PI Name : **Zihao Zhang**	NASA Proposal Number
Organization Name : **University Of North Texas**	23-M-STAR-0011

Proposal Title : **Protective Thermal Electro-Chromic Coatings (ProTECC) for Lunar Exploration**

SECTION IX - Program Specific Data

Question 1 : Data Management Plan (DMP) or an explanation as to why a plan is not necessary given the nature of the work proposed.
Answer:

This project contains both computational and experimental efforts. The following describes how the data from these activities are obtained, stored, and made to the public if needed:

1) Handling of data: The operation at any of the institutions will generate experimental or physical data. Analysis software will be used to post-process experimental data. Research activities also use computer simulations to create predictions and optimize parameters. The studies may likely use other existing data published by other projects. Experiment measurements will be used to validate the function of the simulation software. The data sizes are small (i.e., FTIR spectra generates order 10^4 wavenumber data points per measurement). Most of the data generated as final products will be stored on the investigators' research computers.

2) Format or standards of data: Data gathered from simulations and experiments will be recorded as text files and stored in multiple copies across productivity software. The software codes to creating computational results will be created and stored in text format. Derived simulation data such as parameter metadata describing the simulation contents will be saved as text files. Commercial software implemented on instruments generate text files. Formatted results of experimental measurements and numerical calculations will be disseminated to the community in detailed publications. Analysis results, such as plots/visualization, and project results, such as scientific publications and reports, will be hosted on the PI's website dedicated to this research consortium. Publications and reports are made viewable as PDF files.

3) Public access: Our data will be available to the public if requested. It can be available as soon as our data has been validated, by end of the fiscal year every August. The data can be accessed through website, email, or Google/Dropbox cloud link. The PI welcomes data to be used by the scientific community in the publication with a proper acknowledgment. The data do not contain ethical or privacy issues. No copyright or license is requested for the data. No ITAR-restricted data expected nor shared.

The results will be written up as manuscripts and submitted to the relevant peer-reviewed journals, specifically in chemistry, physics, and thermal sciences. Journals include Applied Materials & Interfaces (ACS), J. Thermophysics and Heat Transfer (AIAA), Applied Physics Letters (AIP), J. Heat Transfer (ASME), Thin Solid Films (Elsevier), Optics Letters (Optica), and broader impact journals/sub-journals in Nature (Springer) and Science (AAAS). Data will also be shared at domestic technical conferences hosted by US societies and NASA. Conference presentations at NASA workshops will be made available to the public on the workshop host website. Articles to appear in subscription-based journals/publishers will be uploaded using PubMed Central for open access. The PI will respond to data calls as requested by NASA OSTEM at Johnson and Kennedy Space Centers and utilize the NASA STEM Gateway data management system for internship monitoring and reporting. Computer software developed can have academic values to researchers of similar interests shared on GitHub.

4) Long-term preservation: The software and data created are stored on multiple computers among investigators, collaborators, and students. The description of the computation method will be published in scientific journals. In case of computer failure, the code can be regenerated by anybody. Code and data are stored on both an external hard/solid-state drive and US cloud services (Google Drive, Dropbox, and MS Teams).

5) Costs of Data Management: No associated costs into data preservation, software generation, web sharing, and data transfer. A $2,500 per year budget ($7,500 term) is allocated to paying fees for publishing an article in an open-access peer-reviewed journal.

Question 2 : What type of MSI is the proposing institution? Please select 1 or more MSI types
Answer:

Hispanic-Serving Institution (HSI)