

JOURNAL OF PROPULSION AND POWER

VOLUME 30, NUMBER 4

JULY-AUGUST 2014



FULL-LENGTH PAPERS

Influence of Initial Propellant Temperature on Solid Rocket Internal Ballistics	D. R. Greatrix	869
Enhancing Composite Solid Propellant Burning Rates with Potassium Doped Ammonium Perchlorate—Part 2	K. Ishitha and P. A. Ramakrishna	876
Integrated Fluid-Structure Simulation for Full Burning of a Solid-Propellant Rocket Interior	S. Han and C. Kim	883
Burning Rate Optimization Under Uncertainty Using Response Surfaces and Monte Carlo Simulation	J. J. Whitehead and R. A. Frederick Jr.	901
Enhancement of Hybrid Fuel Regression Rate Using a Bluff Body	R. Kumar and P. A. Ramakrishna	909
Study on Combustion Dynamic Characteristics of Oxygen-Rich Preburners	I.-Y. Moon, S. H. Kang, S.-Y. Lee, S. Seo	917
Laser Ignition of an Experimental Cryogenic Reaction and Control Thruster: Pre-Ignition Conditions	C. Manfetti	925
Thrust Measurements of the Gaia Mission Flight-Model Cold Gas Thrusters	J. Jarrige, P. Thobois, C. Blanchard, P.-Q. Elias, D. Packan, L. Falleni, G. Noci	934
Experimental Investigation of an Alternative Rocket Configuration for Rocket-Based Combined Cycle Engines	J. Etele, S. Hasegawa, S. Ueda	944
Laser Ignition of an Experimental Cryogenic Reaction and Control Thruster: Ignition Energies	C. Manfetti	952
Combustion Stability Analysis of Rocket Engines with Resonators Based on Nyquist Plots	A. Cárdenas-Miranda and W. Polifke	962
Prediction and Analysis of Combustion Instabilities in a Model Rocket Engine	L. Selle, R. Blouquin, M. Théron, L.-H. Dorey, M. Schmid, W. Anderson	978
Coupling of Cryogenic Oxygen-Hydrogen Flames to Longitudinal and Transverse Acoustic Instabilities	J. S. Hardi, S. K. Beinke, M. Oschwald, B. B. Dally	991
Predicting Thermoacoustic Instability: A Novel Analytical Approach and Its Experimental Validation	N. Olgac, U. Zalluhoglu, A. S. Kammer	1005
Liquid Sheet Formed by Impingement of Two Viscous Jets	L.-j. Yang, F. Zhao, Q.-f. Fu, K.-d. Cui	1016
Experimental Techniques to Study Linear Burning Rates of Heterogeneous Liquid Monopropellants	K. W. McCown III, A. R. Demko, E. L. Petersen	1027
Surface Instability on Cryogenic Swirl Flow at Sub- to Supercritical Conditions	S. Cho, G. Park, Y. Chung, Y. Yoon, V. G. Bazarov	1038

Table of Contents continued on back cover

AIAA

A Publication of the American Institute of Aeronautics and Astronautics Devoted to Aerospace Propulsion and Power
JPOEL 30(4) 869-1124 (2014)
ISSN 0748-4658

CONTENTS—continued

Combustion of Aluminum Suspensions in Hydrocarbon Flame Products	P. Julien, M. Soo, S. Goroshin, D. L. Frost, J. M. Bergthorson, N. Glumac, F. Zhang	1047
Aeroacoustics of Three-Stream High-Speed Jets from Coaxial and Asymmetric Nozzles	D. Papamoschou, A. D. Johnson, V. Phong	1055
Mechanistic Assessment of Swirl Coaxial Injection by Quantitative X-Ray Radiography	C. J. Eberhart, D. M. Lineberry, R. A. Frederick Jr., A. L. Kastengren	1070
Wall Temperature Effects on Heat Transfer Coefficient for High-Pressure Turbines	R. Maffulli and L. He	1080

TECHNICAL NOTES

Direct-Drive System Demonstration for a Low-Power Hall Thruster	A. Pampaloni, M. Trisolini, T. Misuri, M. Andrenucci	1091
Suppressing a High-Frequency Instability with Varying Bands of White Noise	J. W. Bennewitz, R. A. Frederick Jr., D. M. Lineberry	1094
Experiments on an Oxidizer-Rich Preburner for Staged Combustion Cycle Rocket Engines	S. H. Kang, I. Moon, S. Y. Lee	1098
Flame Transition in Dual-Mode Scramjet Combustor with Oxygen Piloted Ignition	J. Hu, W. Bao, J. Chang	1103
Effect of Initial Conditions on Simulations of a Scramjet Flowpath	R. J. Yentsch and D. V. Gaitonde	1107
Effects of Orifice Geometry on Gelled Propellants Sprayed from Impinging-Jet Injectors	Q.-f. Fu, L.-j. Yang, K.-d. Cui, F.-c. Zhuang	1113
Low-Weight Fixed Ceramic Capacitor Impedance Matching System for an Electrothermal Plasma Microthruster	C. Charles, R. W. Boswell, A. Bish	1117