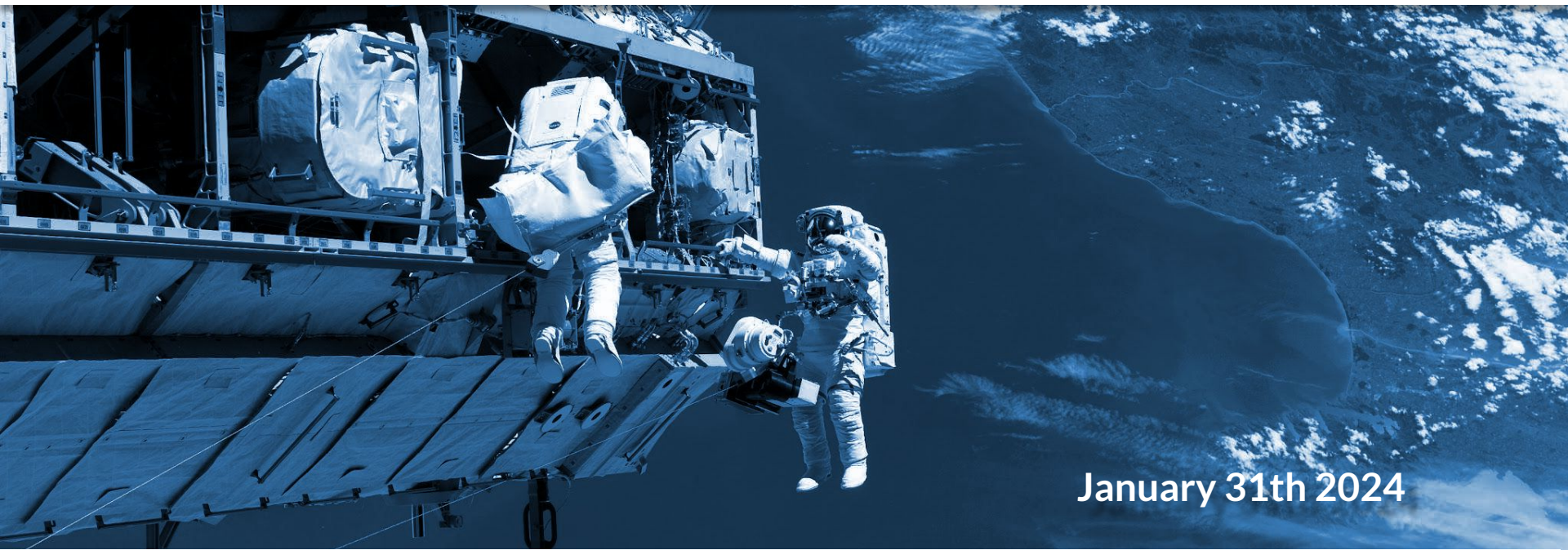




Microstructural Behavior of Aerospace Aluminum Alloy During a Welding Procedure in Microgravity Conditions



January 31th 2024

[01] About Us

The Faculty of Engineering of the Central University of Venezuela is one of the main generators of scientific and technological knowledge in the country and the cradle of future professional engineers.

The Agencia Bolivariana para Actividades Espaciales (ABAE) is an agency of the Ministry of Science and Technology of Venezuela, responsible for developing and carrying out policies regarding the use of the outer space.



[02] Our Team

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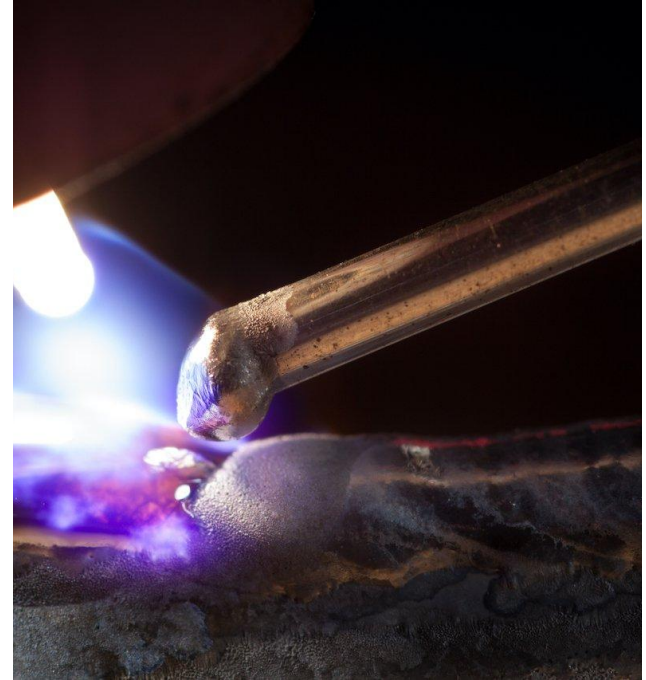


[03] Justification

One of the production processes that can play a significant role in the construction of complex space infrastructure in low orbit and on the lunar surface is welding. However, only a very small amount of research has been done on welding in lunar or space environments. In this regard, the DropTES provides a special testing setting for investigating the impact of microgravity on the microstructural behavior of welding.



This study aims to investigate the effects of microgravity on the welding of aerospace aluminum alloys.

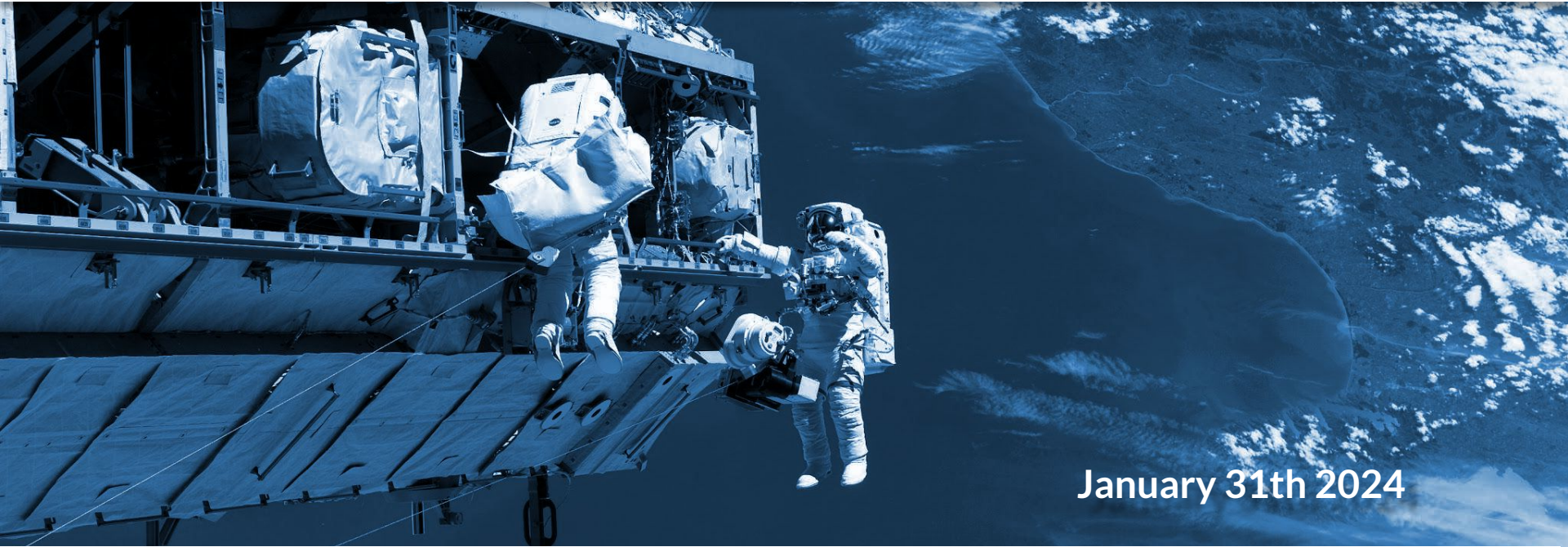


[05] Objectives

- Study how a TIG welding procedure behaves under microgravity conditions when applied to an aluminum alloy 6xxx.
- Study the metallography and microstructure properties of a welded joint at the Heat Affected Zone (HAZ) under microgravity conditions.
- Study how a heat exchanger affects the metallography and microstructure characteristics of welded joints under microgravity conditions.
- Study the behavior of the weld pool under microgravity conditions.
- Study the infrared-NDT thermography technique's potential as a real-time method for weld examinations under microgravity conditions.



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