



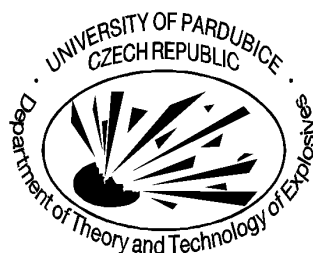
UNIVERSITY OF PARDUBICE
Faculty of Chemical Technology
Department of Theory & Technology of Explosives
CZ-532 10 Pardubice
<http://www.upce.cz/~kttv>



PROGRAM

of the sixth Seminar

„NEW TRENDS IN RESEARCH OF ENERGETIC MATERIALS“



held at University of Pardubice

Pardubice, the Czech Republic

April 23 - 25, 2003

*intended as a meeting of students, postgraduate students, university teachers and
young research and development workers concerned from the whole world*



Indet Safety Systems



OZM Research Ltd.

Seminar is supported by:

*European Office of Aerospace Research and Development of the USAF,
Austin Detonator, Inc., Vsetín,
Indet Safety Systems, Inc., Vsetín,
Dr. Oldrich Machacek, president of UTeC Corp., LLC, Dallas,
OZM Reasearch, Ltd., Hrochův Týnec*

Chairman of the Seminar:

Prof. Svatopluk Zeman, D.Sc.

Scientific Committee:

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

Members: Prof. Ang How-Ghee (*National Univ. of Singapore*)

Dr. Stanislaw Cudzilo (*Military Univ. Technol., Warsaw, Poland*)

Prof. Michel Lefevre (*Royal Military Academy, Belgium*)

Prof. Andrzej Maranda, D.Sc. (*Military Univ. Technol., Warsaw, Poland*)

Assoc. Prof. Shu Yuanjie (*Inst. of Chem. Materials, CAEP, Sichuan, China*)

Dr. Muhamed Sućeska, D.Sc. (*Brodarski Inst., Zagreb, Croatia*)

Assoc. Prof. Pavel Vávra, Ph.D. (*Univ. of Pardubice*)

Dr. Fred Volk, (*ICT Pfinzthal, Germany*)

Dr. Woodward Waesche (*Office of Naval Res. Int. Field Office, USA*)

Organizing Committee:

Chairman: Jiří Vágenknecht, Ph.D. (*Univ. Pardubice*)

Members: Zdeněk Jalový, Ph.D. (*Univ. Pardubice*)

Marcela Jungová, M.Sc. (*Univ. Pardubice*)

Martin Kouba, M.Sc. (*Univ. Pardubice*)

Miloslav Krupka, Ph.D. (*Univ. Pardubice*)

Robert Matyáš, M.Sc. (*Univ. Pardubice*)

Jakub Šelešovský, M.Sc. (*Univ. Pardubice*)

Pavel Valenta, MSc. (*Austin Detonator*)

Dr. Jan Jakubko (*Indet Safety Systems*)

GENERAL INFORMATION

Seminar Venue:

Seminar will take place at a **Congress Hall**, which is a part of Rector's Office of the University (*see enclosed map*).

Lunches:

There is a possibility to bespeak lunches in University cafeteria one day before the lunch.

Price of the lunch + drinkables ~100.-CZK

There are also restaurants within the walking distance from meeting hall.

Official Language:

The official working language will be **English**.

Registration fees:

No fees will be charged.

Proceedings:

The Proceedings will be provided to the members of scientific committee, members of the CEPA-14 steering committee and main authors free of charge.

Other participants can buy corresponding Proceedings at the beginning of the Seminar.

Price of the Proceedings of 6th seminar will be 500,- CZK (i.e. Eur 16.-) printed version and 350,- CZK (i. e. Eur 11.5) for electronic version (CD). Limited amount of printed version of Proceedings from the 4th and 5th seminars is also available for 750,- CZK (i. e. Eur 24.5).

Presentation of papers:

Data, slide and sheet projectors, overhead projector and devices for Power Point presentation. will be available for oral presentation.

Tables (*1980 mm high and 1000 mm wide*) will be available for poster presentation.

Registration of participants:

Registration of participants will take place at the Congress Hall.

April 22nd 4:00PM - 7:00 PM

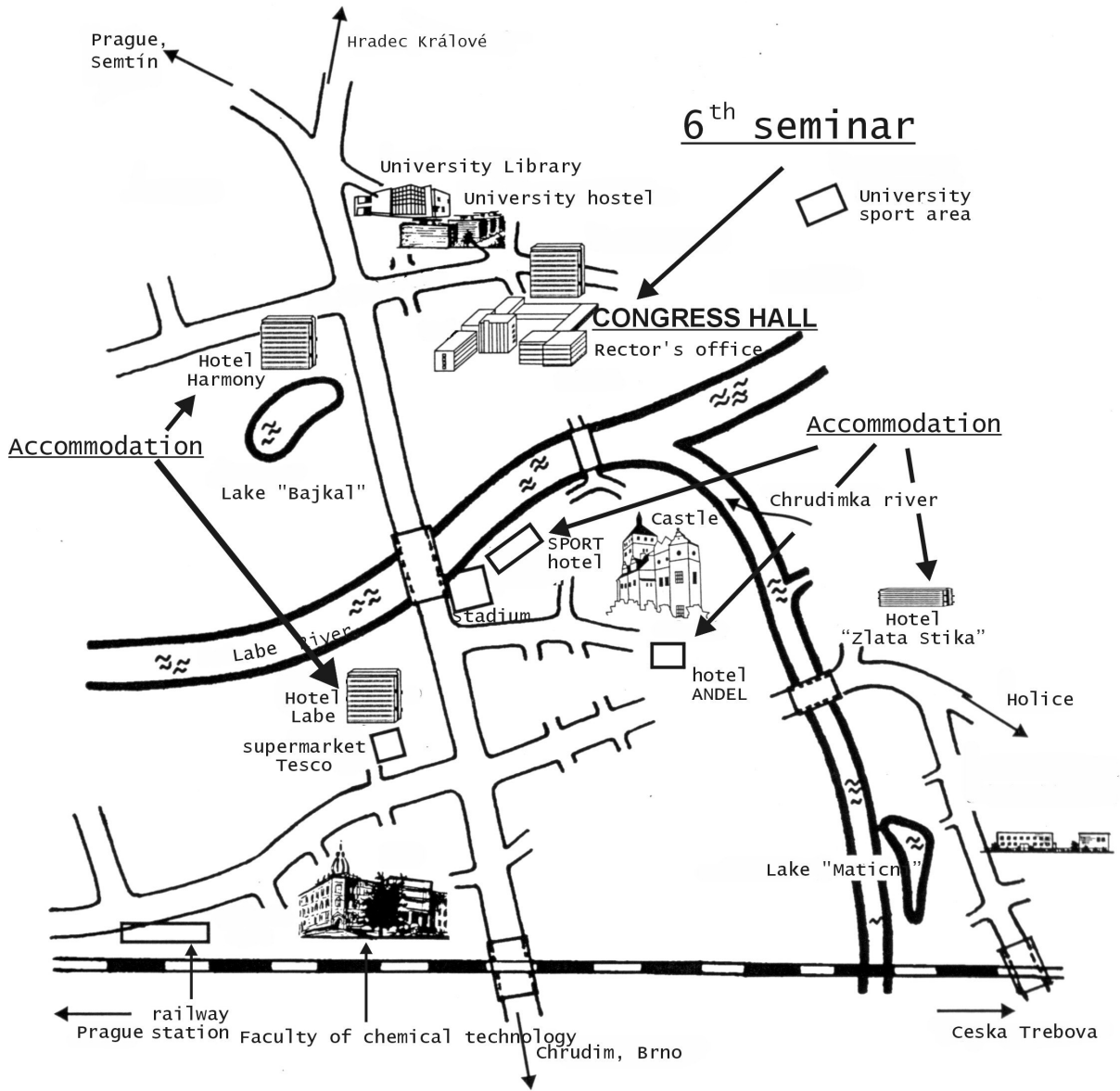
April 23rd 7:30AM - 10:00 AM

Special Program:

A friendly get-together for foreign participants and for workers and co-workers of Dept. of Theory & Technology of Explosives will be arranged at Pardubice's **Castle** on April 24th (*see on page 11*).

In the case of participants interest it is possible to organize a visit of the Department of Theory and Technology of Explosives.

Technology hall
 Doubravice
 Department of Theory and Technology of Explosives



Schematic City Map - Pardubice

LECTURE PROGRAM – Wednesday April 23rd

08:40 **Opening of Seminar** – speech of Prof. Jiří Málek, D.Sc., vice-rector of University

1. Session

Chairman: Dr. Fred Volk
ICT Pfingztal, Germany

- 09:00 Nepovím A., Hebner A., Gerth A., Thomas H. and Vaněk T.,
Inst. of Organic Chemistry and Biochemistry, Acad. Sci. of Czech Rep., Prague
BIODEGRADATION OF TNT BY *IN VITRO* CULTIVATED PLANTS: A MODEL SYSTEM FOR STUDY OF DEGRADATION PROCESSES.
- 09:20 Stockinger J. R. and Reed T. M.,
Naval Surface Center, Crane, USA.
ELIMINATION OF LEAD AND LEAD CONTAMINANTS IN THE MK 141 MOD 0 DIVERSIONARY CHARGE.
- 09:40 Pospišil M., Čapková P., Vávra P. and Zeman S.,
Dept. of Chemical Physics, Faculty of Mathematics and Physics, Charles University, Prague and University of Pardubice, Czech Rep.
CLASSICAL MOLECULAR DYNAMICS SIMULATIONS OF RDX DECOMPOSITION UNDER HIGH PRESSURE.

10:00-10:30 Coffee break

- 10:30 Mathieu D.,
CEA – Le Ripault, Monts, France
A FAST NON-SELFCONSISTENT ELECTRONEGATIVITY EQUALIZATION METHOD WITH APPLICATIONS IN THE FIELD OF ENERGETIC MATERIALS.
- 10:50 Vágenknecht J., Hurtosová G. and Adamík L.,
Dept. of Theory & Technol. of Explosives, University of Pardubice, Czech Rep.
UTILIZATION OF NUMERICAL SIMULATION METHOD TO STUDY OF THE POSSIBLE INFLUENCE OF INITIATION ON PERFORMANCE OF LINEAR SHAPED CHARGE.
- 11:10 Fišerová D., Hameed A., Rose T. A., Hetherington J. G. and Procházka S.,
Cranfield University, Shrivenham, UK and Military Academy, Brno, Czech Rep.
SYSTEMATIC STUDY OF SIMULATED MINE EXPLOSIONS USING AUTODYN.
- 11:30 Siviour C. R., Walley S. M., Proud W. G. and Field J. E.,
Phys. and Chem. of Solids Group, Cavendish Lab., Cambridge, UK.
HOPKINSON BAR STUDIES ON POLYMER BONDED EXPLOSIVES.

11:50-13:00 Lunch break

2. Session

Chairman: Prof. Michel Lefevre
Royal Military Academy, Belgium

- 13:10 Rotariu T. and Orban O.,
Dept. of Ammunition, Military Technical Academy, Bucharest, Romania
SOME REGARDS ABOUT COLD POWDERS PLASTICIZERS.

- 13:30 Wild R.,
Diehl Munitionssysteme GmbH, Germany.
LONGTERM BEHAVIOUR OF THE HARDNESS MEASURED ON CURE CAST SAMPLES.
- 13:50 Rudolf K. P.,
Diehl Munitionssysteme GmbH, Germany.
IMPROVED INSENSITIVE HYTEMP/DOA BONDED HMX AND RDX MIXTURES BY PASTE PROCESS.
- 14:10 Šelešovský J., Pachmáň J. and Hanus M.,
University of Pardubice, and Military Inst. for Weapons and Ammunition, Slavičín, Czech Rep.
CHANGES IN SENSITIVENESS OF FLEGMATIZED HIGH EXPLOSIVES AFTER ARTIFICIAL AGEING.
- 14:30 Wilker S., Pantel G. and Stottmeister L.,
WIWEB Ast Heimerzheim, Germany.
STABILITY ANALYSES OF POROUS PROPELLANTS.
- 14:50 Dobrilović M., Vrkljan D. and Ester Z.,
University of Zagreb, Fac. of Mining, Geology and Petroleum Engineering, Zagreb, Republic of Croatia.
DETERMINATION OF THERMAL STABILITY, RESISTANCE TO WATER AND RESISTANCE TO HYDROSTATIC PRESSURE OF ELECTRIC DETONATORS ACCORDING TO DRAFTS OF EUROPEAN STANDARD.

14:50-17:00 *Poster session (see on page 9)*

LECTURE PROGRAM – Thursday April 24th

3. Session

Chairman: Dr. Adam Cumming
DSTL Fort Halstead, U. K.

- 09:00 Volk F., Bathlet H., Jakob R. and Mueller D.,
ICT, Pfinztal, Germany.
EVALUATION OF THE EFFICIENCY OF IGNITION PROCESSES BY COMBUSTION UNDER DIFFERENT PRESSURE.
- 09:20 Lefebvre M. H.,
Lab. of Enegetic Materials, Royal Military Academy, Belgium
DETERMINATION OF THE POWER OUTPUT OF DETONATORS.
- 09:40 Buczkowski D. and Zygmunt B.,
Inst. of Organic Industrial Chemistry, Warsaw, and WIFAMA-PREXER, Łódź, Poland.
INFLUENCE OF AMMONIUM NITRATE PRILS' POROSITY AND DIMENSIONS ON DETONATION VELOCITY OF ANFO EXPLOSIVES.
- 10:00 Čačić L., Halle R. and Ester Z.,
Ministry of Interior, Zagreb, and Faculty of Mining, Geology and Petroleum, Univ. of Zagreb, Republic of Croatia
EMULSIONS EXPLOSIVES EMULEX AND ELMULEXAL.

10:20-10:50 Coffee break

- 11:10 Teodorczyk A.,
Warsaw University of Technology, Warsaw, Poland
FLAME AND DETONATION ARRESTERS – EUROPEAN NORMATIVE STANDARD FOR TESTING.
- 11:30 Witkowski W., Buchalik K., Trebiński R., Maranda A. and Teodorczyk A.,
Institute of Industrial Organic Chemistry, Warsaw; Military University of Technology, Warsaw; and Warsaw University of Technology, Warsaw, Poland
OVERPRESSURE GENERATED BY DETONATIONS OF ELONGATED GAS CLOUDS.
- 11:50 Kozak G. D., Akinin N. I., Raikova V. M. and Arinina S. V.,
Mendeleev's University of Chemical Technology, Moscow, Russia.
EXPLOSION HAZARD OF SOME ORGANIC PEROXIDES.

12:10-14:00 Lunch break.

4. Session

Chairman: Dr. Stanislaw Cudzilo

Military University of Technology, Warsaw

- 14:00 Lipińska K., Lipiński M. and Maranda A.,
Inst. of Organic Industrial Chemistry, Warsaw, and Military Univ. of Technology, Poland.
INFLUENCE OF DEMILITARIZED DOUBLE BASE PROPELLANTS ON DETONATION PARAMETERS OF AMONALS.
- 14:20 Ang How-Ghee,
National Univ. of Singapore
SYNTHESIS AND REACTIVITY OF (CF₃)₂PN₃, CF₃As CIN₃ AND CF₃As(N₃)₂ AZIDES
- 14:40 Shu Y., Huang Y., Li H. and Liu S.,
Institute of Chemical Materials, China Academy of Eng. Physics, China.
SYNTHESIS OF N-ACETYL-3,3-DINITROAZETIDINE.
- 15:00 Miszczak M., Szymanowska E., Śmigielska B. and Błachno B.,
Military Institute of Armament Technology, Zielonka, Poland
QUANTITATIVE ANALYSIS OF SOME TECHNOLOGICAL COMPONENTS USED ON INHIBITED HOMOGENEOUS ROCKET PROPELLANTS BY MEANS OF THIN LAYER CHROMATOGRAPHY.
- 15:20 Kwok Q. S. M. and Jones D. E. G.,
Canadian Explosives Res. Laboratory, Ottawa, Canada
INVESTIGATION OF THE WETTABILITY OF AMMONIUM NITRATE PRIELS.
09:20 **POLYMERS.**
- 15:40 Sućeska M., Matečić-Mušanić S. and Rajić M.,
Brodarski institute - Marine Research & Special Technologies, Zagreb, Republic of Croatia
DETERMINATION OF ARRHENIUS KINETIC CONSTANTS FOR DB PROPELLANTS BY NON-ISOTHERMAL DSC MEASUREMENTS. INFLUENCE OF SAMPLE SELF-HEATING.
- 15:50 CLOSING REMARKS including PRIZES AWARDING**
- 17:00-22:00 SPECIAL PROGRAM (at Pardubice's Castle - see on page 11)**

PROGRAM – Friday April 25th

Since authors of two lectures (from DDU Gorakhpur University) cancelled their participation in the Seminar at the last moment, Organizing Committee had to transfer the lecture program of April 25th into the 4th Session. The Committee is very sorry about this change.

As a reserve program an excursion to the Department of Theory and Technology of Explosives is offered (with start at 09 AM).

Those interested can use a microbus to Prague, which will be available as early as April 25th morning.

POSTER PROGRAM

Posters should be hanged out in Wednesday, *April 23rd*, before 10:20 h. A special poster sessions will take place on Wednesday (*April 23rd*) from 14:30 up to 17:00 h. During this time authors should be present for discussion at the posters.

- P 01** Varga R. and Ulbrich P.,
University of Pardubice, Czech Rep. and Criminalistic Institute Bratislava, Slovak Rep.
TRACE ANALYSIS OF AFTER-EXPLOSION RESIDUA OF INDUSTRIAL EXPLOSIVES BY MEANS OF GC-CD AND IC.
- P 02** Eisner A., Adam M., Mikulčíková P. and Ventura K.,
Dept. of Analytical Chemistry, University of Pardubice, Czech Rep.
FIRST EXPERIENCE WITH ANALYSIS AFTER LIQUIDATION OF SMOKELESS POWDERS.
- P 03** Vávra P. and Pospíšil M.,
University of Pardubice, and Charles University, Prague
EFFECT OF INTERMOLECULAR FORCES ON SOME PROPERTIES OF EXPLOSIVES II. INFLUENCE OF NON-COVALENT HYDROGEN BOND.
- P 04** Raikova V. M., Kozak D. G. and Likholatov A.,
Mendeleev Univ. of Chemical Technology, Moscow, Russia.
THE CHEMICAL KINETIC AT DETONATION OF NITROESTERS SOLUTIONS.
- P 05** Kouba M., Zeman S. and Zemanová E.,
Dept. of Theory & Technol. of Explosives, University of Pardubice, Czech Rep.
STUDY OF DECOMPOSITION OF TNT BY HEAT AND SHOCK.
- P 06** Aluker E. D., Aduev B. P., Krechetov A. G., Mitrofanov A. Yu. and Tupitsin E. V.,
Kemerovo State Univ., Russia
SPACE-TIME CHARACTERISTICS OF PRE-DETONATION LUMINESCENCE ORIGIN IN HEAVY METAL AZIDES.
- P 07** Aluker E. D., Aduev B. P. and Krechetov A. G.,
Kemerovo State Univ., Russia
PRE-DETONATION PHENOMENA IN HEAVY METAL AZIDES.
- P 08** Sučeska M., Rajić M., Matečić-Mušanić, Bakija S., Čuljak R. and Durak S.,
Brodarski institute - Marine Research & Special Technologies, Zagreb, and Ministarstvo obrane RH, Bauerova 33, 10000 Zagreb, Republic of Croatia
APPLICATION OF DSC IN STABILITY STUDIES OF DB PROPELLANTS
- P 09** Chovancová M., Očko P., Lopúch J., Lazar M. and Pechová A.,
Military Technical and Testing Institute, Záhorie, Slovak republic
CHEMICAL AND THERMAL STABILITY OF FLEXIBLE PBX'S.
- P 10** Chovancová M., Očko P., Lopúch J., Ševčík R. and Čavojský L.,
Military Technical and Testing Institute, Záhorie, Slovak republic
AGEING INFLUENCE ON PLASTIC EXPLOSIVES ON THE BASE OF RDX.
- P 11** Malchevski V. A. and Zarytovskaya N. A.,
Mendeleev Univ. of Chemical Technology, Moscow, Russia.
MECHANICAL DESTRUCTION OF ENERGETIC POLYMERIC COMPOSITES.
- P 12** Wolszakiewicz T. and Książczak A.,
Institute of Organic Ind. Chemistry, Warsaw, and Dept. of Chemistry, Warsaw Univ. of Technology, Warsaw, Poland.
PHYSICO-CHEMICAL PROPERTIES OF NITROCELLULOSE MIXTURES WITH LOW MOLECULAR COMPOUNDS IN THE SHAPE OF FOILS AND IN WATER SUSPENSIONS.
- P 13** Zečević B., Terzić J. and Baškarad M.,
Mechanical Engineering Fac., Def. Technol. Dept., Sarajevo, Bosnia and Herzegovina
INFLUENCE OF THE SOLID PROPELLANT GRAINS PROCESSING ON BURNING RATE OF DOUBLE BASE ROCKET PROPELLANTS.

- P 14** Terzic J., Lekic A. and Zecevic B.,
Mechanical Engineering Fac., Def. Technol. Dept., Sarajevo, Bosnia and Herzegovina
PREDICTION THE THEORETICAL INTERIOR BALLISTIC PROPERTIES OF SOLID PROPELLANT ROCKET MOTORS.
- P 15** Zorić I., Kuhinek D. and Dobrilović M.,
Faculty of Mining, Geology and Petroleum, Univ. of Zagreb, Republic of Croatia
THE INFLUENCE OF MEASUREMENT METHOD ON THE INITIATION TIME MEASUREMENT NECESSARY FOR PRIMER MIXTURE INITIATION OF ELECTRICAL DETONATOR.
- P 16** Strnad J. and Majzlík J.,
University of Pardubice, Czech Rep.
METHODOLOGY OF TESTS OF SENSITIVITY OF ENERGETIC MATERIALS TO ELECTROSTATIC DISCHARGE.
- P 17** Trzciński W. A., Szymańczyk L. and Cudzilo S.,
Military University of Technology, Warsaw, Poland
DETONATION CHARACTERISTICS OF LOW-SENSITIVITY NTO-BASED EXPLOSIVES.
- P 18** Orzechowski A., Maranda A., Powala D. and Borkowski J.,
Inst. of Industrial Organic Chemistry, and Military Univ. of Technology, Warsaw, Poland
DETERMINATION OF SENSITIVITY OF PLASTIC EXPLOSIVE CONTAINING NTO.
- P 19** Paszula J., Maranda A., Papliński A., Golabek B., and Kasperski J.,
Military University of Technology; BLASTEXPOL, Duninów, and Warsaw Univ. of Technology; Poland
A COMPARATIVE ANALYSIS OF BLAST WAVES PARAMETERS GENERATED BY EXPLOSION OF EMULSION EXPLOSIVES AND DYNAMITES.
- P 20** Cudzilo S., Gache S., Huczko A., Monthieux M., and Trzcinski W. A.,
Military Univ. of Technology, Warsaw, Poland and Carbons & Carbon-containing Materials, CEMES, Toulouse, France,
SYNTHESIS OF CERAMIC AND CARBON NANOSTRUCTURES BY SELF-SUSTAINING COMBUSTION OF MIXTURES OF HALOGENATED HYDROCARBONS WITH REDUCERS.
- P 21** Astachov A. M., Kruglyakova L. A., Gelemurzina I. V., Vasiliev A. D. and Stepanov R. S.,
Siberian State Technol. Univ., and Inst. of Physics RAS (Siberian Branch), Russia
SIMPLE MEHOD OF SYNTHESIS AND CHARACTERIZATION OF SOME NITROCYANAMIDE SALTS.
- P 22** Jalový Z., Dudek K. and Mareček P.,
University of Pardubice and Res. Inst. of Industrial Chemistry, Pardubice, Czech Rep.
CRYSTASTALLIZATION OF HNS.
- P 23** Dabkowski A., Kozak A., and Teodorczyk A.,
Warsaw Univ. of Technology, Poland
THE INITIATION OF GASEOUS DETONATIONS IN H₂-O₂ MIXTURES BY INCIDENT SHOCK WAVE.
- P 24** Buracewski P., Sutkowski M., Teodorczyk A., and Shengjun Zhong
Warsaw Univ. of Technology, Poland, and Ind. Explosion Protection Inst., Northeastern Univ, Shenyang, China
DETO2D – THE COMPUTER CODE FOR SIMULATIONS OF GASEOUS DETONATIONS IN COMPLEX GEOMETRIES.
- P 25** Czeczotková R. and Janovský B.,
Dept. of Theory & Technol. of Explosives, University of Pardubice, Czech Rep.
THE INFLUENCE OF THE TYPE AND INTENSITY OF IGNITION SOURCES ON EXPLOSION PARAMETERS OF THE GASEOUS, DUST AND HYBRID MIXTURES.
- P 26** Skácel R., Janovský B. and Švihovský J.,
Dept. of Theory & Technol of Explosives, University of Pardubice, Czech Rep.
BLEVE - BLAST EFFECTS.

P 27 Švihovský J., Janovský B., and Skácel R.,
Dept. of Theory & Technol. of Explosives, University of Pardubice, Czech Rep
MEASURING OF THE BLEVE INTERNAL PROCESSES.

P 28 Matyáš R.,
Dept. of Theory & Technol. of Explosives, University of Pardubice.
**CHEMICAL DECOMPOSITION OF TRIACETONE TRIPEROXIDE AND HEXAMETHYLENE-
TRIPEROXIDEDIAMINE.**

INSTRUMENTS DEMONSTRATION

Instruments, developed in the Dept. of Theory & Technology of Explosives, will be demonstrated on Wednesday and Thursday (April 23rd and 24th) from 08:00 up to 16:00 in precinct next to the Congress Hall.

I 1 Jiří Majzlík and Jiří Strnad
Dept. of Theory & Technology of Explosives, University of Pardubice
ELECTRIC SPARK SENSITIVITY TESTER

I 2 Miloslav Krupka
Dept. of Theory & Technology of Explosives, University of Pardubice
VACUUM THERMAL STABILITY TESTER „STABIL 16Ex“

I 3 Miloslav Krupka
Dept. of Theory & Technology of Explosives, University of Pardubice
APPARATUS AND SOFTWARE FOR DIFFERENTIAL THERMAL ANALYSIS “DTA 551-Ex”.

PROGRAM on Thursday April 24th

at Pardubice's Castle

17:00-18:30 Visit of the exposition “Bohemian glass”;
Visit of the exposition “Historical weapons”;
Exhibition of the Historical fencing group (after dark);

18:30-22:00 A friendly get-together in the Knight Hall;

ACCOMMODATION:

On the basis of experience from previous Seminars, the participants will have to make reservation themselves. The accommodation is possible in hotels in the center of Pardubice (*see map enclosed*):

Hotel LABE: phone: 00420 46 6535359
fax: 00420 46 6535358
approximate prices/night: 1300.-CZK (\$35) single room
1900.-CZK (\$50) apartments
approx. 10 min. walk from the Congress Hall

Hotel HARMONY: phone/fax: 00420 46 643 5020
00420 46 643 5025
E-mail: hotel@harmony-pce.cz
approximate prices/night: 720.-CZK (\$18) single room
840.-CZK (\$21) double room
approx. 8 min. walk from the Congress Hall

Hotel ZLATA STIKA: phone: 00420 46 6613478
fax: 00420 46 6052130
E-mail: zlata@stika.cz
approximate prices/night: 2200-3500 CZK (\$55-\$90) apartments
1200-1500 CZK (\$30-\$38) single room
1400-1700 CZK (\$35-\$43) double room
approx. 25 min. walk from the Congress Hall

Hotel "U Sv. ANDELA" (Holy Angel):
phone: 00420 46 653 56 56
fax: 00420 46 651 15 75
approximate prices/night: 800.-CZK (\$20) single room
1800.-CZK (\$45) apartments
approx. 25 min. walk from the Congress Hall

Hotel SPORHOTEL:
phone: 00420 46 651 22 21
fax: 00420 46 651 20 62
approximate prices/night: 700.-CZK (\$17.5) single room
approx. 10 min. walk from the Congress Hall

Notes: *price of one meal is about 180.-CZK (i. e. ~\$5.30)*