

**Opportunity Title:** Progressive Damage and Failure Analysis of Compression after Impact

**Opportunity Reference Code:** 0029-NPP-NOV23-GRC-TechDev

**Organization** National Aeronautics and Space Administration (NASA)

**Reference Code** 0029-NPP-NOV23-GRC-TechDev

**Application Deadline** 11/1/2023 6:00:59 PM Eastern Time Zone

**Description** The focus of this two year opportunity is to develop progressive damage and failure analysis (PDFA) method for simulation of compression after impact (CAI) of monolithic and/or sandwich composites. This development will include (1) Theoretical development of the PDFA methodology incorporating all the relevant mechanisms observed during the impact event and CAI. (2) Programming the theoretical development for integration within a finite element software package for use on high performance computing (HPC) systems utilizing Open MP and MPI. (3) Design of experimental setup and test specimens to characterize the PDFA method. (4) Oversight of characterization experiments and processing of data. (5) Verification of PDFA tool against characterization data. (6) Design of experimental setup and test specimens to validate the PDFA method. (7) Oversight of validation experiments and processing of data. (8) Validation of PDFA tool against.

Experience with the Finite Element Method (FEM), Fortran, PDFA theoretical developments and parallel programming (Open MP and MPI) is required. Knowledge of other programming and scripting languages is highly desirable. Laboratory experience is beneficial.

**Location:**

Glenn Research Center  
Cleveland, Ohio

**Field of Science:**Technology Development

**Advisors:**

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Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

**Eligibility Requirements** • **Degree:** Doctoral Degree.



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