



On-Board Chemical Propulsion Technology

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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 24 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.On-board propulsion functions include orbit insertion, orbit maintenance, constellation maintenance, precision positioning, in-space maneuvering, de-orbiting, vehicle reaction control, planetary retro, and planetary descentascent. This paper discusses on-board chemical propulsion technology, including bipropellants, monopropellants, and micropropulsion. Bipropellant propulsion has focused on maximizing the performance of Earth storable propellants by using high-temperature, oxidation-resistant chamber materials. The performance of bipropellant systems can be increased further, by operating at elevated chamber pressures andor using higher energy oxidizers. Both options present system level difficulties for spacecraft, however. Monopropellant research has focused on mixtures composed of an aqueous solution of hydroxl ammonium nitrate (HAN) and a fuel component. HAN-based monopropellants, unlike hydrazine, do not present a vapor hazard and do not require extraordinary procedures for storage, handling, and disposal. HAN-based monopropellants generically have higher densities and lower freezing points than the state-ofart hydrazine and can higher performance, depending on the formulation. High-performance HAN-based monopropellants, however, have aggressive, high-temperature combustion environments and require advances in catalyst materials or suitable non-catalytic ignition options. The objective of the micropropulsion technology area is to develop low-cost, highutility propulsion systems for the...



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