MATERIALS AND STRUCTURES SYMPOSIUM (C2)
Space Vehicles – Mechanical/Thermal/Fluidic Systems (7)

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RESEARCH ON FLIGHT EXPERIMENT TECHNIQUE TO VERIFICATION THERMAL PROTECTION MATERIALS AND INSULATION MATERIALS

Abstract

In Advanced Reusable Hypersonic Aerospace Vehicle development, thermal protection materials and insulation materials research occupy an important position. But in the process of materials research, ground experiments can't simulate true flight enviroment, the real response of material and structure can't be achieved. To achieve the real response is important. In this paper a mature Launche Vehicles is used to give the materials true flight enviroment, where the prime strongpoint is to demonstrate new technologies at reduced cost and shorter turnaround time. By design trajectory and control system is designed to recovery verified material wreckage. The key techniques are thermal protection buring by the low altitude and high-speed flight, separate technique at large dynamic pressure and high speed, recovery techniqte. Fly experiment can acquire real response of thermal protection materials and insulation materials under 'low height, high Mach number with long fly time'. The solutions of key techniqtes are gived in this paper. A project is gived in the end. The results have important effect to verification and revise the forecast method and theories, lower new key technique of the aerospace aircraft.