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Science and Technology for Tomorrow's Air and Space Force

Success Story

IMWG EFFORT RECOGNIZED WITH A CONTRACTOR RECEIVING AIAA AWARD



With a goal to double the nation's rocket propulsion capability by 2010, a program called Integrated High-Payoff Rocket Propulsion Technology (IHRPT) depends on the planning, funding, and participation of the nation's Department of Defense services, National Aeronautics and Space Administration (NASA), and the rocket industry. This effort is showing great success with the recognition of Ms. Monica Jacinto, a Materials and Manufacturing Directorate (ML) contractor with Boeing-Rocketdyne.

The West Coast Region American Institute of Aeronautics and Astronautics (AIAA) recognized Ms. Jacinto as Engineer of the Year for her success in developing materials for rocket engines. These stronger material components can be made smaller and lighter without risking catastrophic burning of the hardware in the full-flow cycle environment.



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Accomplishment

The Propulsion Directorate's (PR) Rocket Engine Branch funded the IHPRT Materials Working Group (IMWG) development project for Ms. Jacinto. PR's motivation for this effort is to improve the performance of the directorate's Phase I IHPRT demonstrator for cryoboost to meet the Phase II IHPRT goals for weight reduction and reliability. ML's approach is to maximize the mechanical properties of nickel alloy while maintaining the properties of an alloy that will not burn in a high-temperature, oxygen-rich environment.

The IHPRT IMWG consortium includes the PR and ML directorates as well as numerous NASA partners. PR funded the development project and ML ran the contract because the alloy's development needed to fit unique rocket engine requirements, providing options to solve thrust-to-weight goals for several programs. The joint effort between these two directorates, while working with industry, made this innovation possible.

Background

Ms. Jacinto is a nationally recognized expert in the compatibility of metal in high-pressure, high-temperature, oxygen-rich environments. She is a principal investigator responsible for the development of oxygen-compatible, high-strength superalloys that eliminate the necessity for high-risk plating on oxygen-rich rocket engines. It is anticipated that the superalloys will be applied to future liquid rocket engines. According to Dr. Shelley, a Propulsion Directorate program manager, "Jacinto assembled a thorough and well-qualified team to provide a detailed and quantified plan for her successful rocket engine nickel-alloy materials development project. She approached the project with a significantly different paradigm than I had ever seen come out of the rocket industry before. No flash, no smoke and fire, just hard-core material science and engineering with a logical and pragmatic development approach."

Propulsion
Awards and Recognition

Additional information

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