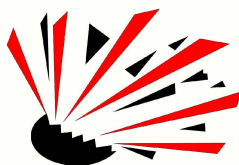


**UNIVERSITY OF PARDUBICE**  
**Faculty of Chemical Technology**  
*Institute of Energetic Materials*  
CZ-532 10 Pardubice  
<http://www.ntrem.com>

*PROGRAM (the seventh version)*  
**of the fifteenth seminar**

**„NEW TRENDS IN RESEARCH OF ENERGETIC  
MATERIALS“**



***NTREM 2012***

**held at the University of Pardubice**

Pardubice, the Czech Republic

**April 18<sup>th</sup> – 20<sup>th</sup>, 2012**

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

**15<sup>TH</sup> INTERNATIONAL SEMINAR**  
**“NEW TRENDS IN RESEARCH OF ENERGETIC MATERIALS”**

<http://www.ntrem.com>

**is supported by:**

*Office of Naval Research Global, Middlesex (conference grant)*  
*US Army International Technology Center - Atlantic, London, UK (conference grant)*  
*European Office of Aerospace Research and Development of the USAF (conference grant)*  
*Austin Detonator, Inc., Vsetín,*  
*Indet Safety Systems, Inc., Vsetín, a member of Nippon Kayaku Group,*  
*Explosia Co., Pardubice,*  
*Faculty of Chemical Technology, University of Pardubice,*  
*OZM Research, Hrochův Týnec*

**The fifteenth** consecutive seminar on new trends in research of energetic materials is intended to be a world meeting of *young* people and university teachers 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 *Disposal and Green Energetic Materials* 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 from January 01<sup>st</sup>, 2008).

**Registration:** via web form should be done before the end of April 15<sup>th</sup>, 2012. Registration of participants after this date will take place at the University Hall:

April 17 <sup>th</sup>	4:00PM - 7:00 PM
April 18 <sup>th</sup>	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. ~ \$190; €145) printed version and 500.- CZK (i. e. ~\$27; €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, monitor the Web sites [http:// www.ntrem.com](http://www.ntrem.com) for updates**

## Chairman of the Seminar:

Prof. Svatopluk Zeman (IEM, FCT, University of Pardubice)

## Scientific Committee:

### Chairman of the Committee:

Dr. Adam Cumming DSTL, Sevenoaks, U.K.

### Co-chairman of the Committee:

Prof. Stanislaw Cudzilo Military Univ. of Technol., Warsaw, Poland

### Members of the Committee:

Assoc. Prof. Alexandr Astachov	Siberian State Technological University, Russia
Dr. Bikash Bhattacharya	DRDO, Ministry of Defence, Govt. of India
Dr. Ruth Doherty	Naval Surface Warfare Center, Indian Head Division, USA
Prof. Zdeněk Friedl	Chem. Faculty, Brno Univ. of Technology, Czech Rep.
Prof. Hiroto Habu	Aerospace Exploration Agency, Sagami-hara, Japan
Prof. Mikhail Ilyushin	State Institute of Technology, Saint-Petersburg, Russia
Prof. Thomas Klapoetke	Ludwig-Maximilians-Universität München, Germany
Dr. Ernst-Christian Koch	NATO MSIAC, Brussels, Belgium
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. James M. Short	CECD, University of Maryland, USA
Prof. Valery Sinditskii	Mendeleev Univ. of Chem. Technology, Moscow
Dr. Muhamed Sućeska	Brodarski Inst., Zagreb, Croatia
Prof. Waldemar A. Trzeciński	Military Univ. Technol., Warsaw, Poland
Prof. Lemi Türker	Middle East Technical Univ., Ankara, Turkey
Assoc. Prof. Emel Yildiz	TÜBITAK, Marmara Res. Centre, Turkey
Assoc. Prof. Pavel Vávra	IEM, FCT, Univ. of Pardubice, Czech Rep.
Prof. Liqiong Wang	Beijing Inst. of Technology, Beijing, China
Prof. Jianguo Zhang	Beijing Inst. of Technology, Beijing, China

## Organizing Committee

### Chairman of the Committee:

Dr. Jiří Pachmáň (IEM, FCT, Univ. of Pardubice, Czech Rep.)

### Members of the Committee:

Dr. Jakub Šelešovský	IEM, FCT, Univ. of Pardubice, Czech Rep.
Dr. Robert Matyáš	IEM, FCT, Univ. of Pardubice, Czech Rep.
Dr. Marcela Jungová	IEM, FCT, Univ. of Pardubice, Czech Rep.
Dr. Iva Ulbrichová	Dean Office, FCT, University of Pardubice

Organizing committee of NTREM  
Institute of Energetic Materials  
University of Pardubice  
532 10 Pardubice  
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## Affiliated activities:

The first meeting of the *SCIENTIFIC COMMITTEE* will be carried out on Tuesday, **April 17<sup>th</sup>, 2012**, at 6 p.m. in the **Pension & Restaurant BIRDIE** (see map), the second one on Thursday, **April 19<sup>th</sup>, 2012** in the University Hall – see page 6.

A friendly get-together for foreign participants and for workers and co-workers of IEM will be arranged at **Pardubice's Castle** on April 19<sup>th</sup>, 2012 – see on page 13.

## Lecture program of the 15<sup>th</sup> NTREM – Wednesday April 18<sup>th</sup>

08:15 **Meeting of all speakers** of the first Session with Chairman of this Session.

08:40 **Opening of seminar** – speech of Assoc. Prof. Tatiana Molkova,  
*vice-rector of University of Pardubice*

### *1. Session*

Chairman: Prof. Stanisław Cudziło  
*Military University of Technology, Warsaw*

09:00 Alexander Dzyabchenko *(invited lecture)*  
*Karpov Institute of Physical Chemistry, Moscow, Russia*  
**Use of organic crystal structure prediction methods in the design of energetic materials.  
Modeling of the conformational polymorphism and pressure-induced phase transitions in RDX.**

09:30 Xue-Hai Ju, Su-Qin Zhou  
*Nanjing University of Science & Technology, Nanjing, China*  
**Theoretical investigation for adsorption of 2,4,6-trinitrotoluene on Al(111) surface**

09:50 Jan Páca, Pavlina Karlova, Martin Halecky, Marie Stiborova, Rakesh Bajpai, Evgenii Kozliak,  
*Dept. of Fermentation Chemistry & Bioengineering, Inst. of Chemical Technology, Prague*  
**Biological degradation of nitrophenol mixture in a continuous aerobic reactor.**

10:10 Nicholas E. Taylor  
*University of Cambridge, Cambridge, United Kingdom*  
**Compaction behaviour of ammonium nitrate prills.**

### **10:30 – 10:50 Coffee break**

10:50 Liqiong Wang, Jie Fang  
*State Key Lab. of Explosion Science & Technology, Beijing Institute of Technology, Beijing, China*  
**Relationship of rheological properties and stability of emulsion matrix.**

11:10 Ondřej Němec, Marcela Jungová, Juraj Grega, Vojtěch Pelikán, Svatopluk Zeman  
*University of Pardubice, Pardubice, Czech Republic*  
**Note on determination of relative explosive strength of fortified W/O emulsions by means of ballistic mortar.**

11:30 Nicolas Sallien, Christophe Vandeveld, Emilie Delcourt, Michel H. Lefebvre  
*Royal Military Academy, Brussels, Belgium*  
**MEKP and mixtures containing MEKP: Detonics investigation.**

11:50 Emilie Delcourt, Christophe Vandeveld, Michel Lefebvre,  
*Royal Military Academy, Brussels, Belgium*  
**MEKP and mixtures containing MEKP: Chemical investigation.**

12:10 Adam L. Collins, David M. Williamson, Andrew P. Jardine  
*University of Cambridge, Cambridge, United Kingdom*  
**Passivated tetrazene for use in small-scale impact-sensitive gas generators.**

**12:30 - 14:00 LUNCH BREAK**

## 2. Session

Chairman: Prof. Michel Lefebvre  
*Royal Military Academy, Belgium*

13:40 **Meeting of all speakers** of the second Session with Chairman of this Session.

14:00 Philip Pagoria, Zhang Mao-xi, Alan DeHope, Gregory Lee, Alexander Mitchell (invited lecture)  
*Lawrence Livermore National Laboratory, Livermore, CA, USA*  
**"Green" energetic materials synthesis at LLNL.**

14:30 Christopher H. Braithwaite, Adam L. Collins, Brady Aydelotte, Francesca McKenzie, Naresh Thadhani, Vitali Nesterenko,  
*University of Cambridge, Cambridge, United Kingdom*  
**Advances in the study of novel energetic materials.**

14:50 Vitaly G. Kiselev, Nina P. Gritsan,  
*Institute of Chemical Kinetics and Combustion SB RAS, Novosibirsk, Russia*  
**Tautomeric equilibria and thermal decomposition of nitrogen-rich heterocycles: New insights from high-level ab initio calculations**

15:10 Olga Gryzlova, Alla Pivkina, Igor Dalinger, Tatyana Pivina, Vyacheslav Korolev, Svyatoslav Shevelev, Yurii Frolov,  
*Semenov Institute of chemical physics RAS, Moscow, Russia*  
**Polynitropyrazoles as new green energetic materials: chemistry and thermal decomposition.**

**15:30 – 15:50 Coffee break**

15:50 Andrey Stepanov, Dmitry Dashko, Alexandr Astrat'ev,  
*Special Design and Construction Bureau SDCB "Technolog", S.-Petersburg, Russia*  
**Some chemical properties of 3,4-bis(3-nitrofurazan-4-yl)furoxan.**

16:10 Niko Fischer, Jörg Stierstorfer, Thomas M. Klapötke,  
*Ludwig-Maximilian University of Munich, Munich, Germany*  
**TKX50 - the revolution in RDX-replacements.**

16:30 Denis Fischer, Jörg Stierstorfer, Thomas M. Klapötke,  
*Ludwig-Maximilian University of Munich, Munich, Germany*  
**Energetic materials based on 3,6-diamino-1-nitroguanidine.**

16:50 Chuan Huang Yanchun Li, Yi Cheng  
*Nanjing University of Science and Technology, Nanjing, PR China*  
**Investigation on the thermal decomposition of Triple-base Propellant by TG / DSC -MS-FTIR and multivariate non-linear regression.**

## Lecture program of the 15<sup>th</sup> NTREM – Thursday April 19<sup>th</sup>

### 3. Session

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

08:40 **Meeting of all speakers** of the third Session with Chairman of this Session.

- 09:00 Michail A. Ijushin, Irina V. Shugalei, Igor V. Tselinskiy *(invited lecture)*  
*State Institute of Technology, Saint-Petersburg, Russia*  
**“Green” energetic materials for primers.**
- 09:50 Dan-Dan Zeng, Jian-Guo Zhang, Zhi-Min Li, Xiao-Qing Niu, Tong-Lai Zhang,  
*Beijing Institute of Technology, Beijing, China*  
**Theoretical study on novel nitrogen-rich energetic compounds with tetrazene unit.**
- 10:10 Koji Fujisato, Hiroto Habu, Hidefumi Shibamoto, Xiuchao Yu, Atsumi Miyake, Keiichi Hori,  
*The University of Tokyo, Tokyo, Japan*  
**Combustion wave structure of ADN-based composite propellant.**
- 10:30 Katarzyna Cieślak, Andrzej Książczak  
*Warsaw University of Technology, Warsaw, Poland*  
**Low molecular weight components's influence to the effects of initial thermal decomposition of seven-perforated base propellants.**

**10:30 – 10:50 Coffee break**

- 10:50 Volker Weiser, Jürgen Hürttlen, Stefan Kelzenberg, André Lity, Evelin Roth, Uwe Schaller,  
*Fraunhofer ICT, Pfinztal, Germany*  
**Combustion behaviour of gelled nitromethane propellants filled with metallic particles and hydrides.**
- 11:10 Andrzej Maranda, Justyna Hadzik, Piotr Koślik, Karolina Nikolczuk, Zenon Wilk,  
*Institute of Industrial Organic Chemistry, Warsaw, Poland*  
**Measurement of blast wave intensity and blast wave overpressure of ammonal explosive.**
- 11:30 Joseph E. Backofen  
*BRIGS Co., Moneta, Virginia, USA*  
**Shaped charge jet initiation of explosives: a different view into penetration and initiation processes.**
- 11:50 Venugopal Rao Soma, Sreedhar Sunku, Ashwin Kumar Myakalwar, Prem Kiran Paturi, Surya Prakash Tewari, Manoj Kumar Gundawar  
*University of Hyderabad, Hyderabad, India*  
**Laser induced breakdown spectroscopic studies of HEM's using nanosecond and femtosecond pulses.**

**12:10 – 14:00 LUNCH BREAK**

**4. Session – Poster program – see on page 8**

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

## Lecture program of the 15<sup>th</sup> NTREM – Friday April 20<sup>th</sup>

### 5. Session

Chairman: Dr. Adam Cumming  
*DSTL Sevenoaks, U.K.*

08:40 **Meeting of all speakers** of the fifth Session with Chairman of this Session.

09:00 Vladimir K. Golubey,  
Russian Federal Nuclear Center, Sarov, Russia  
**Effect of charged and excited states on the decomposition mechanism of several peroxides molecules.**

09:20 Alexandr Smirnov, Sergey Smirnov, Tatyana Pivina, David Lempert, and Alexey Sheremetev State Scientific Research Institute of Mechanical Engineering after V.V. Bakhirev, Dzerzhinsk, Russia  
**The influence of calculation accuracy of formation enthalpy and monocrystal density estimations on some target parameters for energetic materials.**

09:40 Valery Sinditskii, Valery Serushkin, Viacheslav Egorshchev, Gennady Rudakov, Sergey Filatov, Ngok Nguen,  
*Mendelejev University of Chemical Technology, Moscow, Russia*  
**Comparative study of combustion mechanism of guanidine salts: Triaminoguanidine and 3,6-diguanidino-1,2,4,5-tetrazine nitrates.**

**10:00 – 10:30 Coffee break**

10:30 Ernst-Christian Koch, Arno Hahma,  
*NATO Munitions Safety Information Analysis Center (MSIAC), Brussels, Belgium*  
**Evaluation of ytterbium/polytetrafluoroethylene/Viton™ as a payload for infrared decoy flares.**

10:50 David Lempert, Ekaterina Dorofeenko,  
*Russian Academy of Science, Chernogolovka, Russia*  
**Anomalies in influence of boron combustible content on the specific impulse.**

**11:10** Pankaaj Verma, Jagdish Bhujbal, Ramdas Ghavate, Sudam Darekar, RajaVats Singh  
*High Energy Materials Energy Research Laboratory, Pune, India*  
**Boron Viton based fuel rich propellant processing.**

**11:30** Anniyappan Marimuthu, George G. Mugunt, Sikder A. Kanti  
*High Energy Materials Research Laboratory (HEMRL), DRDO, Pune, India*  
**Studies on cyanuric triazide (CTA) as green primary explosive.**

**11:50 – 12:20 CLOSING REMARKS including AWARDING OF PRIZES**

## Poster program of the 15<sup>th</sup> NTREM – Thursday April 19<sup>th</sup>

### 4. Session

Chairman: Prof. Svatopluk Zeman  
*University of Pardubice, Czech Rep.*

Posters should be hung on Thursday, **April 19<sup>th</sup>**, before 10:30. Special poster sessions will take place on Thursday (April 19<sup>th</sup>) from 14:00 up to 17:00 h. During this time authors should be present for discussion at the posters.

- P1** Mikhail A. Ilyushin, Irina V. Shugalei,  
*State Institute of Technology, Saint-Petersburg, Russia*  
**Sensitivity of bis(3(5)-hydrazino-4-amino-1,2,4-triazole) copper (II) perchlorate with additives to laser pulse.**
- P2** Seyed Ghorban Hosseini, Abbas Eslami, Seyed Hadi m Shariaty  
*University of Mazandaran, Babolsar, Iran*  
**Thermoanalytical investigation on some ammonium azide binary pyrotechnic mixture as novel chemical gas generating systems.**
- P3** Abbas Eslami, Seyed Ghorban Hosseini, Afefeh Kamyab,  
*University of Mazandaran, Babolsar, Iran*  
**Investigation on the effect of microencapsulation with some organic coating agents on surface morphology and thermal property of magnesium particles.**
- P4** Abbas Eslami, Seyed Ghorban Hosseini, Reza Pourfaraj,  
*University of Mazandaran, Babolsar, Iran*  
**Optical absorption spectroscopy investigation on the interaction of tetra (methyl pyridinium -4-yl) porphyrin (TMPyP) and its copper(II) complex (CuTMPyP) with TNT in acetonitrile.**
- P5** Mohammad Reza Sovizi, Seyed Ghorban Hosseini,  
*Iranian Scientific Association of Energetic Materials, Tehran, Iran*  
**Thermal behaviour of sucrose/oxidant binary pyrotechnic system.**
- P6** Liudmila A. Krugliakova, Rudolf S. Stepanov  
*Siberian State Technological University, Krasnoyarsk, Russia*  
**Thermal decomposition of the geminal dinitroethylmethylnitramines.**
- P7** Berko Zecevic, Kemal Krivic, Jasmin Terzic, Mario Baskarad, Alan Catovic,  
Sabina Serdarevic-Kadic,  
*University of Sarajevo, Mechanical Engineering Faculty, Sarajevo, Bosnia and Herzegovina*  
**Influence of energetic characteristics of double-base propellants on internal-ballistics parameters.**
- P8** Jasmin Terzic, Berko Zecevic, Samir Muzaferija, Sabina Serdarevic-Kadic, Alan Catovic,  
Mario Baškarad  
*University of Sarajevo, Mechanical Engineering Faculty, Sarajevo, Bosnia and Herzegovina*  
**Research of influence of nozzle geometry on internal- ballistics performances of solid propellant rocket motors using numerical simulations.**
- P9** Sabina Serdarevic-Kadic, Berko Zecevic, Jasmin Terzic, Alan Catovic  
*University of Sarajevo, Mechanical Engineering Faculty, Sarajevo, Bosnia and Herzegovina*  
**Influence of local atmosphere characteristics to range of 155 mm M864 projectile.**
- P10** Sanja Matečić Mušanić, Muhamed Sućeska, Ružica Čuljak,  
*Brodarski Institut d.o.o., Zagreb, Croatia*  
**Study of ageing processes of double base rocket propellants, based on stabilizer consumption.**
- P11** Yan Li, Rui Xue, Lei Lei, Shunguan Zhu, Lin Zhang,  
*Nanjing University of Science & Technology, Nanjing, China*  
**Characteristic analysis of tungsten type delay composition during thermal aging.**



- P12** Ayşem Arda, Ziya Can, Erol Erçağ, Reşat Apak,  
*Istanbul University, Istanbul, Turkey*  
**Extractive-spectrophotometric determination of NTO and TNT in mixtures.**
- P13** Ziya Can, Ayşem Arda, Erol Erçağ, Reşat Apak  
*Istanbul University, Istanbul, Turkey*  
**A novel HPLC method for analysis of composite explosives containing NTO and TNT.**
- P14** Erol Erçağ, Ziya Can, Ayşem Arda, Lemi Türker, Reşat Apak  
*Istanbul University, Istanbul, Turkey*  
**Simultaneous spectrophotometric determination of HNS and TNT by derivative spectroscopy.**
- P15** Ondřej Fryš, Aleš Eisner, Petra Bajerová, Karel Ventura,  
*University of Pardubice, Pardubice, Czech Republic*  
**Application of pressurized fluid extraction for quantification of propellant components.**
- P16** Zoran Bajić, Zlate Veličković, Aleksandar Marinković, Jovica Bogdanov,  
*University of Defence, Belgrade, Serbia*  
**Disposal of explosive ordnance: removal of cadmium from wastewater using modified multi-wall carbon nanotubes.**
- P17** Olga Kovalchukova, Nguyen Dinh Do, Adam Stash, Svetlana Strashnova,  
*Peoples' Friendship University of Russia, Moscow, Russia*  
**Products of transformation of hydroxy-derivatives of N-heterocyclic compounds under conditions of oxidation and nitration.**
- P18** Nikolay Yudin, Yuriy Pinchuk, Vitold Zbarsky, Ekaterina Filimonova,  
*Mendelejev University of Chemical Technology, Moscow, Russia*  
**The study of the stages of nitration derivatives of 2,6,8,12-tetraacetyl-2,4,6,8,10,12- hexaaza-isowurtzitane.**
- P19** Svetlana Strashnova, Valeriy Domanskiy, Yuriy Grygoriev,  
*Peoples' Friendship University of Russia, Moscow, Russia*  
**Synthesis and studies of new 9-derivatives of polynitrofluorenes.**
- P20** Thomas M. Klapoetke, Davin G. Piercey, Joerg Stierstorfer  
*Ludwig-Maximilian University of Munich, Munich, Germany,*  
**Energetic Salts of the Azidotetrazolate-2-oxide Anion.**
- P21** Mateusz Szala, Rafał Lewczuk, Leszek Szymańczyk  
*Military University of Technology, Warsaw, Poland,*  
**Crystallization of nitroguanidine from different solvents.**
- P22** Zhen-Wei Song, Qi-Long Yan, Ying Zhao, Xiao-Fei Qi, Peng Liu, Fang-Li Liu  
*Xi'an Modern Chemistry Research Institute, Xi'an, China, and University of Pardubice, Czech Rep.*  
**Investigation on the crystal transition of  $\epsilon$ -CL-20 in different commonly-used solvent systems.**
- P23** Na He, Fa C Zhong, Yuan J Shu, He L Sui,  
*China Academy of Engineering Physics, Mianyang, China*  
**Synthesis and fluorescence quenching studies on a quinoline derivative in the presence of TNT.**
- P24** Fahimeh Sotoudeh p.h., Hamidreza Pouretdal, Reza Karimian, Mohammadhossein Keshavarz,  
*Malekashtar university of technology, Shahinshahr, Iran*  
**Producing binder of C4 plastic bonded explosive by a green solvent.**
- P25** Andrzej Orzechowski, Dorota Powała, Lucjan Staszewski, Bogdan Florczak, Krystyna Bocheńska  
*Institute of Industrial Organic Chemistry, Warsaw, Poland*  
**Plastic bonded explosive based on PBAN.**
- P26** Radovan Skacel, Jiri Tesitel, Pavel Marecek, Kamil Dudek, Jan Matl  
*Explosia a.s., VUPCH, Pardubice, Czech Republic*  
**Alternative coating materials for preparation of high temperature resistant PETN or RDX granulates.**

- P27 Nina Makhova,  
*Zelinsky Institute of Organic Chemistry RAS, Moscow, Russia*  
**Synthesis of energetic materials in ionic liquids.**
- P28 Alexander M. Astachov, Aleksey G. Kozlov, Pavel V. Brovchenko, William A. Sokolenko, Eduard S. Buka, Anatoliy I. Rubailo,  
*Siberian State Technological University, Krasnoyarsk, Russia*  
**S,S'-Dimethyl-N-nitroimidodithiocarbonate - precursor of new energetic nitrimines, simple method of synthesis and characterization.**
- P29 Alexander M. Astachov, Alexander D. Vasiliev, Vitaliy A. Revenko,  
*Siberian State Technological University, Krasnoyarsk, Russia*  
**The crystal and molecular structure of 1-phenyl-2-nitroguanidine.**
- P30 Gennady Rudakov, Viacheslav Egorshchev, Anna Borodavina, Olga Garbuz  
*Mendelejev University of Chemical Technology, Moscow, Russia*  
**Synthesis and properties of 3-nitroguanidino-1,2,4-triazolo[4.3-b]-s-tetrazine and its salts.**
- P31 Ali Sheikh Bostanabad, Paul Strashnov, Igor Ziuzin, Olga Kovalchukova  
*Peoples' Friendship University of Russia, Moscow, Russia*  
**Structure and some properties of the salts of N-nitroso-N-ethyl(phenyl)hydroxylamine.**
- P32 Camilla Evangelisti, Dániel Izsák, Thomas M. Klapötke, Jörg Stierstorfer  
*Ludwig-Maximilian University of Munich, Munich, Germany*  
**Preparation and characterization of 5-azido-3-nitro-1H-1,2,4-triazole and selected metal salts.**
- P33 Jonas Sarlauskas  
*Institute of Biochemistry, Vilnius, Lithuania*  
**Some derivatives of benzofuroxan (benzo[1,2-c]1,2,5-oxadiazole N-oxide): Recent studies on the synthesis and properties.**
- P34 Anthony J. Bellamy, Alessandro E. Contini, Peter Golding  
*Cranfield University, Shrivenham, United Kingdom*  
**Calorimetric correlation of the structure of an energetic polyphosphazene with its heat of formation.**
- P35 Vladimir Arutyunov, Vladimir Dubovitskiy, Anna Karnaukh  
*Russian Academy of Science, Chernogolovka, Russia*  
**Modeling the gas phase partial oxidations of hydrocarbons at moderate temperatures and increased pressure.**
- P36 Martina Buštorová, Ivana Tureková, Richard Kuracina  
*Slovak University of Technology, Bratislava, Slovakia*  
**Study of the ignition properties of oriented strand boards exposed to radiant heat flux.**
- P37 Soo Gyeong Cho, Yong Jun Hong, Eun Mee Goh, Sun Kwang Lee, Kwang Yeon Kim, Kyoung Tae No  
*Agency for Defense Development, Daejeon, South Korea*  
**A virtual 3-D chemical database for high energy molecules in South Korea: MS-HEMs.**
- P38 Soo Gyeong Cho, Yong Jun Hong, Eun Mee Goh, Jin Hyuk Chung  
*Agency for Defense Development, Daejeon, South Korea*  
**Theoretical studies on mononitro, dinitro, and trinitro derivatives of 1-aminoimidazole.**
- P39 Soo Gyeong Cho, Yong-Hyuk Joo, Yong Jun Hong, Eun Mee Goh  
*Agency for Defense Development, Daejeon, South Korea*  
**New mild synthetic schemes for 1,2-bis(5-nitroiminotetrazol-1-yl)ethane.**
- P40 Monika Bartošková, Zdeněk Friedl  
*Brno University of Technology, Brno, Czech Republic*  
**High-nitrogen heteroaromatics: Relationship between heat of formation and molecular electrostatic potential.**
- P41 Miroslav Pospíšil, Pavel Vávra  
*Charles University in Prague, Prague, Czech Republic*  
**A preliminary study of some factors causing high density of polynitro compounds.**

- P42** Lemi Turker, Taner Atalar  
*Middle East Technical University, Ankara, Turkey*  
**Interaction between TNT and melatonin- DFT treatment.**
- P43** Alan Catovic, Berko Zecevic, Sabina Serdarevic-Kadic, Jasmin Terzic  
*University of Sarajevo, Mechanical Engineering Faculty, Sarajevo, Bosnia and Herzegovina*  
**Numerical simulations for prediction of aerodynamic drag on high velocity fragments from naturally fragmenting high explosive warheads.**
- P44** Jasmin Terzic, Berko Zecevic, Samir Muzaferija, Sabina Serdarevic-Kadic, Alan Catovic  
*University of Sarajevo, Mechanical Engineering Faculty, Sarajevo, Bosnia and Herzegovina*  
**Numerical simulation of internal-ballistics parameters of solid propellant rocket motors.**
- P45** Zenon Wilk, Piotr Košlik  
*Institute of Industrial Organic Chemistry, Warsaw, Poland*  
**Numerical analysis of small caliber charge**
- P46** Stefan Kelzenberg, Sebastian Knapp, Volker Weiser, Norbert Eisenreich  
*Fraunhofer ICT, Pfinztal, Germany*  
**Use of a hot-spot model to describe the influence of particle size and distance between particles on the combustion in a cloud.**
- P47** Mario Dobrilović, Vječislav Bohanek, Vinko Škrlec  
*University of Zagreb, Zagreb, Croatia*  
**Calibration method for velocity of detonation measuring device.**
- P48** Andrey V. Len, Sergey I. Gerasimov  
*Russian Federal Nuclear Center, Sarov, Russia*  
**Safe design of flashbang.**
- P49** Sergey I. Gerasimov, Andrey V. Len'  
*Russian Federal Nuclear Center, Sarov, Russia*  
**Reduction of quantity of HE in explosives light sources for photorecording schemes.**
- P50** Jiří Majzlík  
*University of Pardubice, Pardubice, Czech Republic*  
**Effect of modification of test conditions of zircon composition sensitivity to electrostatic discharge upon test results.**
- P51** Vladimir K. Golubev  
*Russian Federal Nuclear Center, Sarov, Russia*  
**Optical initiation of energetic materials. Recent scientific investigations and technical applications.**
- P52** Yi Sun, Tao Xu, Yuanjie Shu, Tao Duan,  
*China Academy of Engineering Physics, Mianyang, China*  
**Photo-induced decomposition of Energetic Materials.**
- P53** Alexander Dubovik, Mikhail Tereshchenko, Alexey Matveev, Nikolai Akinin  
*Mendelejev University of Chemical Technology, Moscow, Russia*  
**Sensitivity to impact of mixtures ammonium perchlorate with teflon.**
- P54** Joanna Szczygielska, Wincenty Skupiński,  
*Warsaw University of Technology, Warsaw, Poland*  
**Comparison of the sensitivity of CL-20 with different binders.**
- P55** Waldemar Trzeciński, Stanisław Cudziło, Sławomir Dyjak, Marcin Nita  
*Military University of Technology, Warsaw, Poland*  
**A comparison of sensitivity and performance characteristics of melt-pour explosives with TNT- and DNAN-binder.**
- P56** Sławomir Dyjak, Waldemar A. Trzeciński, Stanisław Cudziło, Leszek Szymańczyk  
*Military University of Technology Warsaw Poland*  
**Application of nitrocellulose and cellulose composition in a model reactive armor.**

- P57** Georgii Kozak, Denis Mikheev, Vyacheslav Kuzmin, Ivan Koveshnikov  
*Mendelejev University of Chemical Technology, Moscow, Russia*  
**Detonation velocity of mixtures based on various dispersed ammonium nitrate.**
- P58** Georgii Kozak, Alexander Tsvigunov, Nikolaii Akinin, Denis Mikheev  
*Mendelejev University of Chemical Technology, Moscow, Russia*  
**Transformation of metals at explosion at impact of mixtures of them with high explosives.**
- P59** Lukas Dostal, Břetislav Janovský, Miloš Ferjenčík  
*University of Pardubice, Pardubice, Czech Republic*  
**Determination of Initial Velocity and Range of Fragments from accidental explosions.**
- P60** Jozef Šesták, Zbyněk Večeřa, Vladislav Kahle, Dana Moravcová, Pavel Mikuška, Josef Kellner, Josef Navrátil  
*Faculty of Chemistry, Brno University of Technology, Brno, Czech Republic*  
**A novel portable device for fast analysis of energetic materials in the environment.**

### **Published only in Proceedings:**

- IV.1** Carles Miro Sabate, Henri Delalu,  
*Université Claude Bernard Lyon 1, Lyon, France*  
**Study of metal salts of the 4,5-dicyano-2H-1,2,3-triazole anion as pyrotechnic ingredients.**
- IV.2** Carles Miro Sabate, Henri Delalu,  
*Université Claude Bernard Lyon 1, Lyon, France*  
**Quaternary ammonium energetic salts.**
- IV.3** Alexander Gidasov, Vladimir Avdeev, Yuriy Moschenskiy,  
*Samara State Technical University, Samara, Russia*  
**The correlation relations between the secondary explosives' deflagration temperatures and their 5-second delay burst temperature.**
- IV.4** Alexander Gidasov, Vladimir Bakharev,  
*Samara State Technical University, Samara, Russia*  
**The reaction of trinitromethylation-diaroxylation of 2,4,6-trichloro-1,3,5-triazine.**
- IV.5** Alexander Gidasov,  
*Samara State Technical University, Samara, Russia*  
**The synthesis of 2,6-diamino-4-poly-nitromethyl-1,3,5-triazine-1-oxides.**
- IV.6** Eugene A. Kozhevnikov, Alexander A. Gidasov, Stanislav I. Postnov, Vladimir A. Rekshinskiy.  
*Samara State Technical University, Samara, Russia*  
**The design of high-safety instant-action electric blasting cap.**
- IV.7** Qi Xiao-Fei  
*Xi'an Modern Chemistry Research Institute, Xi'an, China*  
**Experimental and theoretically study on the combustion behavior of metalized double-base propellants (III): Heat effects of the metals on the burning rate and flame temperature.**
- IV.8** Bikash Bhattacharya, (invited lecture)  
*High Energy Mater. Res. Laboratory, DRDO, Ministry of Defence, Govt. of India, Pune, India*  
**Disposal methodology of composite propellant with civil Spin-off benefit of end product as fertilizer.**
- IV.9** Raj Kishore Pandey, Ila Tiwari, Vikram s Ghole, Bikash Bhattacharyya,  
*High Energy Materials Research Laboratory, DRDO, Govt. of India, Pune, India*  
**Phytoremediation of nitroglycerine by aquatic macrophytes and wetland plants.**

## Evening's program of the 15<sup>th</sup> NTREM – Thursday April 19<sup>th</sup>

**18:30 - 22:00 EVENING PROGRAM**      (*at Pardubice's Castle*)  
<http://www.vcm.cz/virtual/zamek.html>

**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  
<http://www.vcm.cz/virtual/vr/ryt/1/flash/index.html>  
<http://www.vcm.cz/virtual/vr/ryt/2/flash/index.html>  
<http://www.vcm.cz/virtual/vr/ryt/3/flash/index.html>  
<http://www.vcm.cz/virtual/vr/ryt/4/flash/index.html>



# 15<sup>th</sup> SEMINAR - orientation map – town PARDUBICE

