UNIVERSITY OF PARDUBICE
Faculty of Chemical Technology
Institute of Energetic Materials
CZ-532 10 Pardubice
http://www.ntrem.com

PROGRAM

(the third version)

of the seventeen seminar

„NEW TRENDS IN RESEARCH OF ENERGETIC MATERIALS“

NTREM 2014

held at the University of Pardubice

Pardubice, the Czech Republic

April 9th – 11th, 2014

intended as a meeting of students, postgraduate students, university teachers and young research and development workers, with interest in energetic materials

17TH INTERNATIONAL SEMINAR
"NEW TRENDS IN RESEARCH OF ENERGETIC MATERIALS"
http://**www.ntrem.com**

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Institute of Shock Physics, Imperial College London, London
Nicolet CZ, Prague
Faculty of Chemical Technology, University of Pardubice,
Centre of Technology Transfer, University of Pardubice
OZM Research, Hrochův Týnec
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The seventeen consecutive seminar on new trends in research of energetic materials is intended to be a world meeting of *young* people, university teachers and specialists working in the fields of teaching, research, development, processing, analyzing and application of all kinds of energetic materials. The main focus of this year's meeting will be aimed towards *Properties of Energetic Materials – Prediction and Reality* but attention will also be devoted to other problems related to energetic materials. It is not aimed only at the exchange of professional information but also at creating a pleasant meeting where young specialists from different countries have the opportunity to meet and gain personal contacts.

Papers should not only describe research work itself, but should also demonstrate awareness of the context and background for the research. The papers presented at this meeting will be quoted in the Chemical Abstracts.

The seminar is organized by staff members of the Institute of Energetic Materials University of Pardubice and in accordance with the tradition of previous meetings will take place at the University Hall.

The official language of the seminar is **English** and all contributions shall be presented and written exclusively in the English language.

Registration fee: ***Students and young researchers*** free of charge, ***other*** free of charge, voluntary donation of €100 to help co-sponsor the seminar would be greatly appreciated.

Passports and visas: the visitors from most countries outside EU need valid passport and visa when entering Czech Republic. Please contact the Czech Embassy or consulate in your country for more information (Czech Republic is a part of Schengen territory).

Registration: via web form should be done before the end of April 7th, 2013. Registration of participants after this date will take place at the University Hall:

April 8th	4:00PM - 7:00 PM
April 9th	7:30AM - 10:00 AM

Proceedings of the presented contributions will be prepared by the organizers of the seminar by the date of its opening; price of the proceedings will be 3500.- CZK (i. e. ~ $180; €130) printed version and 500.- CZK (i. e. ~$25; €20) CD version – the prices are valid at the time of the seminar. The Proceedings will be provided to the main authors free of charge.

Please, watch the web site http:// www.ntrem.com for updates

Chairman of the Seminar:

Prof. Svatopluk Zeman	*IEM, FCT, University of Pardubice*

Scientific Committee:

Chairman of the Committee:

Prof. Adam Cumming	*DSTL, Sevenoaks, U.K.*

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Dr. Ruth Doherty	*Naval Surface Warfare Center, Indian Head Division, USA*
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Prof. Thomas Klapoetke	*Ludwig-Maximilians-Universität Műnchen, Germany*
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Prof. Michel Lefebvre	*Royal Military Academy, Belgium*
Dr. David Lempert	*Russian Acad. of Sci., Chernogolovka, Russia*
Prof. Andrzej Maranda	*Military Univ. Technol., Warsaw, Poland*
Prof. Tatiana S. Pivina	*Zelinskii Inst. of Organic Chemistry, Moscow*
Dr. William Proud	*Imperial College London, G. B.*
Prof. Yuanjie Shu	*CAEP, Inst. of Chemical Materials, Mian Yang*
Prof. Valery Sherushkin	*Mendeleev Univ. of Chem. Technology, Moscow*
Prof. Aleksander Smirnov	*State Sci. Res. Inst. of Mechanical Engineering, Dzerzinsk*
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Prof. Jianguo Zhang	*Beijing Inst. of Technology, Beijing, China*

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Dr. Iva Ulbrichová	*Dean Office, FCT, University of Pardubice*

Organizing committee of NTREM
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University of Pardubice
532 10 Pardubice
CZECH REPUBLIC, European Union

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Affiliated activities:

The first meeting of the ***SCIENTIFIC COMMITTEE*** will be carried out on Tuesday, **April 8th, 2014**, at 6 p.m. in the **Pension & Restaurant BIRDIE** (see map), the second one on Thursday, **April 10th, 2014** in the University Hall – see page 7.

A friendly get-together for foreign participants and for workers and co-workers of IEM will be arranged at **Pardubice's Castle** on April 10th, 2014 – see page 16.

Lecture program of the 17th NTREM – Wednesday April 9th

08:10 **Meeting of all speakers** of the first Session with Chairman of this Session.

08:40 **Opening of seminar** – speech of representative of University,

1. Session

Chairman: Prof. Thomas Klapoetke
Ludwig-Maximilians-Universität Műnchen

08:50 Yuanjie Shu, Huarong Li, Manman Tian, Ling Chen, Song Chi ***invited lecture***
China Academy of Engineering Physics, Mianyang, China
The theoretical investigation on developing smart eutectics based by phase diagrams and co-crystals.

09:20 Qilong Yan, Svatopluk Zeman, Pedro E. Sánchez Jiménez, Ahmed Elbeih,,
University of Pardubice, Pardubice, Czech Republic
Simulation of thermal safety properties for different CL-20 crystals and their PBXs.

09:40 Lilia A. Pashina, Natalia V. Baranova, Anatoly V. Kostochko
Kazan National Research Technological University, Kazan, Russia
The influence of structural-chemical parameters of nitramines on energy and acid-base properties of their surfaces.

10:00 Yuan Wang, Shenghua Li, Chenghui Sun, Bin Yang, Siping Pang,
Beijing Institute of Technology, Beijing, China
A simple method for predicting detonation performances of boron derivatives and aluminized explosives.

10:20Zhiyue Liu, Dongxue Xu, Liqiong Wang,
Beijing Institute of Technology, Beijing, China
Simulation method for deflagration to detonation transition in energetic materials.

10:40 **Presentation of the Centre of Technology Transfer** – Mrs. Linda Lososova

10:50 – 11:10 Coffee break

11:10 Wen Qian, Yuanjie Shu, Huarong Li, Qing Ma, Shumin Wang
China Academy of Engineering Physics, Mianyang, China
Simulation study on the GAP-based comb-like polyurethane modifier used for TNT-based composite explosive

11:30 Hayleigh Lloyd, Stephanie Corless, Peter Wheatley, Colin Pulham
University of Edinburgh, Edinburgh, United Kingdom
Energetic co-crystals – Structural studies of nitrotriazolone salts and co-crystals.

11:50 Joanna Lasota, Zbigniew Chyłek, Waldemar Trzciński,
Military University of Technology, Warsaw, Poland
Methods for preparing spheroidal particles of 3-nitro-1,2,4-triazol-5-one (NTO).

12:10 Feiyan Gong, Xiaobing Liu, Li Wang,
China Academy of Engineering Physics, Mianyang, China
Surface grafting with energetic glycidyl azide polymer (GAP): an efficient way to process ultrafine aluminum powders.

12:30 Davin Piercey, David Chavez, Thomas Klapoetke, Joerg Stierstorfer, Christin Kirst, Stefanie Heimsh,
Ludwig-Maximilian University of Munich, Munich, Germany
Synthesis of a unique heterocycle containing both N-amino and N-oxide functionality.

12:50 - 14:10 LUNCH BREAK

2. *Session*

Chairman: Prof. Tatiana S. Pivina
Zelinskii Inst. of Organic Chemistry, Moscow

14:00 **Meeting of all speakers** of the second Session with Chairman of this Session.

14:10 David E. Chavez ***invited lecture***
Los Alamos National Laboratory, Los Alamos, New Mexico, USA
Recent efforts in heterocyclic chemistry.

14:40 Thomas M. Klapötke, Philipp C. Schmid, Jörg Stierstorfer, Muhamed Sućeska
Ludwig-Maximilian University of Munich, Munich, Germany
Novel energetic bistetrazole-N-oxides - synthesis and characterization.

15:00 Yu Hai-jiang, Gao Deng-pan, Yang Pan,
China Academy of Engineering Physics, Mianyang, China
Synthesis and hydrolysis kinetics of a six-memebered heterocyclic borate ester.

15:20 Stefan Ek, Kamil Dudek, Jonas Johansson
The Swedish Defence Research Agency (FOI), Tumba, Sweden
Scale-up and characterisation of 3(5),4-dinitropyrazole (DNP).

15:40 Yongxing Tang, Hongwei Yang, Xuehai Ju, Chunxu Lu, Qinghui Lv, Guangbin Cheng
Nanjing University of Science and Technology, Nanjing, China
A novel N-N bond cleavage in 1,5-diaminotetrazole: synthesis and characterization of 5-picrylamino-1,2,3,4-tetrazole (PAT).

16:00 – 16:20 Coffee break

16:20 Paul Coster, Craig Henderson, Steven Hunter, William Marshall, Colin Pulham,
School of Chemistry and Centre for Science at Extreme Conditions, The University of Edinburgh, Edinburgh,
Explosives at extreme conditions: Polymorphism of 2,4-dinitroanisole

16:40 Hichem Fettaka, Michel H.Lefebvre,
Laboratory for Energetic Materials, RMA, Bruxelles, Belgium
Investigation of commercial precursors for the synthesis of liquid nitroesters.

17:20 Anna Vasileva, Dmitry Dashko, Alexander Astrat'ev, Telman Goncharov, Zainutdin Aliev
Special Design and Construction Bureau SDCB "Technolog", Saint-Petersburg, Russia
Energetic cocrystal of CL-20 and DNP.

17:20 Jinting Wu, Jianguo Zhang, Baoming ZhengBin Yang, Yunfei Liu, Qingjie Jiao, Tonglai Zhang,
Beijing Institute of Technology, Beijing, China
The high-nitrogen energetic ionic salts.

Prof. Manfred Held
(April 2007)

Prof. Hans Pasman and Dr. Carl-Otto Leiber
(April 2008)

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Lecture program of the 17th NTREM – Thursday April 10th

3. Session

Chairman: Dr. Ruth Doherty
Naval Surface Warfare Center, Indian Head Division, USA

08:00 Aleksandr Smirnov, Sergey Smirnov, Vladimir Balalaev, Tatyana Pivina ***invited lecture***
Joint stock Co. «State scientific res. inst. of mechanical engineering after V.V. Bakhirev», Dzerzhinsk,
Calculation of detonation velocity and pressure of individual and composite explosives.

08:30 Daniel McAteer, Jacqueline Akhavan, Alessandro Contini
Cranfield University, Shrivenham, United Kingdom
The development of novel, low sensitivity, gas-generating formulations for hotwire ignited devices.

08:50 Edward Mily
North Carolina State University, Raleigh, NC, USA
Thin film thermite oxidation behavior at variable time scales.

09:10 Guillaume Bailleau, Bart Simoens, Michel Lefebvre,
Laboratory for Energetic Materials, RMA, Bruxelles
Influence of the shape of explosive charges on the pressure field.

09:30 Thuy-Tien N. Nguyen, Theresa Davey, William G. Proud
The Royal British Legion Centre for Blast Injury Studies at Imperial College London, Imperial College London, London
Percolation of gas and attenuation of shock waves through granular beds and perforated sheets.

09:50 Natalia N. Nikitina, Geliuzia G. Safina, Olga V. Garifullina, Anatoly V. Kostochko,
Kazan National Research Technological University, Kazan, Russia
Solubility prediction of cellulose nitrates and glycols ethers using theoretical approaches.

10:10 – 10:30 Coffee break

10:30 David Lempert
Russian Academy of Science, Chernogolovka, Russia
Preliminary estimation of the effectiveness of new and predicted energetic compounds as oxidizers for solid composite propellants.

10:50 Angelika Zygmunt, Andrzej Książczak, Katarzyna Cieślak,
Warsaw University of Technology, Warsaw, Poland
Application of DSC method for porous structure of single-based propellant.

11:10 Katarzyna Gańczyk, Andrzej Książczak,
Warsaw University of Technology, Warsaw, Polandtkx-
Phase transitions in binary system: nitrocellulose + stabilizer.

11:30 Petar Shishkov, Milena Nedkova, Valery Mitkov, Ivan Glavchev
University of Mining, St. Ivan Rilski, Sofia, Bulgaria
Investigation of long term aged propellants.

11:50 – 14:00 LUNCH BREAK

4. Session – Poster program – see on page 8

17:00 The second meeting of Scientific Committee (*University Hall*)

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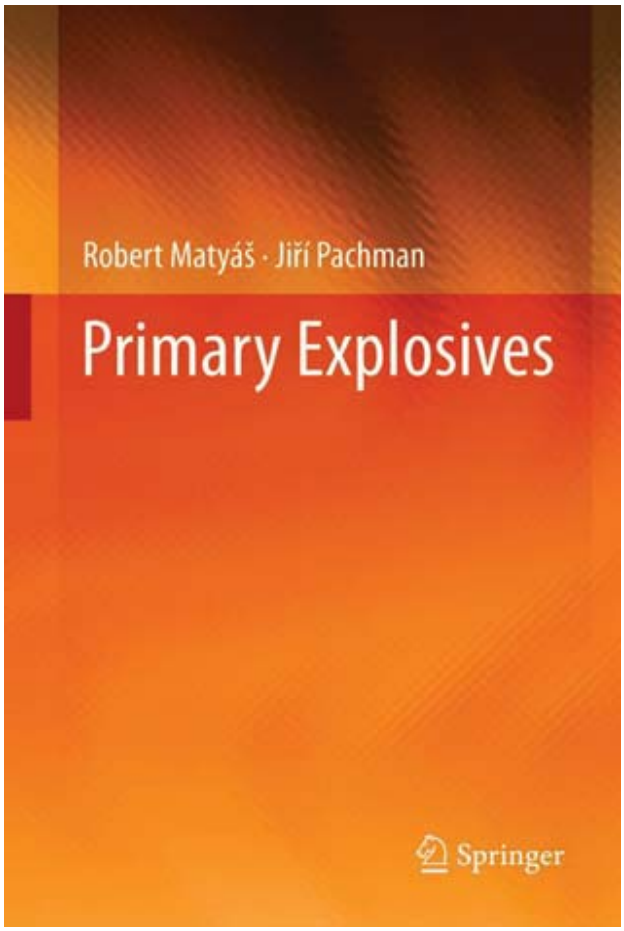

R. Matyáš, and J. Pachmáň,
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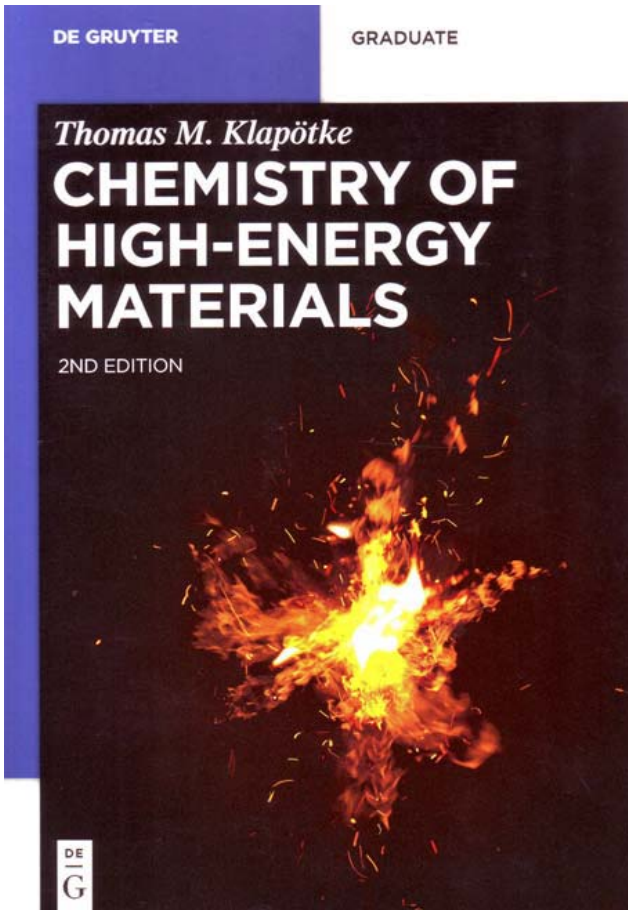

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Dr. Robert Matyas (on left)
with colleagues from Austin Detonator Co.

Prof. Thomas Klapoetke
and Dr. Nikolay Latypov

Lecture program of the 17th NTREM – Friday April 11th

5. Session

Chairman: Prof. Adam Cumming
DSTL Sevenoaks, U.K.

08:00 Lemi Turker ***invited lecture***
Middle East Technical University, Ankara, Turkey
Interaction of TNT with certain bioactive molecules.

08:30 Jan Paca, Martin Halecky, Pavlina Karlova, Evguenii Kozliak,
Institute of Chemical Technology, Prague,
Interactions among isomers of mononitrophenols during biodegradation of their mixtures.

08:50 Rachael L. Boddy, N. E. Taylor, C. H. Braithwaite, D. M. Williamson, A. P. Jardine, P. Gould, I. G. Cullis, R. Johnson
The Cavendish Laboratory, Cambridge, CB3 0HE, U.K.
Application of group interaction modelling to the shock Hugoniots of double-base propellants

09:10 Manfred A. Bohn
Fraunhofer Institut für Chemische Technologie (ICT), Pfinztal, Germany
Recent achievements in kinetic modelling of stabilizer consumption and molar mass degradation in NC-based propellants.

09:50 Mikhail A. Ilyushin, IIrina V Shugalei, Alexey V Kalinin, Alexandr P Voznyakovskiy, Alexandr D Kutsenko,
Saint-Petersburg State Institute of Technology (Technical University), Saint-Petrsburg
Synthesis and some properties of poly-2,4,6-trinitrostyrene.

10:10 Andrew P. Jardine, D. M. Williamson, S. Gymer, N. E. Taylor, S. M. Walley, Stewart J. P. Palmer
The Cavendish Laboratory, Cambridge, CB3 0HE, UK
Optical diagnostics to study impact initiation mechanisms in modern energetic materials.

10:30 Denis Nurmukhametov, Boris Aduev, Igor Liskov, Andrey Nikitin
Institute of Coal Chemistry and Material Science SB RAS, Kemerovo, Russia
Laser initiation of mixed-based composition PETN and the inclusion ultrafine metal and carbon materials.

10:50 – 11:10 Coffee break

11:10 Alexander Lukin
Western-Caucasus Research Center, Tuapse, Russia
Universal Concept of Self-Synchronization of the Micro/Nano-Structures of the Energetic Materials Reactionary Zones and Synthesis of the Advanced Propulsion Materials.

11:30 Andrey Tyutyaev, Andrey Dolzhikov, Irina Zvereva
Samara State Technical University, Samara, Russia
Phenomenological models of explosive systems initiation at mechanical influences

11:50 Liqiong Wang, Xuejiao Shi,
Beijing Institute of Technology, Beijing, China
Effect of moisture content and ambient humidity on the thermal stability of pyrotechnic compositions.

12:10 Alexander Beliakov, Anna Khairullina, Evgeniy Belov, Alexander Korobkov,
Kazan National Research Technological University, Kazan
Pyrotechnic compositions based on calcium sulfate for processing of oil wells.

12:30 Vladilen Minin, Igor Minin, Oleg Minin
Siberian State Academy of Geodesy, Novosibirsk, Russia
Innovative technology of creating hypercumulative shaped charges jet.

l2:50 – 13:10 CLOSING REMARKS including AWARDING OF PRIZES

Poster program of the 17th NTREM – Thursday April 10th

4. Session

Chairman: Prof. Michel Lefebvre
Royal Military Academy, Brussels.

Posters should be hung on **Wednesday**, ***April 9th***, before 14:00. Special poster sessions will take place on Thursday (***April 10th***) from 14:00 up to17:00 h. During this time authors should be present for discussion at the posters.

P.1 Mei Jing, Huarong Li, Jun Wang, Yuanjie Shu, Yigang Huang,
China Academy of Engineering Physics, Mianyang, China
A DFT study of 1-amino-2,4-dinitroimidazole and its three derivatives.

P.2 Taner Atalar
TUBİTAK Marmara Research Center Chemistry Institute, Kocaeli, Turkey
Computational studies on some well-known nitramine type energetic compounds.

P.3 Manfred A. Bohn, Camilla Evangelisti, Thomas M. Klapötke,
Ludwig-Maximilian University of Munich, Munich, Germany
Atomistic simulation of the temperature dependence of density and van-der-Waals interactions of binders, plasticizers and mixtures of them.

P.4 Dmitriy V. Khakimov, Tatiana S. Pivina, Sergey G. Zlotin
Russian Academy of Sciences, Zelinsky Institute of Organic Chemistry, Moscow, Russia
Quantum-chemistry analysis of electrophilic nitrating agents and nitration processes.

P.5 Vladimir Dubovitskiy, Dmitriy Nesterenko, [10+] (1); Alexandr Utkin,
Russian Academy of Science, Chernogolovka, Russia
Calculation of the detonation concentration limits of liquid homogeneous explosive systems.

P.6 Žilvinas Anusevičius, Jonas Šarlauskas, Lina Misevičienė, Alexey V. Yantsevich, Yaroslav V. Dichenko, Jonita Stankevičiūtė, Kastis Krikštopaitis, Sergey A. Usanov, Narimantas Čėnas,
Vilnius University Institute of Biochemistry, Vilnius, Lithuania
Phenyl-N-methylnitroamines: preparation, quanto-mechanical calculations and preliminary studies on enzymatic reactivity.

P.7 Jonas Šarlauskas, Lina Misevičienė, Valė Miliukienė, Svatopluk Zeman, Kastis Krikštopaitis, Žilvinas Anusevičius, Narimantas Čėnas, Ahmed Elbeih,
Vilnius University Institute of Biochemistry, Vilnius, Lithuania
Modern nitramines, TNAZ and CL-20 (HNIW): studies on their electrochemistry, enzymatic reactivity and cytotoxicity.

P.8 Thomas M. Klapötke, Regina Scharf, Jörg Stierdstorfer,
Ludwig-Maximilian University of Munich, Munich, Germany
Aquatic Toxicity Determination of Energetic Materials Using the Luminescent Bacteria Inhibition Test.

P.9 Alexandr Astrat'ev, Vladimir Sannicov, Andrei Stepanov, Dmitry Dashko
SCTB Tecnolog, S.-Petersburg, Russia
Synthesis and properties of 4-azido derivatives of [3,3':4',3'']-ter-1,2,5-oxadiazole.

P.10 Jan Zigmund, Radovan Skácel, Kamil Dudek,
Explosia, a.s., VÚPCH, Pardubice, Czech Republic
Spherical PETN crystals obtained by crystallization from acetone-glycerol emulsions

P.11 Teddy Gilloux, Chaza Darwich, Lionel Joucla, Guy Jacob, Emilie Labarthe, Henri Delalu,
Université Claude Bernard Lyon 1, Laboratoire Hydrazines et Composés Energétiques Polyazotés, UMR 5278, Villeurbanne, France
Synthesis of new molecular structure propellants - Promising performance for NTO/MMH replacement.

P.12 Leonid Fershtat, Igor Ovchinnikov, Nina Makhova,
Russian Academy of Sciences, Zelinsky Institute of Organic Chemistry, Moscow
Synthesis of nitroheterocycles by ionic-liquids promoted [3+2]-cycloaddition reactions to nitroformonitrile oxide generated by cycloreversion of dinitrofuroxan.

P.13 Stefan Huber, Dániel Izsák, Konstantin Karaghiosoff, Thomas M. Klapötke, Stephan Reuter
Ludwig-Maximilian University of Munich, Munich, Germany
Energetic salts of 5-(5-azido-1H-1,2,4-triazol-3-yl)tetrazole.

P.14 Thomas M. Klapötke, Carolin Pflüger, Muhamed Sućeska,
Ludwig-Maximilian University of Munich, Munich, Germany
Zwitterionic explosives based on 4,6-dinitrobenzotriazol-3-ium-1-oxide.

P.15 Marcos A. Kettner, Thomas M. Klapötke, Johannes Feierfeil, Swetlana Wunder, Muhamed Suceska,
Ludwig-Maximilian University of Munich, Munich, Germany
Synthesis and Characterization of Alkylated Trinitromethyl- and Fluorodinitromethyl-tetrazoles.

P.16 Quirin J. Axthammer, Camilla Evangelisti, Thomas M. Klapötke, Rebekka Meyer, Muhamed Suceska,
Ludwig-Maximilian University of Munich, Munich, Germany
Michael addition of nitroform as a source of energetic materials, Synthesis and characterization.

P.17 Thomas M. Klapötke, Jörg Stierstorfer, Tomasz Witkowski,
Ludwig-Maximilian University of Munich, Munich, Germany
Synthesis and investigation of copper salts of 1-alkyl-5-nitriminotetrazoles.

P.18 Alexander M. Astachov, Alexander D. Vasiliev, Denis V. Antishin, Eduard S. Buka,
Siberian State Technological University, Krasnoyarsk, Russia
X-ray structure of S,S'-dimethyl-N-nitroimidodithiocarbonate.

P.19 Rafał Lewczuk, Malwina Wasilewska, Mateusz Szala,
Military University of Technology, Warsaw, Poland
Synthesis and properties of some new salts of 4,4',5,5'-tetranitro-2,2'-biimidazole.

P.20 Mateusz Szala, Malwina Wasilewska, Rafał Lewczuk,
Military University of Technology, Warsaw, Poland
Stnthesis of azoxytriazolone by electrochemical reduction of nitrotriazolone in water/nitric acid system.

P.21 Kewei Ding, Taoqi LiWeijun Zheng, Zhongxue Ge,
Xi'an Modern Chemistry Research Institute, Xi'an, China
Preparation and stablilty investigation of the Ti-N cluster.

P.22 Konstantin Kobrakov, Dmitry Kuznetsov, Sergey Bobylev, occd@mail.ru, Svetlana Strashnova,
Peoples' Friendship University of Russia, Moscow, Russia
Synthesis and properties of new polyfunctional organic compounds derived from 2,4,6-trinitrotoluene.

P.23 Zygmunt Matys, Dorota Powała, Andrzej Orzechowski, Tomasz Sałaciński, Andrzej Maranda
Institute of Industrial Organic Chemistry, Warsaw, Poland
Methods of obtaining of high purity TNT.

P.24 David Lempert, Alexey Shastin
Russian Academy of Science, Chernogolovka, Russia
Triazines as a basis for new energetic compounds creation.

P.25 David Lempert, Nikita Chukanov,
Russian Academy of Science, Chernogolovka, Russia
Pseudopolymorphic solvates as potential energetic materials.

P.26 Stefan Ek, Patrik KrumlindeFrédéric Alvarez, Nikolaj Latypov,
The Swedish Defence Research Agency (FOI), Tumba, Sweden
Synthesis of stabilizers with plastizing properties for nitrocellulose propellants.

P.27 Abderrahmane Mezroua, Michel H. Lefebvre, Kamel Khimeche, Christophe Van-Velde
Ecole Militaire Polytechnique, Algiers, Algeria
Use of porous ammonium percholrate in rocket propellant.

P.28 Maria Luzyanina, Zimfira Valishina, Anatoliy Kostochko,
Kazan National Research Technological University, Kazan
Structure and characteristics of new types cellulose nitrate solutions.

P.29 Nikolay Yudin, Polina Efimova
Mendeleev University of Chemical Technology, Moscow,
Study of features acid hydrolysis of 2,4,6,8,10,12-hexanitro-2,4,6,8,10,12-hexaazaisowurtzitane.

P.30 Manman Tian, Yuanjie Shu, Ling Chen, Huarong Li, Xin Ju
China Academy of Engineering Physics, Mianyang, China
Study of production method and phase diagram of MeNQ/NQ eutectic mixture.

P.31 Jonas Šarlauskas
Vilnius University Institute of Biochemistry, Vilnius, Lithuania
4,5,6,7-Tetranitro-1,3-dihydrobenzoimidazol-2-one (TNBO): modified methods of preparation and crystal structure investigation.

P.32 Wei Liu, Qiu-han Lin, Yu-zhang Yang, Yu-chuan Li, Bin Yang, Si-ping Pang,
Beijing Institute of Technology, Beijing, China
High Thermally Stable and Insensitive Energetic Salts Based On s-Triazine Cation.

P.33 Judyta Rećko, Leszek Szymańczyk, Matuesz Szala, Józef Paszula,
Military University of Technology, Warsaw, Poland
New explosive compositions based on triaminoguanidinium azotetrazolate.

P.34 Mauricio Ferrapontoff Lemos, Arnaldo Miceli,
Brazilian Navy Research Institute, Rio de Janeiro, Brazil
Effects of catalyzer and total binder content on the combustion/explosion energy and burning rate of HTPB propellants.

P.35 Abderrazak Mouloud
Ecole Militaire Polytechnique, Algiers, Algeria
Kinetic Laws and Calorimetric Properties of Epoxy Composite Rocket Propellants Modified by Nanoparticles.

P.36 Karim Moulal Boulkadid, Michel.H Lefebvre, Laurence Jeunieau, Alain Dejeaifve,
Laboratory for Energetic Materials, RMA, Bruxelles, Belgium
Influence of firing temperature on ballistic, mechanical and sensitivity of gun propellants.

P.37 Anatoly P. Denisyuk, Ye Zaw Htwe, Vladimir A. Sizov
Mendeleev University of Chemical Technology, Moscow, Russia
Influence of soot on combustion regularities of high-energetic propellant.

P.38 Yuriy N. Matyushin, Tatyana S. Konjkova
Semenov Institute of Chemical Physics, Russian Academy of Sciences, Moscow
Method for estimation of thermochemical properties for salt compounds.

P.39 Valery P. Sinditskii, Vasilyi I. Kolesov, Viacheslav Yu. Egorshev, Dmitry I. Patrikeev, Olga V. Dorofeeva,
Mendeleev University of Chemical Technology, Moscow, Russia
Organic explosive peroxides of acetone: enthalpies of formation.

P.40 Anatoly P. Denisyuk, Yury G. Shepelev, Dmitry L. Rusin, Kirill A. Gavrilov
Mendeleev University of Chemical Technology, Moscow, Russia
Regulating of combustion behavior of aerosol-forming fire-suppressing compounds by means of catalysts.

P.41 Łukasz Habera, Antoni Frodyma, Piotr Koślik, Zenon Wilk,
, Oil and Gas Institute, Kraków, Poland
The Modern perforating and fracturing tools – the concept and firing ground testing.

P.42 Marcin Romanowski, Justyna Hadzik, Jacek Kosno, Karolina Nikolczuk, Anna Wojtala
Institute of Heavy Organic Synthesis "Blachownia", Kędzierzyn Koźle, Poland
Polyglycerol as enviromental frendly binders for explosives

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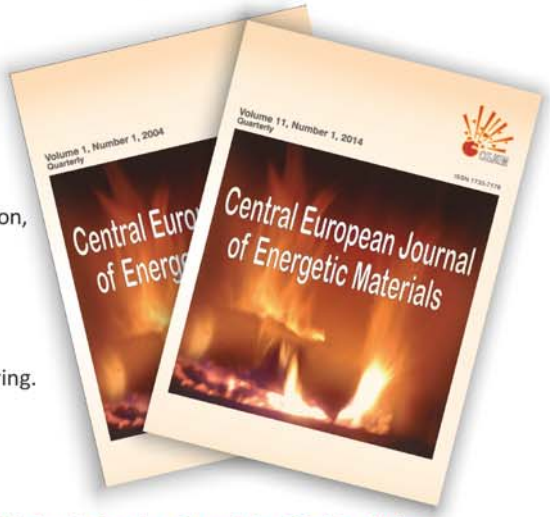

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18:30 - 22:00 EVENING PROGRAM **(***at Pardubice's Castle* **)**
http://www.virtualczech.cz/kraj-pardubicky/78-pardubick-zmek
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18:30 - 19:30 Visit of the expositions in the East Bohemia Museum

19:30 - 22:00 A friendly get-together in the Knight Hall

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