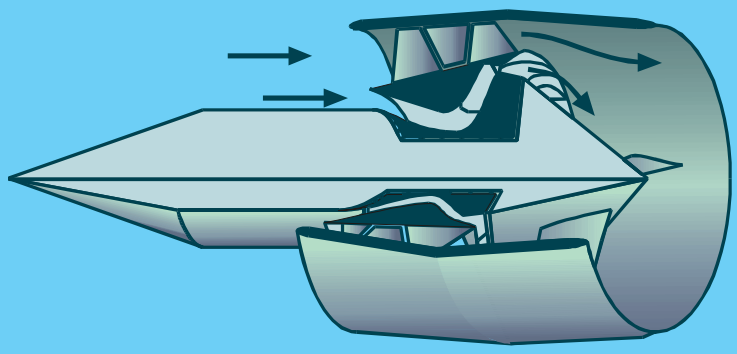
FIFTH INTERNATIONAL COLLOQUIUM ON PULSED AND CONTINUOUS DETONATIONS

Sponsored

by the U.S. Office of Naval Research (ONR),
Russian Foundation for Basic Research (RFBR),
International Science and Technology Center (ISTC),
and The Federal State Enterprise "The Federal Center for Dual-Use Technologies "SOYUZ"

Supported

by the Department of Chemistry and Material Science of the Russian Academy of Sciences (RAS),
Scientific Council on Combustion and Explosion RAS,
and Scientific Council on Chemical Physics RAS



July 3–7, 2006
Moscow, Russia

FINAL ANNOUNCEMENT

AND

TECHNICAL PROGRAM

www.icpcd.ru

The Colloquium is contemplated as a continuation of the previous four colloquia on detonations ("Advances in Experimentation and Computation of Detonations" held in St. Petersburg, September 14–17, 1998 (100 participants from 10 countries); "Control of Detonation Processes" held in Moscow, July 4–7, 2000 (120 participants from 12 countries); "Advances in Confined Detonations" held in Moscow, July 2–5, 2002 (120 participants from 12 countries), and "Application of Detonation for Propulsion" held in St. Petersburg, July 6–9, 2004 (120 participants from 14 countries).

The objective of the Colloquium is to provide a forum to disseminate to the scientific community the world-wide state-of-the-art and advancements made in experimental and computational, fundamental and applied studies relevant to propulsion systems operating on gaseous and heterogeneous detonations, and to determine the avenues of research that is needed to design detonation engines for propulsion and stationary power plants. The primary focus of the Colloquium will be to transfer the scientific accomplishments to commercial, industrial, and other applications of interest.

ADMINISTRATORS

Gabriel D. Roy	ONR, USA
Sergey A. Tsyganov	RFBR, Russia

COLLOQUIUM CHAIR

Alexander A. Berlin	N. N. Semenov Institute of Chemical Physics RAS 4, Kosigin Str., Moscow 119991, Russia

LOCAL ARRANGEMENTS

Ms. Elena Lazarenko	TORUS PRESS Ltd.
Ms. Lily Gazizullina	P.O.Box 3, Moscow 115201, Russia Tel.:/Fax: (7-495) 113-4972 e-mail: torus@torus-press.ru

TECHNICAL CO-CHAIRS

Sergey M. Frolov N. N. Semenov Institute of Chemical Physics RAS
4, Kosigin Str., Moscow 119991, Russia
Tel: (7-495) 939-7228,
Fax: (7-495) 651-2191
E-mail: smfrol@center.chph.ras.ru

Jose O. Sinibaldi Mechanical and Astronautical Engineering
Naval Postgraduate School
700 Dyer Rd, CODE MAE/SJ
Monterey, CA 93943, USA
Tel: (1-831) 656-2327
Fax: (1-831) 656-6201
E-mail: sinibaldi@nps.edu

COLLOQUIUM SITE AND DATES

The Colloquium will be held in Moscow, Russia, **July 3–7, 2006** in the building of the Presidium of the Russian Academy of Sciences (Blue Hall at the 3rd floor). The building is located on the Vorobiovy Gory (''Sparrow Hills''), at the beautiful bend of the Moskva river, approximately 5 min walk from the metro station ''Leninsky Prospect'' (location of the conference site is shown on the back cover of this booklet).

ACCOMODATION

The Local Organizing Committee reserved a limited number of rooms in the hotel SPUTNIK located at Leninsky Prosp., 38 at walking distance from the colloquim site. Address: Leninsky Prosp. 32 A.

The rates of rooms, including breakfast, are shown below:

Single 3970 RUB (approx. 150 USD)

Double 4750 RUB (approx. 175 USD) for 2 persons
or 4440 RUB (approx. 165 USD) for 1 person

Suite 6200 RUB (approx. 230 USD)

Additional bed for a child of 7 years old is available in rooms Double and Suite.

Note: The hotel accepts only payments (cash or credit cards) in national currency — Rubles.

To book a room, please contact the Local Organizing Committee by e-mail or fax and indicate the dates of stay and a room category chosen. Our confirmation will serve as a guarantee for your accommodation. No advance payment is required; however, at the hotel, you will be charged additionally 25% of your room rate for hotel reservation. In case of late reservation, the Organizing Committee cannot guarantee availability of rooms at SPUTNIK hotel.

COLLOQUIUM LANGUAGE

All presentations at the Colloquium will be in English.

INVITED LECTURES

Invited lectures are intended as reviews of recent world-wide research accomplishments delivered by international experts. Presentation time is 40 min including discussion.

ORAL PRESENTATIONS

Oral presentations will be on current ongoing basic and applied experimental and computational research relevant to pulsed and continuous deflagrations and detonations. Presentation time is 20 min including discussion.

POSTER PRESENTATIONS

There will be one (1) poster session. A poster will be provided for each presentation. The authors of poster presentations are required to prepare their papers for display on 1 x 1 m poster.

PUBLICATION

The Book of Extended Abstracts will be available during on-site registration at the Colloquium. After the Colloquium, it is intended to edit and publish selected papers (in English) in bound volume. Also, a book of selected contributions translated into Russian will be published after the Colloquium.

"NO PAPER – NO PODIUM" POLICY

A "no paper – no podium" policy is adopted. The manuscripts of the papers meeting the instructions for manuscript preparation (see web site www.icpcd.ru) should be available before June 15, 2006. Send two hard copies of the manuscript, a floppy disc of the text (or an attached file via e-mail), one set of original illustrations and one set of copies of illustrations to Sergey M. Frolov, Technical Co-Chair.

REGISTRATION FEE

For participants:
$550 if paid before **June 1, 2006**
$600 if paid after**June 1, 2006**

For accompanying persons:
$400 if paid before **June 1, 2006**
$440 if paid after **June 1, 2006**

For students:
$200 if paid before **June 1, 2006**
$220 if paid after **June 1, 2006**

The Registration Fee should be transferred in US dollars to:

Beneficiary bank:
IMPEXBANK
Moscow, Russia
SWIFT: IMPE RU MM

Beneficiary:
TORUS PRESS Ltd.
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Intermediary:
The Bank of New York, New York
SWIFT: IRVTUS3N, No.890-0487-550

For the transaction please, specify:
(1) beneficiary bank;
(2) beneficiary;
(3) any of intermediary.

If you prefer to pay in Euro, please address the Organizing Committee for the corresponding invoice.

WELCOME PARTY

Welcome Party is planned on Tuesday, July 4, 2006, 6.30 p.m. The Party will be held in a restaurant at the Presidium of the Russian Academy of Sciences.

COLLOQUIUM BANQUET

Colloquium banquet is planned on Thursday, July 6, 2006, 7 p.m. at the "Vodka-bar" restaurant in the city center. Address: 18B, Leo Tolstoy Str.

WEATHER

In July, the weather in Moscow is usually warm with a temperature of 25–30 °C. The probability of rains is low.

PROGRAM FOR ACCOMPANYING PERSONS

TUESDAY, JULY 4, 2006

10:00–14:00
Excursion to Kremlin

14:00–15:00
Lunch

18:30–21:30
WELCOME PARTY

WEDNESDAY, JULY 5, 2006

10:00–13:00
Tret'yakov Gallery

13:00–14:00
Lunch

14:00–18:00
Sightseeing tour to Kolomenskoye Estate

THURSDAY, JULY 6, 2006

10:00–14:00
Kuskovo

14:00–15:00
Lunch

19:00
Colloquium Banquet

FRIDAY, JULY 7, 2006

10:00–14:00
Christ, The Saver, Cathedral
Moscow Shopping

19:00
BOLSHOI THEATRE
"KARMEN — THE SUITE. THE CARD GAME"

TENTATIVE PROGRAM

TUESDAY, JULY 4, 2006

8:40–9:20
Registration

9:40-10:20
Opening Ceremony

Berlin A. A. (N. N. Semenov Institute of Chemical Physics RAS Moscow, Russia)
Roy G. D. (ONR, USA)
Meyer U. (ISTC)
Tsyganov S. A. (RFBR, Russia)

SESSION 1:
Transient Combustion Phenomena in Gases — Kinetics

Chairpersons:

Markov V. V. (V. A. Steklov Mathematical Institute, Moscow, Russia)
Tsyganov S. A. (RFBR, Russia)

10:20–11:00
PLENARY LECTURE

Kinetics of gaseous hydrocarbon fuel combustion and thermally nonequilibrium effects
Starik A. M. (P. I. Baranov Central Institute of Aviation Motors (CIAM), Moscow, Russia)

11:00–11:20
COFFEE BREAK

11:20–11:40

Autoignition of jet propulsion fuel and its surrogate: Experiments and modeling
Basevich V. Ya., Borisov A. A., Frolov S. M., Troshin K. Ya., Skachkov G. I. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

11:40–12:00

High-temperature detailed and skeletal mechanisms of Jet-A combustion

Strelkova M. I., Liventsov V. V., Kirillov I. A., Potapkin B. V. (RRC Kurchatov Institute, Moscow, Russia)

Umanskiy S. Y. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

Varatharajan B., Dean T.(GE Global Research, Niskayuna, USA)

Tentner A. (Argonne National Laboratories, Chicago, USA)

12:00–12:20

Flammability limits in hydrogen–(N_2–O_2)-diluent mixtures at various oxygen concentrations

Azatyan V. V. (Institute of Structural Macrokinetics RAS, Moscow, Russia)

Shebeko Yu. N., Bolodian I. A., Shebeko A. Yu., Navzenya V. Yu., Tomilin A. V. (All-Russian Scientific Research Institute for Fire Protection, VNIIPO, Moscow, Russia)

12:20–12:40

Modeling of ignition and combustion of propane and products of its thermal decomposition in a supersonic air flow

Bezgin L., Kopchenov V. I., Starik A. M., Titova N. S. (P. I. Baranov Central Institute of Aviation Motors (CIAM), Moscow, Russia)

12:40–13:00

Self-ignition in supersonic flows: Hydrogen vs. hydrocarbons/ hydrogen mixtures — chemistry/mixing interplay

George E., Magre P., Sabel'nikov V. A. (ONERA — DEFA/ EFCA, France)

13:00–14:00
LUNCH

SESSION 2:

Transient Combustion Phenomena in Gases — Flames

Chairpersons:

Borisov A. **(**N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)
Segal C. (University of Florida, Gainesville, Florida, USA)

14:00–14:40
PLENARY LECTURE

Some basic problems in modeling transient premixed turbulent flames
Lipatnikov A.N. (Chalmers University of Technology, Gothenburg, Sweden)

14:40–15:00

Large-scale hydrogen–air deflagrations: Modeling and LES
Molkov V. V., Makarov D. V. (University of Ulster, Northern Ireland, U.K.)

15:00–15:20

Instability and structure of flames
Aslanov S. K., Volkov V. E. (Odessa National University, Odessa, Ukraine)

15:20–15:40

Modeling of spiral wave patterns in radial microchannels
Minaev S., Fursenko R. (Institute of Theoretical and Applied Mechanics SB RAS, Novosibirsk, Russia)
Maruta K., Kumar S. (Institute of Fluid Science, Tohoku University, Sendai, Japan)

15:40–16:00
COFFEE BREAK

SESSION 3:

Transient Combustion Phenomena in Gases — Deflagration-to-Detonation Transition

Chairpersons:

Molkov V. (University of Ulster, Northern Ireland, U.K.)
Smirnov N. (M. V. Lomonosov Moscow State University, Moscow, Russia)

16:00–16:40

PLENARY LECTURE

Effects of hydraulic resistance and heat losses on deflagration-to-detonation transition
Kagan L., Sivashinsky G. (Tel-Aviv University, Tel-Aviv, Israel)
Valiev D., Liberman M. (Uppsala University, Uppsala, Sweden)

16.40–17.00

Deflagration-to-detonation transition
Buravova S. N., Gordopolov Yu. A. (Institute of Structural Macrokinetics and Materials Science, Moscow, Russia)

17.00–17.20

On the transmission of high-speed deflagration into abrupt area change
Krivosheev P. N., Penyazkov O. G. (A. V. Luikov Heat and Mass Transfer Institute, Minsk, Belarus)

17.20–17.40

Control of turbulization of deflagration wave by electric discharges
Ilyin S. V. (Chuvash State University, Cheboksary, Russia)
Kidin N. I. (Institute for Problems in Mechanics RAS, Moscow, Russia)

14.00–18.00
Poster Session

1. Application of PDE valveless fuel supply system for detonation control by creating variable fuel mixture composition along the combustion chamber
   Baklanov D. I., Gvozdeva L. G., Tarusova N. W. (Institute for High Energy Densities of Associated Institute for High Temperatures RAS, Moscow, Russia)
2. Detailed and overall reaction mechanisms of low- and high-temperature oxidation of hydrocarbons
   Basevich V., Frolov S., Skachkov G. I. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

3. Generation of super-high temperatures by shock waves and detonations
   Bogdanov V. I. (NPO Saturn, Rybinsk, Russia)

4. Criterion of detonation initiation
   Il'in V. V., Rybakov N. A., Pogudin A. L., Rybakov A. P., Kozlov V. V. (Perm State Technical University, Perm, Russia)

5. IDeA software: Tool for integrated detonation assessment
   Kirillov I. A., Okun M. I., Strelkova M. I. (Kurchatov Institute, Moscow, Russia)
   Mechik C. A., Potapkin B. V. (Kinetic Technologies, Moscow, Russia)
   Trotsuyk A. V., Vasil'ev A. A., Vasil'ev V. A.
   (M. A. Lavrentyev Institute of Hydrodynamics, Novosibirsk, Russia)
   Basevich V. Ya., Belyaev A. A., Borisov A. A., Frolov S. M.
   (N. N. Semenov Institute of Chemical Physics, Moscow, Russia
   Dean A., Tangirala V., Varatharajan B. (GE Global Research, Niskayuna, NY, USA)
   Tentner A. M. (Argonne National Laboratory, Argonne, IL, USA)

6. Initiation of high-speed combustion by low-energy plasma jets
Korytchenko K. V. (Kharkov Institute of Armed Forces NTU KhPI, Kharkov, Ukraine)
Dovbnya A. N. (Science-Research Complex "Accelerator" NSC KPTI, Ukraine)
Loginov V. V. (Kharkov University of Air Force, Kharkov, Ukraine)

7. Reaction zone structure of a detonation wave in a pressed TNETB high explosive
Mochalova V. M., Utkin A. V., Ananin A. V. (Institute of Problems of Chemical Physics RAS, Chernogolovka, Russia)

8. Resonance effects in detonating gas-plasma media
Serov Yu. L. (A. F. Ioffe Physico-Technical Institute RAS, St. Petersburg, Russia)

9. Hypersonic ramjet with detonation combustion and mixed diffusion combustion
Tereshin A. M., Rudnev Y. T. (Machine-Building Design Bureau "Soyuz," Turaevo, Russia)
10. Externally oscillated combustion: high efficiency and low NOx
Young Nam Chun, Seong Cheon Kim, Hyoung Oon Song, Mun Sup Lim (Chosun University, R. Korea)
Shmelev V. A. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

11. The theory of detonation with incomplete combustion
Zhizhin G. V. (North-Western State University, St. Petersburg, Russia)

18.30–21.30
WELCOME PARTY

WEDNESDAY, JULY 5, 2006

SESSION 4:
Transient Combustion Phenomena in Gases — Special ISTC Session on Detonation Initiation by Weak Energy Sources

Chairpersons:

Daniau E. (MBDA, France)
Ryzhova T. (ISTC)

9.00–9.20
PLENARY LECTURE

ISTC: The latest news
Ryzhova T. (ISTC)

9.20–9.40

Shock-to-detonation transition due to shock interaction with the zone of prechamber-jet ignition
Frolov S., Aksenov V., Basevich V. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

9.40–10.00

Shock-to-detonation transition in tubes with U-bends
Frolov S., Aksenov V., Shamshin I. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

10.00–10.20

Shock-to-detonation transition in tubes with shaped regular obstacles
Semenov I., Utkin P. (Institute for Computer Aided Design RAS, Moscow, Russia)
Frolov S. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)
Markov V. (V. A. Steklov Mathematical Institute RAS, Moscow, Russia)

10.20–10.40

Initiation of detonation by nanosecond gas discharge
Zhukov V. P., Rakitin A. E., Starikovskii A. Yu. (Moscow Institute of Physics and Technology, Dolgoprudny, Russia)

10.40–11.00

Some aspects of oblique detonation wave initiation in a supersonic flow
Bezgin L. V., Kopchenov V. I., Starik A. M., Titova N. S. (P. I. Baranov Central Institute of Aviation Motors (CIAM), Moscow, Russia)

11.00–11.20
COFFEE BREAK

11.20–11.40

Numerical study of impulse tube with shock-induced combustion
Babushenko D. I., Kopchenov V. I. (P. I. Baranov Central Institute of Aviation Motors (CIAM), Moscow, Russia)

11.40–12.00

Convective burning – to low velocity detonation – transition in ternary aluminum–ammonium perchlorate–nitromethane mixtures
Borisov A. A., Ermolaev B. S., Komissarov P. V., Sokolov G. N., Ibragimov R. H. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

12.00–12.20

Convective burning of ternary aluminum–ammonium perchlorate–nitromethane mixtures
Borisov A. A., Ermolaev B. S., Komissarov P. V., Kudryashova E. L., Sokolov G. N., Ibragimov R. H. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

12.20–13.00
DISCUSSION

13.00–14.00
LUNCH

14.00–18.00
SIGHTSEEING TOUR TO KOLOMENSKOYE ESTATE

A unique architectural ansemble of the Tsars former country residence that reserved its original layout structure situated on the high right shore of the Moskva River. The history of this estate goes back to the 6th century B.C. Kolomenskoye was mentioned in the will of Moscow Prince Ivan Kalita in 1336. The earliest architectural monument on the estate is the Church of the Ascension built in 1532 by Grand Prince Vassily III to commemorate the birth of his son, the future tsar Ivan the Terrible. Two hundred feet high it was one of the tallest Russian buildings in the 16th century and one of the stone churches in the Russian tent-roof style. The church also served as a watchtower. This church has a unique acoustics and festivals of orthodox music is annually carried out here. In 1994 the Church of the Ascension was included in the UNESCO List of the World Historical and Cultural Inheritance. At present the expositions presenting various fund collections of the museum are shown in buildings of the 16th–19th centuries: the Russian ancient painting works, art carving on wood, works of folk arts. Monuments of wooden architecture were moved to territory of Kolomenskoye from different places of Russia: Tower of the stockade for keeping political prisoners built in the middle of the 17th century, Small house of Peter the Great made by himself, Fragment of the fortress wall with a watch tower and the gate made of wood without nail.

Conference participants will attend a special folklore performance with beverage.

THURSDAY, JULY 6, 2006

SECTION 5:
Transient Combustion Phenomena in Two-Phase Reactive Mixtures

Chairpersons:

Desbordes D. (CNRS, ENSMA, Universite de Poitiers, France)
Sinibaldi J. (Naval Postgraduate School, Monterey, CA, USA)

9.00–9.40
PLENARY LECTURE

Mathematical modeling of layered two-phase detonations
Fedorov A. (Institute of Theoretical and Applied Mechanics SB RAS, Novosibirsk, Russia)

9.40–10.00

Transient combustion phenomena in polydispersed fuel–air mixtures
Smirnov N. N., Nikitin V. F., Khadem J., Alyari-Shourekhdeli Sh. (M. V. Lomonosov Moscow State University, Moscow, Russia)

10.00–10.20

Mathematical modeling of binary fuel drop ignition
Frolov S., Basevich V., Posvianskii V., Kuznetsov N., Smetanyuk V. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

10.20–10.40

Mathematical model of flame propagation in drop suspensions
Basevich V., Belyaev A., Frolov S. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

10.40–11.00
COFFEE BREAK

SECTION 6:

Transient Phenomena in Heterogeneous Reactive Media

Chairpersons:

Penyazkov O. (A. V. Luikov Heat and Mass Transfer Institute, Minsk, Belarus)
Johnsson G. (Volvo Aero Corporation, Trollhattan, Sweden)

11.00–11.40
PLENARY LECTURE

Jet deformation of chemically active gas bubbles and its influence on bubble detonation parameters
Voronin D. V. (M. A. Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia)

11.40–12.00

Supercritical mixing
Polikhov S. A., Segal C. (University of Florida, Gainesville, FL, USA)

12.00–12.20

Effect of transient heating on ignition of metal particles
Avdeev K. (Tula State University, Tula, Russia)
Frolov F., Frolov S. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)

12.20–12.40

Ignition modes of heterogeneous systems containing nanopowders of metals
Arkhipov V. A., Korotkikh A. G., Kuznetsov V. T. (Institute of Applied Mathematics and Mechanics, Tomsk, Russia)

12.40–13.00

Shock initiation of detonations in aluminum–oxygen mixtures
Ingignoli W., Veyssiere B., Khasainov B. A. (CNRS, ENSMA, Universite de Poitiers, France)

13.00–14.00
LUNCH

SESSION 7:

Gaseous Detonation Structure

Chairpersons:

Veyssiere B. (CNRS, ENSMA, Universite de Poitiers, France)
Zhdan S. A. (M. A. Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia)

14.00–14.40
PLENARY LECTURE:

Cellular structure of gas detonation front: Modeling of some effects in channels with acoustic absorbing walls
Sharypov O. V. (Institute of Thermophysics SB RAS, Moscow, Russia)

14.40–15.00

Detonation as deflagration in supersonic flow
Vasil'ev A. A. (M. A. Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia)

15.00–15.20

On the role of heat release law on detonation cellular structure and detonation behavior in gases
Guilly V., Luche J., Virot F., Desbordes D., Khasainov B., Presles H. N. (CNRS, France)

15.20–15.40

Propagation of shock and reaction fronts along the structure of marginal and normal detonations
Penyazkov O. G., Sevruk K. L. (A. V. Luikov Heat and Mass Transfer Institute, Minsk, Belarus)

15.40–16.00
COFFEE BREAK

SESSION 8:

Propagation of Gaseous and Heterogeneous Detonations

Chairpersons:

Fujiwara T. (Nagoya University, Nagoya, Japan)
Vasil'ev A. (M. A. Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia)

16.00–16.40
PLENARY LECTURE

Multidimensional study on alminum–oxygen two-phase detonation
Hayashi A. K. (Aoyama Gakuin University, Kanagawa, Japan)

16.40–17.00

Numerical simulation of continuous spinning detonation in a circular tube
Tsuboi N. (Japan Aerospace Exploration Agency, Kanagawa, Japan)
Hayashi A. K. (Aoyama Gakuin University, Kanagawa, Japan)

17.00–17.20

Formation of plane and cellular heterogeneous detonations in bi-fractional particle–gas suspensions
Khmel T. A., Fedorov A. V. (Institute of Theoretical and Applied Mechanics SB RAS, Novosibirsk, Russia)

17.20–17.40

Synthesis of inorganic microtubes in the products of overdriven detonation propagating in acetylene
Kozlov G. I. (Institute for Problems in Mechanics RAS, Moscow, Russia)

19.00–22.00
COLLOQUIUM BANQUET

FRIDAY, JULY 7, 2006

SESSION 9:

Pulse Detonation Engines — Fundamentals

Chairpersons:

Frolov S. (N. N. Semenov Institute of Chemical Physics RAS, Moscow, Russia)
Hayashi A. K. (Aoyama Gakuin University, Kanagawa, Japan)

9.00–9.40
PLENARY LECTURE

Pulse detonation engines: Reduction of predetonation distance
Gvozdeva L. G. (Institute for High Energy Densities of Associated Institute for High Temperatures RAS, Moscow, Russia)

9.40–10.00

Effect of obstacles on detonation wave propagation
Levin V. A. (Institute for Automation and Control Processes FEB RAS, Vladivostok, Russia)
Markov V. V. (V. A. Steklov Mathematical Institute RAS, Moscow, Russia)
Zhuravskaya T. A., Osinkin S. F. (Institute of Mechanics, M. V. Lomonosov Moscow State University, Moscow, Russia)

10.00–10.20

Influence of igniting spark discharge location and energy on detonation formation in a confined volume
Golub V. V., Baklanov D. I., Golovastov S. V., Volodin V. V., Semin N. V. (Institute for High Energy Densities of Associated Institute for High Temperatures RAS, Moscow, Russia)

10.20–10.40

Experimental study and numerical modeling of detonation wave attenuation in duct

Remeev N. Kh., Vlasenko V. V., Khakimov R. A. (TsAGI, Zhukovsky, Russia)

Serre L. (ONERA, France)

10.40–11.00
COFFEE BREAK

SESSION 10:

Pulse Detonation Engines — Design Concepts and Performance

Chairpersons:

Kopchenov V. (P. I. Baranov Central Institute of Aviation Motors (CIAM), Moscow, Russia)

Sabel'nikov V. **(**ONERA, France)

11.00–11.20

Design and development of a new valveless PDE concept

Sinibaldi J., Hall P., Holthaus J., Robbins T. (Naval Postgraduate School, Monterey, CA, USA)

11.20–11.40

Performance tests of NPS pulse detonation engine

Hutcheson P. D., Holthaus J. E., Brophy C. M., Sinibaldi J. O. (Naval Postgraduate School, Monterey, CA, USA)

Barbour E., Hanson R. K. (Stanford University, Stanford, CA, USA)

Cathey C., Gundersen M. A. (University of Southern California, Los Angeles, CA, USA)

11.40–12.00

Analytical and experimental study of PDE with exit valves for thrust augmentation

Kojima T., Kobayashi H. (Japan Aerospace Exploration Agency, Chofu, Tokyo, Japan)

Tsuboi N. (Japan Aerospace Exploration Agency, Kanagawa, Japan)

Kasahara J. (Tsukuba University, Tsukuba, Japan)

12.00–12.20

Performance estimations of a PDE with exit nozzles

Hayashi A. K., Jotaki H. (Aoyama Gakuin University, Kanagawa, Japan)

Tsuboi N. (Japan Aerospace Exploration Agency, Kanagawa, Japan)

Tangirala V., Dean A. J. (GE Global Research, Niskayuna, NY, USA)

12.20–12.40

Development of micro-PDE and its performance evaluation

Kitano Sh., Sato H., Hayashi A. K. (Aoyama Gakuin University, Kanagawa, Japan)

12.40–13.00

The results of valveless pulse engine demonstrator testing and numerical simulation

Marchukov E. Yu., Tarasov A. I., Wagner A. V. (TSC NPO "Saturn," Moscow, Russia)

13.00–14.00
LUNCH

SESSION 11:

Rotating Detonation Engines

Chairpersons:

Golub V. (Institute for High Energy Densities of Associated Institute for High Temperatures RAS, Moscow, Russia)
Tsuboi N. (Japan Aerospace Exploration Agency, Kanagawa, Japan)

14.00–14.20

Numerical study of rotating detonation in gaseous H_2–O_2 mixture
Zhdan S. A., Bykovskii F. A., Vedernikov E. F.
(M. A. Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia)

14.20–14.40

Initiation of detonation in a vortex flow of hydrogen–air mixture
Bykovskii F. A., Vedernikov E. F., Golubev Yu. V.
(M. A. Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia)
Polozov S. V. (Institute of Geophysics SB RAS, Novosibirsk, Russia)

14.40–15.00

Experimental study of small rotating detonation engine
Wolanski P., Kindracki J. (Warsaw University of Technology, Warsaw, Poland)
Fujiwara T. (Nagoya University, Nagoya, Japan)
15.00–15.20
A study of continuously rotating detonation in fuel–air mixtures for ramjet-type combustor
Bykovskii F. A., Zhdan S. A., Vedernikov E. F.
(M. A. Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia)

15.20–15.40

Design of a continuous detonation wave engine for space application

Daniau E., Falempin F. (MBDA, France)
Zhdan S., Bykovskii F. (M. A. Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia)

15.40–16.00
COFFEE BREAK

16.00–17.30
PANEL DISCUSSION
"INTELLIGENT APPROACHES TO DETONATION INITIATION"

Moderators:

Roy G. D. (ONR, Arlington, VA, USA)
Tsyganov S. A. (RFBR, Russia)

Panel Members: ***Borisov A.*** (Russia), ***Daniau E.*** (France), ***Desbordes D.*** (France), ***Frolov S.*** (Russia**)**, ***Fujiwara T.*** (Japan), ***Golub V.*** (Russia), ***Gvozdeva L.*** (Russia), ***Hayashi A. K.*** (Japan), ***Johnsson G.*** (Sweden), ***Kopchenov V.*** (Russia), ***Markov V.*** (Russia), ***Molkov V.*** (Northern Ireland, U.K.), ***Penyazkov O.*** (Belarus), ***Sabelnikov V.*** (France), ***Segal C.*** (USA), ***Sinibaldi J.*** (USA), ***Smirnov N.*** (Russia), ***Vasil'ev A.*** (Russia), ***Veyssiere B.*** (France), ***Zhdan S.***(Russia)

All participants are requested to submit a 1-page abstract on this specific topic that reflects their expertise and approach before or at the registration at the Colloquium. Selected materials will be used for highlighting the Panel Discussion in the book of selected papers. Each panelist will be provided with 3 min to present his/her conceptions and reasoning.

CONCLUDING REMARKS

Roy G. D. (ONR, Arlington, VA, USA)
Tsyganov S. A. (RFBR, Russia)

19.00–22.00
BOLSHOI THEATRE
"KARMEN — THE SUITE. THE CARD GAME"

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