Opportunity Title: Deformation and Damage Mechanics
Opportunity Reference Code: 0005-NPP-NOV23-GRC-AeroEng

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0005-NPP-NOV23-GRC-AeroEng

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

Description

Opportunity Restricted to US Citizens and Lawful Permanent Residents

Research focuses on developing (1) advanced constitutive equations, (2) numerical algorithms for analysis and design, and (3) experimental validation of proposed theories and characterization of material response. Materials under investigation include advanced metallics, polymeric matrix composites, metal and intermetallic matrix composites, ceramic matrix composites, cellular materials, smart materials, and multifunctional materials. The aim is to develop analysis and design methods, which predict useful life in components subjected to extreme thermomechanical loading conditions. Deformation mechanisms of interest include those influencing time-dependent and time-independent reversible and/or irreversible material response behaviors, e.g., plasticity, creep, and relaxation. A material's response is further complicated by the presence of multiaxial stress states and complete mission cycles. Damage evolution and failure definition under these conditions are component specific and material specific, and proper consideration needs to be given to thermomechanical effects, environmental effects, and their possible interaction. The theoretical work is supported by research at the microstructural level to develop a detailed understanding of key deformation and damage mechanisms.

Location:
Glenn Research Center
Cleveland, Ohio

Field of Science: Aeronautics, Aeronautical or Other Engineering

Advisors:
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Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree.