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Catherine Lanier, Associate Director,
Oregon Space Grant Consortium (OSGC)
OSGC Undergraduate Team Experience Award Program

Dear Ms. Catherine Lanier,

Please accept this letter in support of the proposed project, which is to design and manufacture a composite cryogenic fuel tank for rocket propellant application. The research team consists of six highly motivated undergraduate students with comprehensive experience and knowledge strengthen to carry out the proposed tasks.

While NASA has reported in recent years that a pressurized, large cryogenic propellant tank made of composite materials has been built and tested, it also suggested that many challenges remain before the composite tank can be used for space missions. "These successful tests mark an important milestone on the path to demonstrating the composite cryogenic tanks needed to accomplish our next generation of deep space missions," said Michael Gazarik, NASA's associate administrator for space technology at NASA Headquarters in Washington.

This NASA initiative provides opportunities for researchers, engineers, and students to contribute their ideas and efforts to advance the composite-based fuel tank technology. The proposed approach highlighted in this PSU/MME undergraduate-team project demonstrates one of these efforts.

As a faculty mentor, I have extensive experience in various materials development and their property characterizations. Specifically, my expertise on carbon-based materials including carbon fibers, carbon nanotubes, graphene, and their composites development in relation to technological applications, will allow me to guide this team to achieve their project goal. I have served as the faculty advisor for undergraduate projects for more than a dozen times. In addition, I have been the principle investigator (PI) for an NSF-funded Research Experience for Undergraduate (REU) Site at PSU for more than 15 years and am deeply committed to promoting and inspiring undergraduates to gain research experience.

This proposed project is also a senior capstone undertaken by a strong undergraduate team, whose members aim to complete project objectives in six months. Experience gained from this project will have significant impact on students' career development, as the project involves materials science, engineering design, composite tank manufacturing, and product testing. Although the tasks are challenging, the team is determined and committed to carry out the proposed activities. Through my interaction and guidance to the student team, I am confident their proposed efforts will make valuable contributions toward the advancement of one of NASA's missions, developing a new generation of composite cryogenic fuel tank for rocket propellant application.

I look forward to working with the undergraduate team to accomplish the proposed project, in addition to both volunteering my time and making my research laboratories (<http://www.pdx.edu/jiao-lab/equipment>) available for the team to characterize the materials and test their products.

Sincerely,

A handwritten signature in black ink, appearing to read "Jun Jiao".

Jun Jiao, Ph.D.
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