***DuraMAT Core Project Proposal Submission Template***

## Cover Page: limited to 1 page

**Proposal Title:**

# PI:

# PI Institution:

# PI Email Address:

# Collaborators and Institutions:

# Requested Total Funding and Project Duration:

# *Include 1-2 sentence budget justification detailing budget breakdown by institution*

## Section 1 – Proposal Background, goals, motivations

## limited to 4 pages – Arial 11 pt., 1 inch margins

* 1. **Project Goals: Forecasting Problem Statement**
* Define your project in terms of the specific degradation mechanism your work will address and briefly describe the materials and stresses involved in the mechanism. Be specific about which materials and stresses will be addressed in your project.
* Document the relevance of this mechanism in current and emerging commercial modules. DuraMAT prioritizes research on issues relevant to high energy yield modules for utility commercial, and residential applications.
* Describe the effect of the degradation mechanism on fielded performance, including the risk factors that make modules susceptible to this mechanism, probability or frequency of occurrence, ability to detect, and impact on performance. DuraMAT prefers proposals that address the degradation rates or failure probabilities shown in Figure 1 of the RFP and show how the study improves our ability to quantify lifetime, degradation, or failure more quickly.

**1.2 Proposed Solution & Technical Approach**

* Describe the technical approach and specific technical goals in detail. Describe how the proposed work is novel and different, and how the proposed research will advance the state of the art. Describe how this research is high impact.
* Describe how your work will help DuraMAT meet its goal of developing confidence in 50 year modules by forecasting early failure, useful life, degradation, or the onset of wear out related to the phenomena you study.
* Clearly describe the experimental, modeling, and/or characterization aspects of the work and how they will add to our understanding of lifetime and degradation.
* Describe how your approach addresses your problem statement or key research question and how it addresses the challenges identified in Figure 2.
* Document the expected results – Is this a new test, an interfacial adhesion model, reaction mechanism, validation study, etc? How can the results be used?
* Document available input data from other projects and how your output data could be used in a future lifetime prediction effort. Include references to complementary or related work.
* Describe the specific mechanisms under investigation and the relevance current and emerging commercial modules. How can your work be leveraged for future technologies?
* Describe why you have chosen your test samples, stress testing, or characterization approach and how they are relevant to current and emerging module technologies. Does this experiment answer your research questions?

**1.3 Data Sharing**

* All project proposals are required to include a plan to submit FAIR compliant data with the DuraMAT datahub.
* All proposals including the development of software tools must include open source development and release with full documentation and an example or demonstration data set for use.
* Proposals relying on proprietary or commercial software packages must commit to sharing methods, input data, boundary conditions, output data, etc. so their work can be replicated using alternative software packages to the extent permitted by license conditions.

1.4 Extensibility/Dissemination Plan

* Proposals should include a short description of how their work could be used in a larger lifetime prediction effort or combined with other work to study more complicated questions requiring sequential or combined stresses, validated material models, or additional degradation models.
* A dissemination plan for the project should be described in the proposal, including a description of how others can use your work, model, or data without working with you. Studies are expected to be foundational with a clear path for next steps. This plan should include journal publications and conference presentations for the research community. Open data, software, and tools are also encouraged. The dissemination plan should also describe how the results will be shared with industry through non-academic channels such as trade press, industry events, webinars, etc.

**1.5 Current State of the Art & Prior Results w/i DuraMAT**

* Describe the current state of the art in the area of your proposed work and the current state of this field in DuraMAT. Is this a new area for the consortium or is it a continuation of or complement to existing work?
* Describe how the proposal will leverage the DuraMAT Network, the strengths of your project team, and how feedback from workshops or the IAB have informed the proposal.
* If needed describe how this proposed effort is differentiated from the research in other current or past SETO-funded projects (e.g. SETO Lab Call/Core, PVRD, PREDICTS, etc.).

**SECTION 2.0 – Technical Workplan:**

## limited to 2 pages – Arial 11 pt., 1 inch margins

**2.1 Yr 1 Workplan (Describe the tasks to be accomplished in Yr 1 of the project)**

**2.2 Yr 2 Workplan (Describe the tasks to be accomplished in Yr 2 of the project)**

**2.3 Yr 3 Workplan (Describe the tasks to be accomplished in Yr 3 of the project)**

**2.4 Milestones and Deliverables**

**2.5 Project Industrial Relevance and Engagement (approx. 100 words)**

# Appendix 1: References (no page limit)

Please add numbered references here.

# Appendix 2: Resumes of Key Personnel (no page limit – limit each resume to 3 pages)

Applicants must submit a resume (limited to 3 pages) for each Principal Investigator and Senior/Key Personnel.

As an alternative to a resume, it is acceptable to use the biographical sketch approved by the National Science Foundation (NSF). The biographical sketch format may be generated by the Science Experts Network Curriculum Vita (SciENcv), a cooperative venture maintained at <http://www.ncbi.nlm.nih.gov/sciencv>.

# Appendix 3: Optional letters of support (no page limit)