

MATERIALS AND STRUCTURES SYMPOSIUM (C2)  
Interactive Presentations (IP)

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## ENERGETIC COMPOSITE SOLID PROPELLANTS FOR ADVANCED SPACE SYSTEMS

**Abstract**

Research efforts in Composite solid rocket propellants are directed to develop efficient propellants in terms of safety and performance. The prevailing issues of low specific impulse, 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 analysed 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.