Opportunity Title: Polymer Aerogels
Opportunity Reference Code: 0016-NPP-JUL24-GRC-AeroEng

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0016-NPP-JUL24-GRC-AeroEng

Application Deadline 7/1/2024 6:00:59 PM Eastern Time Zone

Description

Opportunity Restricted to U.S. Citizens and Lawful Permanent Residents

The objective of this research is to develop light weight, nanoporous polymer and polymer-ceramic hybrid aerogels for aerospace power, sensing communication and propulsion applications. Other potential applications for technology developed under this task include airframe and space structures. Areas of investigation include the development of new chemistries that can be used to form aerogels, and incorporation of nano-sized fillers such as clay or metal nanoparticles, graphene or carbon nanotubes to form nanocomposite aerogels with novel properties. This work encompasses research activities in (1) polymer and monomer synthesis and characterization, (2) polymer and aerogel processing, (3) mechanical behavior of aerogels, and (4) mechanistic studies (chemical and physical) of aerogel cure and degradation. Emphasis is placed on both the development of improved materials and on achieving a fundamental understanding of materials behavior at the molecular level. This research is well supported by state-of-the-art facilities in chemical analysis, polymer processing, and testing. Such facilities include supercritical fluid extractors, nitrogen sorption, helium pycnometry, nuclear magnetic resonance (liquids, solids, imaging), emission and absorption (ultraviolet-visible and infrared), thermal analysis (including TGA interfaced with infrared and mass spectrometers), processing facilities including high temperature resin transfer molding, electron microscopes (scanning electron microscope, transmission electron microscope, scanning transmission electron microscope), atomic force microscopy, and various load frames for mechanical testing.

Location:
Glenn Research Center
Cleveland, Ohio

Field of Science: Aeronautics, Aeronautical or Other Engineering

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Eligibility Requirements	• **Citizenship:** LPR or U.S. Citizen • **Degree:** Doctoral Degree.