

SPACE PROPULSION SYMPOSIUM (C4)  
Poster Session (P)

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DESIGN, MANUFACTURE, TESTS AND EVALUATION OF A PARAFFIN FUELED HYBRID  
ROCKET MOTOR WITH SEQUENTIAL AND UNINTERRUPTED BURN WITH OXIDANTS AIR  
AND OXYGEN**Abstract**

Rocket-based combined cycle engines are thought as an alternative for cheaper space access. One kind of these cycles includes a rocket powered initial flight followed by an air-breathing powered engine phase. At the same time, paraffin based hybrid rocket are viewed as a possible disruptive technology for low Earth orbit access at reduced cost. The present paper describes the design, manufacturing and tests of a paraffin hybrid rocket. Both gaseous oxygen and air are used as oxidants. Also, uninterrupted burns with oxygen to air mode shifts are evaluated, as in a combined cycle. Therefore, the main objective is to evaluate paraffin fueled motor performance in a cycle with these two phases: initial burn with gaseous oxygen (rocket mode), shifted to air phase (as an approximation to a ramjet mode).