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SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
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EFFECT OF HIGH ENERGY MATERIALS ON PERFORMANCE OF SOLID ROCKET MOTOR FOR SPACE MISSIONS

Abstract

Research efforts in Composite solid propellants are directed to develop efficient propellants in terms of safety and performance. The prevailing issues of low specific impulse, wide use of Ammonium Perchlorate as the oxidizer expelling hazardous Hydrogen Chloride in the exhausts are worked upon. Energetic materials are utilized as the potential sources to enhance the composite solid propellant performance. Selected energetic fuels, oxidizers and catalysts are tested to understand their effect and extent of effect and related thermochemistry on composite propellants. The performance was analyzed in terms of change in specific impulse and characteristic velocity. The proposed work also involves exploring the reason behind the use of the oxidizer, fuel and binder at a specific percentage in the propellant composition. Results shows that high energy materials do affect the composite propellant performance. Proportional use of energetic material can be trusted to become an accountability for enhanced performance and safety.