International Journal of Aerospace Engineering

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Special Issue on

Advancements in Energetic Materials for Propulsion

CALL FOR PAPERS

In recent years, the pace of research in the field of energetic materials for propulsion systems has accelerated tremendously, primarily driven by the desire and the need to enhance specific impulse and burning rate. With the continued increase in deep-space exploration missions coupled with prohibitive cost-to-launch requirements, the development of energetic materials with high energy density and efficient combustion becomes imperative. Also, recent works demonstrate the utility of propellants/gas generators in contained systems or for atmospheric thrust generators. Further, the goal of miniaturizing combustion systems while preserving conventional efficiency has been established, which defines unique engineering design requirements. Also, recent innovations in the fields of nanochemistry and nanophysics in the past two decades have significantly contributed to the progression of novel propellants with enhanced combustion performance. Advancements in computational tools and nonintrusive experimental methods have accelerated energetic materials research with focus on developing advanced energetic materials systems and combustion devices. Obviously, the effort to advance novel energetic material systems for propulsion demands a multidisciplinary and interdisciplinary research involving a multitude of domains like propulsion technology, reaction chemistry, thermodynamics, electromechanical engineering, aerodynamics, and nanophysics.

The objective of this special issue is to publish high-quality research papers as well as review articles addressing recent advances on novel energetic materials geared towards propulsion and combustion. We invite researchers to contribute original research articles as well as review articles that seek to address the mechanisms and significance of potential topics given below.

Potential topics include but are not limited to the following:

- Numerical modelling of combustion and heat release in energetic materials
- Thermodynamics and chemical kinetics of energetic materials
- Studies on green energetic materials
- Synthesis of advanced energetic material propellants
- Hierarchical self-assembly of multiscale binary energetic material propellants
- Microcombustion devices and systems for propulsion
- Dynamic reaction control of solid state propellants
- Advanced propellant initiators and primers
- Novel propellant additives
- Propellants and primers on a chip
- Advanced propellant diagnostics
- Novel propellant processing techniques
- Mechanisms of combustion processes

Authors can submit their manuscripts through the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/ijae/aemp/.

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