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DEVELOPING TENDENCY IN LIQUID ROCKET ENGINE RESEARCH AND CORRESPONDING KEY TECHNOLOGIES

Abstract

The propellant combination and engine cycle scheme of a liquid rocket engine determines the research and development orientation of a new type of liquid rocket engines. The decision process of propellants and cycle schemes lays the foundation of the engine advancement. The developing tendency for liquid rocket engines to have optimum propellant and cycle schemes is presented in this paper. Various prospective propellant combinations and engine cycle schemes are evaluated and the main considerations and the way of weighing during the selection among the schemes are also stated. The key technologies corresponding to advanced liquid rocket engines, such as the general optimization of an engine system, combustion and thermal-protection, turbopump reliability, failure diagnostic, experimental and measuring technologies, novel materials and advanced techniques, are interpreted subsequently in the paper.