

# Journal of Pyrotechnics

## Tables of Contents for Issue 1 through 26 [1995–2007]

---

---

### Issue 1, Summer 1995

Observations on the Heights Attained by Spherical Fireworks Shells – by – R. K. Wharton .....	1
Observations on the Behaviour of Seamed Steel Mortar Tubes – by – S. G. Myatt .....	6
An Introduction to Propep, A Propellant Evaluation Program for Personal Computers – by – E.R. Brown .....	11
Introductory Chemistry for Pyrotechnists, Part 1: Atoms, Molecules, and Their Interactions – by – W. D. Smith .....	19
Concussion Mortar Internal Pressure, Recoil and Overpressure as Functions of Powder Mass – by – K. L. Kosanke, B. J. Kosanke, and T. DeWille .....	26
Prediction of Flame Temperatures, Part 1: Low Temperature Reactions – by – D. P. Dolata .....	37

---

---

### Issue 2, Winter 1995

The Semiconductor Bridge (SCB) Igniter – by – R. W. Bickes, Jr. and M. C. Grubelich .....	1
Modern Rack and Mortar Designs for Professional Fireworks Displays – by – M. A. Williams .....	6
Introductory Chemistry for Pyrotechnists, Part 2: The Effects of Electrons – by – W. D. Smith .....	15
Hazardous Chemical Combinations – by – C. Jennings-White and K. L. Kosanke .....	22
Bullet Impact Sensitivity Testing of Class B Fireworks Ingredients and Detonability Testing of Flash Powders [Reprint from US Bureau of Mines] – by – J. E. Hay .....	36

---

---

### Issue 3, Summer 1996

Electric Spark Sensitivity of Reductive Element–Oxidizer Mixtures – by – S. Amari, K. Sato, T. Yoshida, Y. Mizushima and F. Hosoya .....	1
Health Effects from Theatrical Pyrotechnics – by – M. Rossol .....	14
Observations on the Perceived Burst Size of Spherical Aerial Shells – by – D. Kark and M. A. Williams .....	22
Aerial Shell Drift Effects: .....	30
(A) The Effect of Long Mortars – by – K.L. and B.J. Kosanke, and A.L. Bauer	
(B) The Effect of Capsule-Shaped Shells – by – K.L. and B.J. Kosanke, and E.R. Mutascio	
Ammonium Perchlorate Composite Basics – by – R.R. Sobczak .....	35

---

---

### Issue 4, Winter 1996

SEM Studies on a Strobe Star Composition – by – R. I. Grose, M. Cartwright and A. Bailey .....	1
Flash Powder Output Testing: Weak Confinement – by – K. L. and B. J. Kosanke .....	5
Evaluation of Fire and Explosion Hazards for a Non-Azide Gas Generant – by – K. Hara, M. Kanazawa and T. Yoshida .....	15
Progress in Developing a Fuel-Air Salute – by – F. Ryan .....	25
Pyrotechnic Whistles – by – W.R. Maxwell .....	37

---

---

### Issue 5, Summer 1997

Model Rocket Engines, Theory and Design – by – E. J. Clinger and W. D. Smith .....	1
Flow Agents in Pyrotechnics – by – L. Weinman .....	8
Hazard Analysis for the Manufacture of a Non-UN Gas Generant – by – K. Hara, M. Kanazawa, N. Forster, and T. Yoshida .....	11
Techniques for the Quantitative Analysis of Sulfur and Chlorate in Fireworks Compositions – by – D. Chapman .....	25
A Survey of Concussion Powders – by – K. L. and B. J. Kosanke .....	33
The Nitrous Oxide Hybrid Rocket Motor – by – A. Jackson .....	47

---

---

### Issue 6, Winter 1997

Thermal Hazards from the Accidental Ignition of Pyrotechnic Compositions – by – R. K. Wharton and R. Merrifield .....	1
Methods for Calculation of Thrust Coefficients – by – E. R. Brown .....	9
Pyrotechnic Ignition and Propagation: A Review – by – K. L. and B. J. Kosanke .....	17
Studies of the Thermal Stability and Sensitiveness of Sulfur/Chlorate Mixtures Part 1. Introduction – by – D. Chapman, R. K. Wharton and G. E. Williamson .....	30
Hydrazinium Nitroformate: A High Performance Next Generation Oxidizer – by – J. Louwers .....	36
A Thermodynamic Properties Estimation Method for Isocyanates – by – W. M. Meyerriecks .....	43
A Severe Human ESD Model for Safety and High Reliability System Qualification Testing – by – R. J. Fisher .....	57
Correspondence:	
Consideration of Alternate Whistle Fuels – by – R. Amons .....	65
Frequency Stabilization of Large Diameter Strobe Flares – by – K. L. Kosanke .....	68
Estimating the Distribution of Molecular Energies – by – W. D. Smith .....	70
Further Comment from F. Ryan on “Flash Powder Output Testing” .....	70
Comment from T. McCreary on “Model Rocket Engines, Theory and Design” .....	71
Authors’ reply to T. McCreary .....	71
Review – by – P. E. Smith of <i>Lecture Notes for Pyrotechnic Chemistry</i> .....	72
Review – by – T. Dimock of <i>Introductory Practical Pyrotechnics</i> .....	72

---

---

### Issue 7, Summer 1998

The Production of Music with Pyrotechnic Whistles – by – F. Ryan .....	1
High-Nitrogen Pyrotechnic Compositions – by – D. E. Chavez and M. A. Hiskey .....	11
An Oxygen-Exchange Approach to Pyrotechnic Formulations – by – E. J. Clinger and W. D. Smith .....	15
Artificial Meteor Fireworks – by – D. Caulkins .....	26
Studies on the Use of Epoxy Resin Binder in Small Rockets – by – R. I. Grose .....	33
Development of a Video Spectrometer – by – K. L. and B. J. Kosanke .....	37
Studies of the Thermal Stability and Sensitiveness of Sulfur/Chlorate Mixtures Part 2. Stoichiometric Mixtures – by – D. Chapman, R. K. Wharton, J. E. Fletcher, and G. E. Williamson .....	51
Novel Powder Fuel for Firework Display Rocket Motors – by – B. Cook .....	59

Communications:

Use of the Term Sensitiveness to Describe the Response of Pyrotechnic Compositions to Accidental Stimuli – by – R. K. Wharton and D. Chapman .....	65
Some Measurements of Glitter – by – K. L. and B. J. Kosanke and C. Jennings-White .....	68
Another Fog Study – by – M. Rossol .....	73
Possible Applications for Computer Codes in the Development of Pyrotechnic Compositions – by – R. Webb .....	74
Review – by – John Bergman of Ian von Maltitz’s <i>Black Powder Manufacture Methods and Technique</i> .....	76

---

---

**Issue 8, Winter 1998**

Organic Fuels: Composition and Formation Enthalpy Part I — Wood Derivatives, Related Carbohydrates, Exudates, and Rosin – by – W. M. Meyerriecks .....	1
Composite Color Stars – by – S. Anderson .....	19
Silicone II: A New Fuel and Binder for Fireworks – by – K. Burdick .....	31
Determination of the Velocity of Fragments Produced from Exploding Firework Maroon Shells – by – S. G. Myatt .....	43
Glitter Chemistry – by – Clive Jennings-White .....	53
Communications:	
Comment from R. Webb on “High-Nitrogen Pyrotechnic Compositions”, Issue 7 .....	29
Comment from B. Nelson on “Development of a Video Spectrometer”, Issue 7 .....	52
Review – by – C. Weeth of White’s article “Pollution Caused by Fireworks” .....	72
Review – by – M. Rossol of White’s article “Pollution Caused by Fireworks” .....	74

---

---

**Issue 9, Summer 1999**

Organic Fuels: Composition and Formation Enthalpy Part II — Resins, Charcoal, Pitch, Gilsonite, and Waxes – by – W. Meyerriecks .....	1
The Hazards Posed by Fragments from Rupturing Steel Fireworks Mortar Tubes— Predictions from a Computer Model – by – M. R. Edwards, S. G. Myatt and S. Ellis .....	21
An Introduction to Chemical Thermodynamics Part 1 — Matter, Energy and the First Law – by – B. Sturman .....	29
Performance Study of Civil War Vintage Black Powder – by – K.L. & B.J. Kosanke and F. Ryan .....	51
The Rare Earths As Possible Flame Color Agents – by – B. Sturman .....	57
Studies on Low Smoke Photoflash Compositions – by – R. Hancox, M. Wilson and B. Whiffen .....	68
Communications:	
Comment from W. Meyerriecks on “Composite Color Stars”, Issue 9 .....	62
Comment from B. Sturman on “Glitter Chemistry”, Issue 8 .....	62
Review – by – L. Weinman of P.W. Cooper and S.R. Kurowski’s book <i>Introduction to the Technology of Explosives</i> .....	64
Review – by – M. Rossol of P. Butterworth’s book <i>Theatre of Fire</i> .....	65
Review – by – J. Bergman of <i>Fire Protective Clothing: A Guide for Those Who Manufacture or Store Pyrotechnics or Propellants</i> .....	67

---

---

## Issue 10, Winter 1999

Burst Process of Spherical Aerial Shells	
– by – Y. Takishita, H. Shibamoto, T. Matsuzaki, K. Chida, F. Hosoya, and N. Kubota ...	1
Six Methods for Estimating the Formation Enthalpy of Organic Compounds	
– by – W. Meyerriecks .....	7
High-Nitrogen Fuels for Low-Smoke Pyrotechnics	
– by – D. E. Chavez, M. A. Hiskey and D. L. Naud .....	17
Measurement of the Effectiveness of Various Mitigation Methods at Reducing the Projectile Hazards from Fragmenting Steel Firework Mortar Tubes	
– by – S. G. Myatt and M. R. Edwards .....	37
Combustion of Ti/C Pyrolants – by – M. Takizuka, T. Onda, T. Kuwahara, and N. Kubota .....	45
Effect of Differing Charcoal Types Upon Handmade Lift Powder – by – C. Wilson .....	49
Communications:	
Peak In-Mortar Aerial Shell Accelerations – by – K. L. and B. J. Kosanke .....	56
Letter to the Editor from N. Kahn about “Fog” review article in Issue 7, with reply from M. Rossol, author of review article .....	60
Review – by – B. Sturman of R. Lancaster’s <i>Fireworks Principles and Practice</i> .....	61
Review – by – L. Weinman of P. W. Cooper’s <i>Explosives Engineering</i> .....	62
Review – by – B. Sturman of T. Shimizu’s English translation of <i>Selected Pyrotechnic Publications of Dr. Takeo Shimizu, Part 3: Studies on Fireworks Colored-Flame Compositions</i> .....	65
Review – by – J. Bergman of the Confederation of British Industry’s <i>Hearing Protection A Guide for Those Who Manufacture, Test, or Use Explosives</i> .....	68
Review – by – K. Kosanke of J. Akhavan’s <i>The Chemistry of Explosives</i> .....	69
Review – by – B. Sturman of J. Akhavan’s <i>The Chemistry of Explosives</i> .....	70

---

---

## Issue 11, Summer 2000

A Labscale Hybrid Rocket Motor or Instrumentation Studies	
– by – R. Shanks and M. K. Hudson .....	1
Chemical Analysis of Consumer Fireworks – by – P. Alenfelt .....	11
Studies of the Thermal Stability and Sensitiveness of Sulfur/Chlorate Mixtures Part 3. The Effects of Stoichiometry, Particle Size and Added Materials	
– by – D. Chapman, R. K. Wharton, J. E. Fletcher and A. E. Webb .....	16
Propellant Chemistry – by – N. Kubota .....	25
Pyrotechnic Particle Morphologies — Metal Fuels	
– by – K. L. and B. J. Kosanke and R. Dujay .....	46
Forensic Testimony: “Matches”, An Over-Inference of Data? A Giglio Obligation?	
– by – F. Whitehurst .....	53
Study on Various Polyesters as Binders for Pyrotechnic Composition Combustion of Ti/C Pyrolants – by – J. P. Agrawal, S. N. Singh, D. B. Sarwade, V. A. Mujumdar and N. T. Agawane .....	65
Communications:	
Shell Altitude vs. Mortar Length – by – R. Dixon .....	70
The Effect of Sample Containers on the Ignition Temperature of Sulfur/Chlorate Mixtures – by – D. Chapman and J. E. Fletcher .....	72

---

---

## Issue 12, Winter 2000

Speculation on the Effects of Gunshot or Explosive Residues on Historic Silk Flags – by – C. S. Tumosa .....	1
Pyrotechnic Particle Morphology—Low Melting Point Oxidizers – by – K. L. and B. J. Kosanke and R. C. Dujay .....	5
A Survey of Analytical Tools for Explosion Investigations – by – K. R. Mniszewski and R. Pape .....	16
An Introduction to Chemical Thermodynamics Part 2—Entropy, Molecular Disorder, and the Second and Third Laws – by – B. Sturman .....	31
Studies of the Thermal Stability and Sensitiveness of Sulfur/Chlorate Mixtures Part 4. Firework Compositions and Investigation of the Sulfur/Chlorate Initiation Reaction – by – D. Chapman, R. K. Wharton, J. E. Fletcher and A. E. Webb .....	43
Practical Applications of Capillary Extrusion Rheometry to Problems in the Processing of Energetic Materials – by – R. E. Carter .....	52
Fixed and Scanning Infrared Radiometers for Combustion Studies – by – K. Underhill-Shanks, M. K. Hudson and M. J. Russo .....	57
Communications:	
Comment by C. Jennings-White on: “Shell Altitude vs. Mortar Length” by R. Dixon	68
Review – by – C. Andrus of <i>Experimental Composite Propellant An Introduction to     Properties and Preparation of Composite Propellant Design, Construction,     Testing and Characteristics of Small Rocket Motors</i> by Terry W. McCreary .....	68
Review – by – P. Smith of <i>The Chemistry of Fireworks</i> by Michael S. Russell .....	69
Review – by – B. Sturman of <i>The Chemistry of Fireworks</i> by Michael S. Russell .....	71

---

---

## Issue 13, Summer 2001

Evaluation of Lithium Compounds as Color Agents for Pyrotechnic Flames – by – E-C. Koch ...	1
Pyrotechnic Delays and Thermal Sources – by – M. A. Wilson and R. J. Hancox .....	9
Fireworks Shell Drift due to Shell-to-Bore Clearance – by – R. K. Norton .....	31
Pressure, Plume Flicker, and Acoustic Data Correlation in Labscale Hybrid Rockets – by – M. F. Desrochers, G. W. Olsen, C. Luchini, and M. K. Hudson .....	35
Pyrotechnic Reaction Residue Particle Identification by SEM / EDS – by – K. L. & B. J. Kosanke and R. C. Dujay .....	40
Commercial Developments in Red Phosphorus Performance and Stability for Pyrotechnics – by – S. Hoerold and A. Ratcliff .....	54
Summary Report on Tests on Display Fireworks Conducted by the Bureau of Mines for the U.S. Department of Transportation Relative to Hazard Classification .....	63
Communications:	
Brief Survey of Chromium Toxicity – by – Monona Rossol .....	61

---

---

## Issue 14, Winter 2001

Hazards Associated with the Storage of Fireworks – by – R. Merrifield .....	1
Thermal Techniques Used in the Hazard Evaluation of Pyrotechnics – by – P. D. Lightfoot, R. C. Fouchard, A.-M. Turcotte, Q. S. M. Kwok and D. E. G. Jones .....	15
Our Present Knowledge of the Chemistry of Black Powder – by – I. von Maltitz .....	27
A Brief Introduction to Noise and Data Filtering – by – L. Weinman .....	40

Applying Explosives Testing Techniques To Obtain Insight into the Explosion (Or Is It Detonation?) Phenomenon of Piles of Fireworks – by – E. Contestabile .....	45
A Ground Test Rocket Thrust Measurement System – by – M. F. Desrochers, G. W. Olsen, and M. K. Hudson .....	50
Hypotheses Regarding “Star-Shell Detonations” – by – K. L. and B. J. Kosanke .....	56
<b>Communications:</b>	
Speculation on the Explosive Decomposition of “Yellow Powder” – by – R. Foreman, J. Ittenbach, and C. Swartzendruber .....	65
Bridgewire Temperature Estimation Using a Constant Current Supply – by – L. Weinman .....	68
An Observation Regarding: “Fireworks Shell Drift due to Shell-to-Bore Clearance” – by – K. L. Kosanke .....	72
Review – by – D. Caulkins of <i>The Big Bang: A History of     Explosives</i> by G. I. Brown .....	74
Review – by – J. Malek of <i>Incendiary Art: The Representation of Fireworks     in Early Modern Europe</i> by K. Salatino .....	76

### Issue 15, Summer 2002

Evaluation of the Hazards Posed by High Energy Bangers Part 1. Noise, Overpressure and TNT Equivalence – by – R. K. Wharton, D. Chapman and A. E. Jeffcock .....	1
Special Materials in Pyrotechnics Part 2 — Application of Cæsium and Rubidium Compounds in Pyrotechnics – by – E-C. Koch .....	9
An Introduction to Chemical Thermodynamics Part 3. Free Energy and Equilibrium – by – B. Sturman .....	25
Studies of Electric Match Sensitiveness – by – K. L. and B. J. Kosanke .....	43
Multi-Wavelength Laser Opacity Study of a Hybrid Rocket Plume – by – A. P. Chouinard, A. J. Adams, A. M. Wright, and M. K. Hudson .....	65
<b>Communications:</b>	
A Note on the Design of Experiments – by – L. Weinman .....	73
Air Pollutant Emissions from Power Plants – by – M. Joseph, C. Johnston, and C. Smith .....	75
Reprint of: Chapter III — Accroides .....	77
Review – by – Tom Smith of <i>The Chemistry and Characteristics of     Explosive Materials</i> by J. R. Cook, PhD .....	81
Review – by – Linda Pierpont of <i>Head and Eye Protection: A Guide for Those     Who Manufacture, Test, or Use Explosives</i> by Confederation of British Industry ...	81
Review – by – Monona Rossol of <i>Protection against Substances     Hazardous to Health</i> by Confederation of British Industry .....	82

### Issue 16, Winter 2002

Evaluation of the Hazards Posed by High Energy Bangers Part 2. Damage to Hand Simulants – by – R. K. Wharton and A. E. Jeffcock .....	1
Thermodynamic Modeling of High-Temperature Systems – by – G. V. Belov .....	5
Test Burn of a Temporary Fireworks Stand – by – D. Lynam .....	13
Accidents and their Role in Aiding the Management of Health and Safety in Pyrotechnics Manufacture – by – A. Webb .....	27

Thermodynamics of Black Powder and Aerodynamics of Propelled Aerial Shells – by – J. E. Mercer .....	37
Effect of Ultrasound on Single-Base Propellants for Pyrotechnic Purposes – by – V. Grozev, R. Ganev, I. Glavchev .....	53
The Effects of External Fire on Fireworks Stored in Steel ISO Transport Containers – by – S. G. Myatt .....	59
Application of Hydroxyl (OH) Radical Ultraviolet Absorption Spectroscopy to Rocket Plumes – by – M. W. Teague, T. Felix, M. K. Hudson, and R. Shanks .....	71
Communications:	
Grass Tree Gum—(Australian Dragon’s Blood) – by – Dr. McCrea / John Kruse .....	76
Review – by – K. Hudson of <i>Propellants and Explosives: Thermochemical Aspects of Combustion</i> by N. Kubota .....	77
Review – by – L. Weinman of <i>Explosives</i> by R. Meyer , J. Köhler, & A. Homburg ....	78

---



---

### Issue 17, Summer 2003

Color Purity Measurements of Traditional Pyrotechnic Star Formulas – by – Brian V. Ingram ...	1
A Study of the Combustion Behaviour of Pyrotechnic Whistle Devices (Acoustic and Chemical Factors) – by – M. Podlesak and M. A. Wilson .....	19
Reasons for Fuse Failure and Drift Distance of Spherical Fireworks Shells – by – Marc Speer ...	35
Some Properties of Explosion Generated Toroids – by – Fred Ryan and Joe Daugherty .....	53
Feasibility Study on the Use of Nanoscale Thermites for Lead-Free Electric Matches – by – Darren L. Naud, M. A. Hiskey, S. F. Son, J. R. Busse, and K. L. Kosanke .....	65
Communications:	
A Curious Observation during the Burning of Bulk Whistle Composition – by – L. Weinman .....	79
Review by S. Miller of: <i>Proximate Special Effects Familiarization and Safety</i> – by – J. L. Mattingly, D. A. Opperman and F. Pinkerton .....	80

---



---

### Issue 18, Winter 2003

Color Values and Spectra of the Principal Emitters in Colored Flames – by – W. Meyerriecks and K. L. Kosanke .....	1
Thermal Characterization of Smoke Composition – by – Z. Abdel-Qader, Q. S. M. Kwok, R. C. Fouchard, P. D. Lightfoot and D. E. G. Jones .....	23
Assessing the Risks — Suggestions for a Consistent Semi-Quantified Approach – by – Tom Smith .....	32
Control Systems for the Storage of Explosives, Including Fireworks – by – M. J. Bagley .....	43
Studies of the Thermal Stability and Sensitiveness of Sulfur/Chlorate Mixtures — Part 5: Application of Self-Heating Theory to the Prediction of Ignition Temperatures – by – J. E. Fletcher .....	53
Communications:	
Particle Size Effect in Pyrotechnic Compositions Containing Potassium Chlorate – by – M. Fathollahi, S. G. Hosseini, S. M. Pourmortazavi, and F. Farahani .....	63
Review – by – B. E. Douda of: <i>Pyrotechnics</i> by A. P. Hardt .....	66
Review – by – S. D. Poehlein & S. K. Wilharm of: <i>Pyrotechnics</i> by A. P. Hardt .....	67
Review – by – B. Sturman of: <i>Pyrotechnics</i> by A. P. Hardt .....	68

Review – by – J. Bergman of: <i>Black Powder Manufacturing, Testing, and Optimizing</i> – by – Ian von Maltitz .....	74
--	----

### Issue 19, Summer 2004

Metal Monochloride Emitters in Pyrotechnic Flames — Ions or Neutrals? – by – B. Sturman .....	1
Experimenting with High Explosive Fuel Explosions for Movies and Television – by – S. Miller .....	14
Industrial Scale Nano-Aluminum Powder Manufacturing – by – D. Pesiri, C. E. Aumann, L. Bilger, D. Booth, R. D. Carpenter, R. Dye, E. O’Neill, D. Shelton, and K. C. Walter ..	19
Essential Molecular Orbital Theory for the Study of Pyrotechnics – by – R. B. Lowry .....	32
Guanidinium Azo-Tetrazolate (GAT) as a High Performance Hybrid Rocket Fuel Additive – by – M. K. Hudson, A. M. Wright, C. Luchini, P. C. Wynne, and S. Rooke ..	37
A Report on the Fireworks Accident at Carmel, Western Australia – by – R. I. Grose and K. L. Kosanke .....	43
Illuminants and Illuminant Research – by – D. R. Dillehay .....	53
Bandwidth in Electro-Magnetic Compatibility (EMC) Testing – by – J. Stuart .....	61
A Brief Description of the Construction and Function of Common Electric Matches – by – L. Weinman and K. L. Kosanke .....	66
Communications:	
Comment from Ron Lancaster on “Review of <i>Pyrotechnics</i> ” in Issue 18 .....	73
Review – by – K. L. Kosanke of: <i>Ignition Handbook</i> by Vytenis Babrauskas .....	74

### Issue 20, Winter 2004

Simple Core Design for Neutral Burn Composite Rocket Motors – by – S. K. Anderson .....	1
Strobe Chemistry – by – Clive Jennings-White .....	7
Maximizing the Number of Electric Matches That Can Be Fired in a Single Circuit – by – Michael A. Tockstein .....	17
Sparking Compositions for Garden Fireworks – by – A. V. Belyakov, A. I. Khatsrinov, G. S. Baturova, L. A. Kiprova, and E. N. Panferova .....	23
Principles of Solid Rocket Motor Design – by – Naminosuke Kubota .....	27
A Practical Performance Testing Protocol for Fireworks Mortar Tubes – by – Andrew Fischer ..	51
Fireworks Shells Subjected To a Modified Height-To-Detonation Test – by – E. Contestabile, R. Guilbeault, D. Wilson, and B. von Rosen .....	55
Communications:	
A Simplified Method for Determining the Strength of a Tube Subjected to Internal Pressure – by – L. Weinman .....	71
Review – by – John Steinberg of: <i>Amateur Rocket Motor Construction</i> by David Sleeter .....	73
Review – by – K. Koenig of: <i>Rocket Propulsion Elements</i> by George P. Sutton, and Oscar Biblarz .....	74

### Issue 21, Summer 2005

A Review of the Chemistry and Dynamics of Pyrotechnic Whistles – by – Matthew L. Davies ...	1
Air Blast TNT Equivalency for Rolls of Paper Toy Caps – by – K. R. Mniszewski and K. L. Kosanke .....	13

Optical Studies of Combustion Chamber Flame in a Hybrid Rocket Motor	
– by – Andrew B. Wright, Jason E. Elsasser, M. Keith Hudson, and Ann M. Wright	21
Special Materials in Pyrotechnics: IV.[1] The Chemistry of Phosphorus and its Compounds	
– by – Ernst-Christian Koch	31
Choked Flow, a Frequently Misunderstood Term	
– by – Lawrence Weinman	39
Impact Sensitiveness Analysis of Pyrotechnic Flash Compositions	
– by – S. P. Sivapirakasam, M. Surianarayanan, P. Nagaraj, G. S. Venkataratnam	51
Spectral Study of Metallic Molecular Bands in Hybrid Rocket Plumes	
– by – K. L. Maxwell and M. K. Hudson	59

Communications:

Note on “Metal Monochloride Emitters in Pyrotechnic Flames – Ions or Neutrals?”	
– by – Barry Sturman	71
Review – by – F. J. Feher of: <i>The Chemistry of Explosives</i> by Jacqueline Akhavan	72
Review – by – K. Kosanke of: <i>Color, An Introduction to Practice and Principles</i>	
by Rolf G Kuehni	74
Review – by – J. R. Steinberg of: <i>Pyrotechnic Chemistry</i>	
by Journal of Pyrotechnics	75
Review – by – Bernard E. Douda of: <i>Pyrotechnic Chemistry</i>	
by Journal of Pyrotechnics	78
Review – by – Tony Cardell of: <i>Pyrotechnic Chemistry</i>	
by Journal of Pyrotechnics	79

## Issue 22, Winter 2005

Interior Pressure in the Mortar and Motion of a No. 3 Shell in the Fireworks Shot	
– by – Yuzo Ooki, Dayu Ding, Masamori Higaki and Tadao Yoshida	3
Prediction of Aerial Shell and Comet Trajectories Using Shellcalc©	
– by – John Harradine and Tom Smith	9
Reaction propagation between fireworks shells and compositions confined in steel pipes	
– by – E. Contestabile and B. von Rosen	15
Thermodynamic and Spectroscopic Analysis of a Simple Lilac Flame Composition	
– by – B. T. Sturman and K. L. Kosanke	27
A Thrust and Impulse Study of Guanidinium Azo-Tetrazolate as a Fuel Additive for Hybrid Rocket Motor	
– by – Ann Wright, Warfield Teague, M. Keith Hudson, Andrew Wright, Patrick Foley	43
Pressure in Mortar and Estimation of Muzzle Velocity of Expelled Star	
– by – Dayu Ding, Morimasa Higaki, Yuzo Ooki, and Tadao Yoshida	50
Notes on chlorinated rubber and some other chlorine donors	
– by – Barry T. Sturman	61

Communications and Reviews:

An Introduction to the European CHAF Project	
– by – D. Chapman	65
Review – by – Tom Smith of <i>Firework Art</i> by Mark Flemming	68

## Issue 23, Summer 2006

Computer Modeling of Flying Star Ballistics	
– by – Dayu Ding, Morimasa Higaki, Yozo Ooki and Tadao Yoshida	3
Temperature Measurements within the Luminous Region of a Burning Ba(NO <sub>3</sub> ) <sub>2</sub> /Al Mixture	
– by – P. J. Disimile, R. Prasad and N. Toy	10

Ballistics of an Iron Bar Shot from a Mortar – by – Morimasa Higaki, Dayu Ding, Yuzo Ooki and Tadao Yoshida .....	21
Ballistics of a No. 3 Spherical Shell with Illuminant – by – Dayu Ding, Yuzo Ooki, Morimasa Higaki and Tadao Yoshida .....	30
Effect of Particle Size on the Mechanical Sensitivity and Thermal Stability Aspects of Pyrotechnic Flash Compositions – by – S. P. Sivapirakasam, M. Surianarayanan, F. Chandrasekaran and G. Swaminathan .....	39
Interrelation between Impact, Friction and Thermal Energy of Pyrotechnic Cracking Reaction – by – S. P. Sivapirakasam and M. Surianarayanan .....	51
Thermal Characterisation and Kinetic Modelling of Pyrotechnic Flash Composition under Adiabatic Conditions – by – S.P. Sivapirakasam, M. Surianarayanan and R. Vijayaraghaven .....	61

Communications and Reviews:

Review – by – Christopher Pearce of <i>Fireworks, Principles and Practice</i> by Revd. Ron Lancaster .....	67
---	----

Selected Proceedings of the 2<sup>nd</sup> Workshop on Pyrotechnic Combustion Mechanisms:

Introduction – by – Ernst-Christian Koch and Rutger Webb .....	69
The Combustion Products of Novel High-Nitrogen Energetic Materials – by – David E. Chavez, Michael A. Hiskey, My Hang Huynh, Darren L. Naud, Steven F. Son and Bryce C. Tappan .....	70
Laser-Initiated Reactions of Energetic/Thermitic Composites – by – Jared C. Gump and Suhithi M. Peiris .....	81
New Approaches to Model Pyrotechnic Reactions – by – Stefan Kelzenberg, Norbert Eisenreich and Volker Weiser .....	87

**Issue 24, Winter 2006**

Application of Conducting Composition Fuseheads in Pyrotechnic Devices – by – Vojtech Pelikan .....	3
Metal–Fluorocarbon Pyrolants: VII. Crackling Effect Based on Mg/KClO <sub>4</sub> /(C <sub>2</sub> F <sub>4</sub> ) <sub>n</sub> – by – Ernst-Christian Koch .....	11
Spectroscopic Measurement of Light and Flame of LEDs and Liquid Colors – by – Kazuomi Itoh, Dayu Ding and Tadao Yoshida .....	17
Spectroscopic Measurement of Burning Stars – by – Kazuomi Itoh, Dayu Ding, Hiroshi Tajima and Tadao Yoshida .....	28
The Search For The Glitter Phenomenon – by – John Wraige .....	40
An Evaluation of Lightning Thermo Tube™ as a Pyrotechnic Ignition System – by – K. L. Kosanke and B. J. Kosanke .....	50
Primer Gunshot Residue Detection from the Firing of a Black Powder Revolver – by – L. T. Briscoe, K. L. Kosanke, and R. C. Dujay .....	64

**Issue 25, Summer 2007**

Tests for Evaluating the Ignitability of Firework Stars and Compositions – by – Yasuhiro Sashimura, Mamoru Horiuchi, Hideo Watanabe, Maiko Watanabe, Dayu Ding and Tadao Yoshida .....	3
--	---

Spectroscopic Measurement of Burning Toy Fireworks – by – Kazuomi Itoh, Dayu Ding and Tadao Yoshida .....	14
Burning Characteristics of Firework Stars and Lifting Charge – by – Morimasa Higaki, Dayu Ding, Yuzo Ooki, and Tadao Yoshida .....	28
Exterior Ballistics of Firework Stars – by – Yuzo Ooki, Dayu Ding, Morimasa Higaki, and Tadao Yoshida .....	37
Evaluation Of Multi-shot Firework Articles Using Mortar Recoil Measurements – by – R. Guilbeault and E. Contestabile.....	44
<b>Communications and Reviews:</b>	
Survey of Firework Trends from UK Display Companies – by – Tom Smith and Avril di Palma .....	49
Thermal Conductivity Testing of Minimal Volumes of Energetic Powders – by – Adam Harris and Daniel N. Sorensen .....	53
Book Review by Theodore S. Sumrall: <i>Introduction to Fireworks</i> by T. Yoshida and D. Ding .....	58
Book Review by Megan Bottegal and Bruce McCord: <i>Bombs and Bombings, A Handbook to Protection, Security, Detection, Disposal, and Investigation for Industry, Police, and Fire Departments</i> by Thomas G. Brodie .....	59

---



---

## Issue 26, Winter 2007

Atmospheric Flight Dynamic Simulation Modeling of Spin-Stabilized Projectiles – by – Dimitrios N. Gkritzapis, Elias E. Panagiotopoulos, Dionissios P. Margaris and Dimitrios G. Papanikas .....	3
Atmospheric Flight Dynamic Simulation Modeling of Spin-Stabilized Projectiles and Small Bullets with Constant Aerodynamic Coefficients – by – Dimitrios N. Gkritzapis, Elias E. Panagiotopoulos, Dionissios P. Margaris and Dimitrios G. Papanikas.....	15
Selected Proceedings of the 5 <sup>th</sup> Workshop on Pyrotechnic Combustion Mechanisms:	
Introduction – by – Ernst-Christian Koch and Rutger Webb .....	23
Ignition and Combustion of Aluminum in High Explosives – by – Arno Hahma .....	24
Ignition And Burning Rate Characteristics Of Pyrolant Black Powder – by – Takuo Kuwahara ..	47
Laser Diode Ignition of Pyrotechnic Mixtures: Experimental and Numerical Studies – by – Philippe Gillard .....	53
Synthesis, Structural and Reactive Characterization of Miscellaneous Nanothermites – by – Denis Spitzer and Marc Comet .....	60
Thermal Stability of Hydrazinium Nitroformate (HNF) Assessed by Heat Generation Rate and Heat Generation and Mass Loss – by – Manfred A. Bohn .....	65

---