

**INTERNATIONAL JOURNAL OF ENERGETIC MATERIALS
AND CHEMICAL PROPULSION**

Contents Volume 14, 2015

Page Numbers for Issues:

Issue 1: 1–84; Issue 2: 85–175; Issue 3: 177–264; Issue 4: 265–356;

Issue 5: 357–451; Issue 6: 453–547

NUMBER 1

- Effects of Methanol and Fumed Silica on Linear Burning Rates of Aqueous Hydroxylammonium Nitrate** 1
K.W. McCown, III & E.L. Petersen
- Experimental Observation for the Development of Reaction Kinetics in Composite Propellant Slow Cook-Off** 13
T.D. Hedman, M.L. Gross, K.P. Ford, E.B. Washburn, M.T. Gemrich, J.A. Webb, & A.I. Atwood
- Effect of Flight and Motor Operating Conditions on Infrared Signature Predictions of Rocket Exhaust Plumes** 29
R. Stowe, S. Ringuette, P. Fournier, T. Smithson, R. Pimentel, D. Alexander, & R. Link
- Application of Energetic Materials in Laser Ablative Micropropulsion** 57
L. Jiao, J. Cai, H. Ma, Z. Shen, L. Li, & Z. Tang
- Hypergolic Ignition Mechanism of Hydrazine/Nitrogen Tetroxide Co-Flowing Jets at Low Temperatures** 71
H. Tani, H. Terashima, Y. Daimon, & M. Koshi

NUMBER 2

- Advanced Liquid and Gelled Propellants for Rocket and Ramjet Propulsion** 85
H.K. Ciezki, M. Negri, & A. Gernoth
- On the Explicit Determination of the Chapman–Jouguet Parameters for an Explosive Compound** 125
D. Nandlall
- Thermolysis and Their Kinetics of Copper and Zinc Perchlorate Complexes with 2-Aminopyridine Ligand** 147
C.P. Singh, A.K. Srivastava, A. Singh, & B. Singh
- Fuel Nozzle Coking Analysis due to Soak-Back in a Gas Turbine Combustor** 163
A. Bazin, A. de Champlain, & B. Paquet

NUMBER 3

- A Robust Multi-Time Scale Method for Stiff Combustion Chemistry** 177
H. Terashima, Y. Morii, & M. Koshi
- Investigation of a Thruster Based on a Traveling Propellant Charge** 197
D. Michaels & A. Gany
- Combustion and Performance Studies of Glycidyl Azide Polymer and Its Mixtures as Hybrid Rocket Fuel** 221
P.-J. Chang, Y. Wada, A. Garg, H. Nakayama, M. Kimura, & K. Hori
- Experimental Investigations of Drop Size Distributions with Impinging Liquid Jets using Phase Doppler Anemometer** 241
C. Indiana, M. Bellenoue, & B. Boust

NUMBER 4

- Effects of Nano-Metric Aluminum Powder on the Properties of Composite Solid Propellants** 265
W. Pang, L.T. Deluca, X. Huixiang, F. Xuezhong, Z. Fengqi, L. Fangli, X. Wuxi, & L. Yonghong
- Combined Effects Aluminized Explosives Modeling and Development** 283
E.L Baker, L.I. Stiel, W. Balas, C. Capellos, & J. Pincay
- Preparation and Characterization of Ultrafine ϵ -Hexanitrohexaazaisowurtzitane Particles** 295
C. An, B. Yu, H. Li, W. Guo, & J. Wang
- A Study on the Combustion Mechanism of Hydroxylammonium Nitrate** 307
T. Katsumi, R. Amrousse, Y. Niboshi, & K. Hori
- Vapor Pressure and Sublimation Enthalpy of Triacetone Triperoxide by a Gas Chromatography Static Headspace Approach** 321
J. Mbah, D. Knott, S. Steward, & D. Cornett
- Combustion of Plain and Reinforced Paraffin with Nitrous Oxide** 331
S. Sisi & A. Gany
- A Calculation Method of Overpressure on Nonideal Explosives Exploding in Air** 347
Z. Shengxiang, X. Xiaoling, & Z. Weipeng

NUMBER 5

- Kinetic Modeling of Hypergolic Ignition of N_2H_4 -NTO Mixtures at Low Temperatures and the Sawyer-Glassman Experiment on Reactions of N_2H_4 with NO_x ($x = 1, 2$) at High Temperatures** 357
B-R. Gu, P. Raghunath, G.C. Cheng, Y.S. Chen, J.S. Wu, & M.C. Lin
- Combustion Behaviors and Mechanism of AP-Based Compositions with Nitroester Binders** 381
V.P. Sinditskii, A.N. Chernyi, V.V. Serushkin, & S.A. Filatov
- Towards the Simplified Composite Propellant Burning Rate Model Based on Detailed Chemistry Calculations** 399
M.L. Gross & T.D. Hedman
- Supported MnO_x / SrO - Al_2O_3 High-Cell Density Honeycomb Ceramic Monolith Catalyst for High-Concentration Hydrogen Peroxide Decomposition** 421
C. Wu, X. Wang, X. Zhou, T. Yang, & T. Zhang
- Curing Reaction and Rheological Properties of the Slurry of an HTPB/CL-20-Based Composite Explosive** 437
Y. Wei, J. Wang, C. An, & H. Li

NUMBER 6

- Formulation, Casting, and Evaluation of Paraffin-Based Solid Fuels Containing Energetic and Novel Additives for Hybrid Rockets** 453
D.B. Larson, J.D. Desain, E. Boyer, T. Wachs, K.K. Kuo, R. Borduin, J.H. Koo, B.B. Brady, T.J. Curtiss, & G. Story
- Simulation of Ignition and Combustion of Low-Vulnerability Propellant for Artillery** 479
C. Boulnois, P. Gillard, C. Strozzi, & A. Bouchama
- The Sensitivity of Chemical Kinetics with Two Characteristic Lengths of Detonation Dynamics in Homogeneous Gases** 499
S. Boulal, P. Vidal, R. Zitoun, & J. Luche
- Vibrational and Thermodynamic Properties of 1, 3, 5-Triamino-2, 4, 6-Trinitrobenzene (TATB): Comparison of Exchange-Correlation Functionals in Density Functional Theory** 519
Z. Wu, W. Mou, R.K. Kalia, A. Nakano, & P. Vashishta

**INTERNATIONAL JOURNAL OF ENERGETIC MATERIALS
AND CHEMICAL PROPULSION**

Author Index Volume 14, 2015

Page Numbers for Issues:

Issue 1: 1–84; Issue 2: 85–175; Issue 3: 177–264; Issue 4: 265–356;

Issue 5: 357–451; Issue 6: 453–547

| | | |
|-------------------------|-----------------------|------------------------|
| Alexander, D., 29 | Guo, W., 295 | Shen, Z., 57 |
| Amrousse, R., 307 | Hedman, T.D., 13, 399 | Shengxiang, Z., 347 |
| An, C., 295, 437 | Hori, K., 221 | Sinditskii, V.P., 381 |
| Atwood, A.I., 13 | Hori, K., 307 | Singh, A., 147 |
| Baker, E.L., 283 | Huixiang, X., 265 | Singh, B., 147 |
| Balas, W., 283 | Indiana, C., 241 | Singh, C.P., 147 |
| Bazin, A., 163 | Jiao, L., 57 | Sisi, S., 331 |
| Bellenoue, M., 241 | Kalia, R.K., 519 | Smithson, T., 29 |
| Borduin, R., 453 | Katsumi, T., 307 | Strivastava, A.K., 147 |
| Bouchama, A., 479 | Kimura, M., 221 | Steward, S., 321 |
| Boulal, S., 499 | Knott, D., 321 | Stiel, L.I., 283 |
| Boulnois, C., 479 | Koo, J.H., 453 | Story, G., 453 |
| Boust, B., 241 | Koshi, M., 71, 177 | Stowe, R., 29 |
| Boyer, E., 453 | Kuo, K.K., 453 | Strozzi, C., 479 |
| Brady, B.B., 453 | Larson, D.B., 453 | Tang, Z., 57 |
| Cai, J., 57 | Li, H., 295, 437 | Tani, H., 71 |
| Capellos, C., 283 | Li, L., 57 | Terashima, H., 71, 177 |
| Chang, P-J., 221 | Lin, M.C., 357 | Vashishta, P., 519 |
| Chen, Y.S., 357 | Link, R., 29 | Vidal, P., 499 |
| Cheng, G.C., 357 | Luche, J., 499 | Wachs, T., 453 |
| Chernyi, A.N., 381 | Ma, H., 57 | Wada, Y., 221 |
| Ciezki, H.K., 85 | Mbah, J., 321 | Wang, J., 295, 437 |
| Cornett, D., 321 | McCown, III, K.W., 1 | Wang, X., 421 |
| Curtiss, T.J., 453 | Michaels, D., 197 | Washburn, E.B., 13 |
| Daimon, Y., 71 | Morii, Y., 177 | Webb, J.A., 13 |
| de Champlain, A., 163 | Mou, W., 519 | Wei, Y., 437 |
| Deluca, L.T., 265 | Nakano, A., 519 | Weipeng, Z., 347 |
| Desain, J.D., 453 | Nakayama, H., 221 | Wu, C., 421 |
| Fangli, L., 265 | Nandlall, D., 125 | Wu, J.S., 357 |
| Fengqi, Z., 265 | Negri, M., 85 | Wu, Z., 519 |
| Filatov, S.A., 381 | Niboshi, Y., 307 | Wuxi, X., 265 |
| Ford, K.P., 13 | Pang, W., 265 | Xiaoling, X., 347 |
| Fournier, P., 29 | Paquet, B., 163 | Xuezhong, F., 265 |
| Gany, A., 197, 221, 331 | Petersen, E.L., 1 | Yang, T., 421 |
| Gennrich, M.T., 13 | Pimentel, R., 29 | Yonghong, L., 265 |
| Gernoth, A., 85 | Pincay, J., 283 | Yu, B., 295 |
| Gillard, P., 479 | Raghunath, P., 357 | Zhang, T., 421 |
| Gross, M.L., 13, 399 | Ringuette, S., 29 | Zhou, X., 421 |
| Gu, B-R., 357 | Serushkin, V.V., 381 | Zitoun, R., 499 |

INTERNATIONAL JOURNAL OF ENERGETIC MATERIALS AND CHEMICAL PROPULSION

Subject Index Volume 14, 2015

Page Numbers for Issues:

Issue 1: 1–84; Issue 2: 85–175; Issue 3: 177–264; Issue 4: 265–356;

Issue 5: 357–451; Issue 6: 453–547

-
- 1,3,5-Triamino-2,4,6-Trinitrobenzene (TATB), 519
2-aminopyridine, 147
advanced propellants, 85
advanced propulsion, 85
aluminum oxide, 283
ammonium perchlorate, 13, 381
atomization, 241
burning rate, 221
catalytic decomposition, 307, 421
Chapman-Jouguet parameters, 125
chemical kinetics, 499
chemical length, 499
C-J parameters, 125
coking, 163
combined effects aluminized explosives, 283
combustion, 479
combustion mechanisms, 381
combustion property, 265
combustion wave, 221
composite propellant, 13, 265, 399
computational fluid dynamics (CFD), 29, 71, 163, 177
conjugate heat transfer, 163
cook-off, 13
cordierite honeycomb monolith, 421
critical radius, 499
curing reaction, 437
Cyclotrimethylenetrinitramine (RDX), 453
density functional theory (DFT), 519
detailed chemical kinetic mechanisms, 177
detailed chemical reaction, 71
detonation velocity, 125
detonation, 499
differential thermal analysis (DTA), 307
dimethylformamide (DMF), 453
drop sizing, 241
eigenvalue detonation theory, 283
energetic materials characterization, 125
energetic materials, 57
evaporation, 241
explicit time integration, 177
explosion delay, 147
explosive characterization, 125
gas chromatography mass spectrometry (GC-MS), 307
gas chromatography, 321
gas-phase reactions, 357
gel propulsion, 85
gelled propellants, 85
glycidyl azide polymer, 57, 221
green propellants, 85
HAN aqueous solution, 1, 307
hazardous property, 265
heat soak-back, 163
heterogeneous propellant, 1
high bed-loading, 421
high blast energies, 283
high-pressure jet assisted precipitation, 295
homogeneous gas, 499
HTPB/CL-20-based composite explosive, 437
hybrid motor, 331
hybrid propulsion, 331
hybrid rocket, 331
hybrid rocket, regression rat, 453
hydrazine, 71
hydrazine replacement, 85
hypergolic ignition, 71
ignition, 479
imaging spectrometer, 29
impact sensitivity, 295
improvised explosive, 321
infrared, 29
instantaneous burning rate, 221
interior ballistics, 197
ionic liquids, 85
IR spectroscopy, 307
Ir-based catalyst, 307
jet impingement, 241
kinetic law, 479
kinetic modeling, 357
kinetics, 147
laser plasma thruster, 57
laser propulsion, 57
liquid propulsion, 241
lithium aluminum hydride (LAH), 453
low-vulnerability ammunition (LoVA), 479
material chemistry, 265
metal perchlorate complexes, 147
metal pushing, 283
micropropulsion, 57
monopropellant limit, 399
multiwalled carbon nanotubes (MWNT), 453
N₂H₄-N₂O₄ reaction, 357
nAl powder, 265
nanofluid, 1
natural convection, 163
NICEMs, 85
nitroesters, 381
nitrogen tetroxide, 71
NOFBx, 85
nonideal explosives, 347
non-ionic mixtures, 85
nontoxic monopropellant, 421
numerical modelling, 479
overpressure, 347
paraffin fuel, 331
paraffin, 453
plume, 29
premixed limit, 399
product gas analysis, 307
propellant, 479
propellant burning rate, 399

propellant charge, 197
quantum chemical
calculations, 357
reaction mechanism, 307
regression rate, 331
rheological properties, 437
rocket, 29
Salovskii empirical equation,
347
self-combustible, 221
signature, 29
Simulations, 519

solid propellant, 29
solution reactions, 357
sprays, 241
static headspace, 321
stiff combustion chemistry,
177
sublimation enthalpy, 321
surface instability, 221
surface temperature, 221
thermal decomposition, 265
thermal stability, 295
hermodynamic properties, 519

thermogravimetric analysis
(TGA), 307
thermolysis, 147
thruster discharge, 197
triacetone triperoxide, 321
ultrafine CL-20, 295
ultrasonic, 221
vapor pressure, 321
Vibrational properties, 519
viscosity model, 437
wax, 331
Zel'dovich, 221

**INTERNATIONAL JOURNAL OF ENERGETIC MATERIALS
AND CHEMICAL PROPULSION**

Reviewers List Volume 14, 2015

The Editorial Board of the *International Journal of Energetic Materials and Chemical Propulsion* would like to thank the following reviewers for their reviews and their help in establishing a high-quality review process.

Alexander Gromov
Barbara Baschung
Brian Evans
Bryce Tappan
Chad Junkermeier
Charles Kappenstein
Claude Phipps
Craig Tarver
Dimitrios Stamatis
Eckart W.Schmidt
Helmut Ciezki
Joe Majdalani
John DeSain
John Zevenbergen
Keiichi Hori

Kyle Niemeyer
Luciano Galfetti
Martin Chiaverini
Matthew Biss
Patrick Bowden
Pierre Gosselin
Priya Santhanam
Qilong Yan
Richard Yetter
Rocco Farinaccio
Shashank Vummidi
Stefan Thynell
Steven Son
Thomas Jackson
Valery Sinditskii