and budget/justification.



Wearable Technologies



University of Puerto Rico  
Central Administration  
Rio Piedras: (787) 765-5170  
ext. 2117  
Mayaguez: (787) 832-4040  
ext. 3766

COVER LETTER (1 PAGE MAX, NOT INCLUDED WITHIN THE 3 PAGE MAX)

Each proposal must contain a cover letter, addressed to the IRG2 leader, highlighting the important aspects of the proposal.

#### TITLE

Should be located at the top of the first page of the proposal. Below the title the names of the faculty members and corresponding organizations should be included. Make sure that you distinguish which faculty member will serve as principal investigator of the proposal.

#### PROJECT DESCRIPTION

This should be a brief description of the project, what challenge(s) it intends to address, and what is the preliminary hypothesis of the proposed work. It should also include the **intellectual merit** (encompasses the potential to advance knowledge) and the **broader impact** (encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes).

#### INNOVATION

This section intends to briefly describe the innovative aspect of the project. Some questions that can be used to guide the discussion are but not limited to: (i) Does the application challenge and seek to shift current research paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions? (ii) To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts? (iii) Does the project address an important problem or a critical barrier to progress in the field? (iv) Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense?

#### SUMMARY OF WORK FROM PREVIOUS EXPLORATORY FUNDS (ONLY IF APPLICABLE)

Provide a brief summary of the main outcomes of any previous exploratory funds.

#### IRG2 RELEVANCE STATEMENT

Here you must address:

- How this exploratory project is of interest to IRG2 which is about developing all solid state miniaturized energy storage (e.g., Li-ion and Li-S batteries) for medical devices.
- How you will capitalize on existing CAWT resources.



Wearable Technologies



University of Puerto Rico  
Central Administration  
Rio Piedras: (787) 765-5170  
ext. 2117  
Mayaguez: (787) 832-4040  
ext. 3766

#### RESEARCH PLAN

Provide a brief summary of how the proposed research will be conducted, which can include methodologies, etc. Make sure that the proposed research can be conducted within the time scale of the proposal.

#### PROJECT DURATION

1 Year (renewal may be possible based on your research progress)

#### PROJECT OUTCOMES

You must provide not only scientific outcomes, but also which agency/programs will this project be submitted for full funding and in which time frame.

#### BUDGET

You can request up to \$50,000 in funds that should be used for students, materials or small equipment that is fully justified.

#### REFERENCES (NOT INCLUDED WITHIN THE 3 PAGE LIMIT)

Provide all necessary references in any appropriate format.

#### MANAGEMENT PLAN (1 PAGE MAX, EXCLUDED FROM THE 3 PAGE LIMIT)

This section must include a Gantt chart with the milestones, tasks, and outcomes, the timeframe for each task and outcome, and the person responsible for it. Also, it should include a paragraph providing an explanation of the roles, expertise, and responsibilities of each member of the team. You must address how well qualified is the team to conduct the proposed activities. If a junior faculty member is part of the team a brief description of his/her development plan should be included.

#### REVIEWERS LIST

Provide a list of 3-4 reviewers that could or should not review your proposal.

#### **SUBMIT MATERIALS AS A SINGLE PDF** file to:

Rita Fronteras at ( [rita.frontera@upr.edu](mailto:rita.frontera@upr.edu) ) and (cc) IRG2 leaders to  
Ram Katiyar ( [ram.katiyar@upr.edu](mailto:ram.katiyar@upr.edu) ) and  
Gerardo Morell ( [gerardo.morell@upr.edu](mailto:gerardo.morell@upr.edu) )

**SUBMISSION DEADLINE: JANUARY 12, 2022**