Special Issue

Green Propellants for In-Space Propulsion

Message from the Guest Editors

The propulsion systems of spacecraft currently rely on high-performance yet storable propellants, which are traditionally hydrazine-based fuels and nitrogen oxides. These propellants, while well investigated and effective, are highly toxic, posing significant health and environmental risks. Handling these chemicals requires stringent safety protocols, leading to high operational costs and potential regulatory restrictions. To address these challenges, so-called green propellants—alternatives that are less toxic, non-carcinogenic, and easier to handle—have been investigated and developed in recent years. Green propellants aim to offer similar or improved performance compared to traditional propellants while minimizing health risks and environmental impact.

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