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INVESTIGATIONS OF VARIABLE THRUST LIQUID OXYGEN/KEROSENE ENGINE USING A
PINTLE INJECTOR

Abstract

The objective of this study is to investigate the characteristics of liquid oxygen (LOX)/kerosene (RP-3) engine by using a pintle injector to adjust the thrust level. Numerical simulations were conducted to examine the combustion performance at the thrust of 1000N and 100N, respectively, with the same oxygen/fuel (O/F) mixing ratio of 2.7. In other words, the variation range of thrust is 10:1. Different initial particle sizes of discrete phase were attempted during the process. Results demonstrate that the combustion efficiency of 1000N condition is 24.49