

Contents

Part 1

Invited lectures

- 1 European Governmental Collaboration in Energetics Research – The Future
Adam Cumming 11
- 2 New Diagnostic Techniques in Blast Waves
Manfred Held 16
- 3 The Thermal Behaviour of BTAW, a High Nitrogen Fuel
David Jones, K. Armstrong, T. Parekunnel, Q. Kwok 42
- 4 New Trends in Detection of Explosives
Petr Mostak, Miroslav Stancl 61
- 5 Molecular Surface Electrostatic Potentials in the Computational
Characterization of Energetic Compounds
Peter Politzer, Jane Murray 65

Lectures

- 6 The Influence of Geometry and Material Properties on an Explosive's
Gurney Velocity and Energy
Joseph Backofen 76
- 7 Computer Simulation of Thermal Decomposition Mechanism for
Compounds with Nitroguanidine Fragment
Eugeniya Bakhmatova, Vyacheslav Korolev, Aleksey Porollo, Tatyana Pivina 90
- 8 Thermal Decomposition of Solid Energetic Materials
Yurii Burov 98
- 9 Use of Compressed Gas Gun to Investigate Response of Explosives to a
Range of Initiation Stimuli
Michael Cartwright, Andrew Lewis 107
- 10 The Relationship between Shock Sensitivity and Morphology in Granular
RDX
Helen Czerski, William Proud, John Field 118
- 11 Guanidinium Nitroformate Salts: Possible New Oxidizers for High
Performance, Halogen Free Solid Propellants
Michael Göbel, Thomas Klapötke 127

12	Preliminary Study of Superfine Metal Powders Effect on the Decomposition of Energetic Materials <i>Alexander Gromov, Elena Popenko, Alexey Sergienko, Young-Soon Kwon, Ulrich Teipel</i>	135
13	Preparation, Properties and Application of Energetic Complex Perchlorates of d-Metals <i>Mikhail Ilyushin, Igor Tselinsky, Irina Bachurina, Yurii Gruzdev, Valery Sinditskii, Valery Serushkin, Vyacheslav Egorshin</i>	143
14	Balistic Stability of a Spherical Propellant: Comparison with a Flattened Spherical Propellant <i>Laurence Jeuniau, Michel Lefebvre, Pierre Guillaume</i>	150
15	Synthesis and Characterization of 1,2-Dinitroguanidine (DNG) and its Derivatives <i>Nikolaj Latypov, Martin Johansson, Larisa Yudina-Wahlström, Stefan Ek, Carina Eldsäter, Patrick Goede</i>	160
16	Energetic Characteristics of Solid Composite Propellants and Ways for Energy Increasing <i>David Lempert, G. Nechiporenko, G. Manelis</i>	169
17	Mechanism of Low-Frequency Non-Acoustic Instability Phenomena From the Point of View of the Concept of Spatial-Periodic <i>Alexander Lukin</i>	181
18	Stable Salts of Methylated 5-Aminotetrazoles <i>Carles Miró, Michael Göbel, Konstantin Karaghiosoff, Thomas Klapötke, Jan Welch</i>	202
19	Applicability of Dynamic Mechanical and Thermal Methods in Investigation of Ageing Processes of Double Based Propellants <i>Sanja Mušanić, Muhamed Sućeska, Sanko Bakija</i>	214
20	High Energy Density Materials (HEDM): Overview, Theory and Synthetic Efforts at FOI <i>Henric Östmark</i>	231
21	Aerobic Biodegradation of Mononitrotoluenes in Different Reactor Configuration <i>Jan Páca, Martin Halecky, Rakesh Bajpai</i>	251
22	Polyfunctional N-nitramines Structure Differentiation as a Basis for Simulation of Their Decomposition Mechanism <i>Tatyana Petukhova, Victor Ivshin, Vyacheslav Korolev, Tatyana Pivina</i>	260
23	Process Hazard Evaluation for Explosives Manufacturing Using TEMCLEV-EX Procedures <i>Tadeusz Piotrowski, Tomasz Salaciński, Michał Frączak</i>	268
24	Determination of the Thermal Resistance of the Emulsion Explosives <i>Tomasz Salaciński, Waldemar Witkowski, Andrzej Maranda, Johann Kasperski, Barbara Gołębek, Henryka Boniuk</i>	279

25	Reduction of Nitroaromatic Explosives by Oxygen-insensitive NAD(P)H:Nitroreductases: Implications for their Cytotoxicity <i>Jonas Sarlauskas, Lina Miseviciene, Henrikas Nivinskas, Zilvinas Anusevicius, Ausra Nemeikaite-Ceniene, Evaldas Maldutis, Narimantas Cenas</i>	285
26	Complex Research of Al Nanopowders Produced by the Exploding Wire Method <i>Valentin Sedoi, Galina Volkova, Mirslan Osmonaliev, Victor Ivanov, Ludmila Chemezova, Alexander Alekseev</i>	293
27	Ab Initio MD Computation of the Vibrational Relaxation Time in HE Molecules <i>Alexander Selezenev, Aleksey Aleynikov</i>	304
28	Unusual Thermal Decomposition of NTO: Is It a Result of Very Strong Bonds or Other Reasons Exist? <i>Valerii Sinditski, Sergei Smirnov, Valerii Egorshv</i>	314
29	The principal approach to the estimation of cookoff temperature using FEM <i>Jakub Šelešovský, Miloslav Krupka</i>	329
30	Low Temperature Activation Energy of Propellants <i>Stephan Wilker, Uldis Ticmanis, Gabriele Pantel</i>	338
31	Theoretical Study of the Tetrazine's C-N Heterocyclic Derivatives <i>Zhou Yang, Shu Yuan-Jie, Wang Xin, Long Xin-Ping, Tan An-Min</i>	356
32	Self-aggregation of Thermal Decomposition Products <i>Tomasz Zielenkiewicz, Teresa Książczak, Andrzej Książczak</i>	368
Only in Proceedings		
33	Study of the Routes for Producing Nitroguanidine(NQ) in Aqueous Nitric Acid Solutions. Development of the Efficient Meth <i>Alexandr Astrat'ev, Dmitry Dashko, Andrei Stepanov</i>	377
34	Fuel Dispersion in Air by Detonation Wave <i>Esmail Bazrafshan, Seyed Pourmortazavi</i>	393
35	Preliminary Study of the Behavior of Al Nano Powders – Water Slurry Compositions at Near Room Temperatures <i>Mikhail Laritchev, Olga Laricheva, Ilia Leipunsky, Pavel Pshechenkov, Alexey Jigatch, Michael Kuskov, Valentin Sedoi</i>	404
36	Carbon Nanotubes as Support for Co/TiO ₂ Electrocatalysts for Hydrogen Evolution <i>Orce Popovski, P. Paunović, A. Dimitrov, D. Slavkov, D. Smileski, M. Tasev, S. Hadži Jordanov</i>	416
37	Sliding Shock Wave Causing Deformation of the Metal Plate Attached to the Cover <i>Huiying Zhao, Zhaowu Shen</i>	423

Part 2

Posters

- 38 Simulation of Coffee Mill Explosion Accident Underatex 137 Directive
Vladislav Adamík, Břetislav Janovský 451
- 39 Explosion Hazard of Water Gel-like Systems on a Base of High Explosives
Alexei Apolenis, Ekaterina Aleshkina, Vladimir Annikov, Georgii Kozak 464
- 40 Heat of Melting of Nitrocompounds Measuring by Means of the Differential Scanning Calorimetry Method
Svetlana Arinina, Georgii Kozak 473
- 41 Characterization and some Properties of 1-Nitroamidino-3-amino-5-nitrimino-1,2,4-triazole
Alexander Astachov, Vitaliy Revenko, Ludmila Kruglyakova, Andrew Nefedov, Eduard Buka 480
- 42 The Use of a Kenics Static Mixer for the Reaction of TNT with NaOCl
Anthony Bellamy, Victoria Lomax, Kate Read 491
- 43 Investigation of Stabilizing Properties of Triphenylamine (TPA)
Jan Bladek, Stanislaw Cudzilo, Sylwia Pietrzyk, Stephan Wilker 500
- 44 Some Properties of a Composite Propellant Premix
Daniel Buczkowski, Bogdan Florczak, Tomasz Salaciński 507
- 45 Thermophysical Properties of Thermoplastic Composite Propellants Based on Modified PVC Binder
Vladica Bozic, Marko Milos, Djordje Blagojevic 513
- 46 Thermal Decomposition of the trans-1,4,5,8-Tetranitro-1,4,5,8-tetraazadecalin
Yurii Burov, Irina Kucherova 526
- 47 Observation of Changes in Chosen Properties of Plastic Explosives During Artificial Ageing
Martina Chovancová, Peter Očko, Jozef Lopúch, Alžběta Pechová 529
- 48 Hexanitrostilbene - Density Dependend Sensitivity
Dominik Clément, Karl Rudolf 540
- 49 Self-sustaining reductive defluorination of (CF)_n and characterization of the reaction products
Stanislaw Cudzilo, Andrzej Huczko, Mateusz Szala, Michal Bystrzejewski 544
- 50 Insensitive Environmentally-compatible and Non-toxic Replacements for RDX in EMs – New Method Of Synthesis Of DAT
Chaza Darwich, Thomas Klapötke 551
- 51 The Nitration Reaction of Isowurtzitane Acyl Derivatives
Maciej Duda, Pawel Maksimowski, Wincenty Skupiński 561

52	Initiation of Deflagration and Detonation in the Metal Dust/Air Systems <i>Irina Egorova, Boris Kondrikov</i>	569
53	JET Velocity and the Effects of the Shaped Charge Perforator for Use in the Oil and Gas Well <i>Zvonimir Ester, Mario Dobrilović, Branimir Janković, Zvonimir Tomičić, Mile Odak</i>	581
54	Thermochemical Calculations and Experimental Study of Composite Propellants Containing DADNE or NTO <i>Bogdan Florczak, Andrzej Orzechowski, Tomasz Salaciński</i>	587
55	Implementation of the Absolute Method in the Ballistic Analysis of Gunpowder <i>Tomasz Gawor, Tomasz Wolszakiewicz, D. Korszeń</i>	598
56	“Green” Polymer-Bound Explosive (PBX) for Laser <i>Mikhail Ilyushin, Igor Tselinsky, Irina Shugalei, Anatoliy Chernay, Valeria Toftunova</i>	602
57	Synthesis of 2,4-dinitro-2,4-diazapentane from methylnitramine and dihalogenmethanes <i>Zdeněk Jalový, Pavel Mareček, Kamil Dudek, Matúš Ondrejko, František Liška</i>	608
58	Application of Supercritical Fluid Extraction for the Isolation of Nitrocompounds <i>Věra Ježová, Tomáš Fojtík, Aleš Eisner, Martin Adam, Karel Ventura</i>	613
59	Possibilities of Degradations Process of Nitroaromatic Compounds <i>Věra Ježová, Tomáš Fojtík, Karel Ventura, Vít Matějů, Eva Kyslíková, Simona Vosáhllová</i>	618
60	Preparation of Low-melting Compositions Based on 1,3,3-Trinitroazetidine <i>Dmitrii Katorov, N. Vyalova, G. Rudakov, A. Ladonin, V. Zhilin, E. Veselova</i> ..	624
61	Salts OF 5-Nitrotetrazolate <i>Thomas Klapoetke, Peter Mayer, Kurt Polborn, Jan Wlechl</i>	631
62	5,5'-Bis-(1H-tetrazolyl)amine (H2bta): A Promising Ligand in Novel Copper Based Priming Charges (PC) <i>Thomas Klapoetke, Peter Meyer, Kurt Polborn, Jörg Stierstorfer, Jan Weigand</i> ..	641
63	Emulsive Explosive Sensitized by Inorganic Peroxides <i>Igor L. Kovalenko, Alexandr V. Kuprin</i>	652
64	Detonability of Nitromethane Mixtures with Azideethanol <i>George Kozak, Vlada Raikova</i>	657
65	Effect of Rubbing Surfaces Velocity on the Results of Friction Sensitivity Testing of Explosives <i>Miloslav Krupka, Jan Horkel, Jakub Selesovsky</i>	668

66	Thermal Effects of a Slow Thermal Decomposition and Inflammation of Nitramines and Its Mixtures with Al, B and Zr Powder <i>Valeriy Lashkov, A. Strikanov, A. Tikhonova</i>	673
67	Sensitivity Research of Explosive Mixtures Containing Nitroguanidine and 3-Nitro-1,2,4-triazol-5-one <i>Andrzej Maranda, Jerzy Nowaczewski, Andrzej Orzechowski, Dorota Powala</i>	680
68	Cytotoxicity of Novel Nitrotriazole and Trinitroaniline Explosives: The Role of Oxidative Stress <i>Ausra Nemeikaite-Ceniene, Jonas Sarlauskas, Henrikas Nivinskas, Zilvinas Anusevicius, Narimantas Cenas</i>	689
69	Optimalization of Crystallization of 1,1-Diamino-2,2-dinitroethylene <i>Andrzej Orzechowski, Dorota Powala, Bogdan Florczak, Andrzej Maranda, Jerzy Nowaczewski</i>	693
70	Selective Modifiers of Thermal Decomposition and Combustion of Composite Solid Rocket Propellants Containing HMX <i>E. Popenko, A. Sergienko, E. Sokolov, D. Petrov, V. Shandakov, Y. Zharinov, A. Lobanova</i>	701
71	Crystal Structures of Selected Energetic Materials Calculated by Molecular Simulations <i>Miroslav Pospíšil, Pavel Vávra, Petr Kovář</i>	712
72	Comparison of Coating with Various Deterrents <i>Pavel Prchal</i>	719
73	Treatment of Wastewaters Containing Nitrate Esters <i>Jan Skládal, Martin Kouba, Martina Mudruňková, Miloslav Slezák</i>	723
74	The Use of Low Pressure Closed Vessel and Rocket Motor for Measurements of Burning Rate of Rocket Solid Propellants. <i>Petr Stojan</i>	730
75	Experimental Rating of Surge Withstand Capability of Reinforced Concrete to the Standard Concrete with Dynamic Load <i>Jiří Štoller</i>	736
76	An Experimental Study of Detonation Transmission from Hydrogen-Oxygen to Hydrogen-Air Mixture <i>Andrzej Teodorczyk, A. Dabkowski, M. Bratowski</i>	742
77	On Some Methods of Determination of the Detonation Energy of Explosives <i>Waldemar A. Trzcziński, Józef Paszula</i>	748
78	Regarding the Fundamental Problem Solving of Interior Ballistics in the Case of Flegmatized Powders <i>Titica Vasile, Cristian Barbu, Doru Safta</i>	756
79	Numerical Description of the Effects in Gas Generator <i>Tomasz Wolszakiewicz, Tomasz Gawor, Zbigniew Walenta</i>	764

80	The Mechanisms of Thermal Decomposition of Simple Hydronitrogen Compounds <i>Ying Xiong, Yuanjie Shu, Ge Zhou, Xinfeng Wang, Anming Tian, Ning-Bew Wong</i>	769
81	Influencing Parameters on HE Projectiles with Natural Fragmentation <i>Berko Zecevic, Jasmin Terzic, Alan Catovic, Sabina Serdarevic-Kadic</i>	780
82	New Findings in the Electric Spark Sensitivity of Nitramines. Part I. Aspects of Molecular Structure <i>Svatopluk Zeman, Jiří Kočí, Vojtěch Pelikán, Jiří Majzlík, Zdeněk Friedl</i>	796
83	New Findings in the Electric Spark Sensitivity of Nitramines. Part II. A Problem of Hot Spots <i>Svatopluk Zeman, Jiří Kočí, Vojtěch Pelikán, Jiří Majzlík</i>	810
84	Theoretical Study on the Decomposition of 1,1-Diamino-2,2-Dinitroethylene <i>Hehou Zong, Yuanjie Shu, Yigang Huang, Xinfeng Wang</i>	816
Abstract		
85	Polymorphic Transformations and Thermal Decomposition of Ammonium Nitrate at Thermal Analysis Conditions <i>Valeriy Lashkov, E. Egorychev, A. Strikanov, A. Tikhonova, V. Rybakov</i>	825
	Author Index	826