

ICPCD-2022
TENTATIVE TECHNICAL PROGRAM
(mixed face-to-face and online format)

Monday, April 18, 2022

9:50–10:20

Registration

10:20–10:30

Opening Ceremony

**Session 1: Mixing, Combustion, and
 Deflagration-to-Detonation Transition - I**

Session Chair: S. M. Frolov

10:30–11:30 Keynote Lecture:

Deflagration-to-detonation transition in stoichiometric binary hydrocarbon (methane, propane, ethylene) – hydrogen blends in air
I. O. Shamshin, M. V. Kazachenko, S. M. Frolov, V. Ya. Basevich

11:30–12:00

Coffee Break

12:00–12:30

Numerical modeling of near-wall supersonic mixing using IDDES approach

R. S. Solomatin, I. V. Semenov

12:30–13:00

Determination of induction and reactions time for hydrogen–air mixtures at high temperatures

E. A. Baranyshin, O. G. Penyazkov, K. L. Sevruk

13:00–14:00

Lunch

**Session 2: Mixing, Combustion, and
 Deflagration-to-Detonation Transition - II**

Session Chair: O. G. Penyazkov

14:00–15:00 Keynote Lecture:

Instabilities of supersonic combustion at plasma-based flameholding
and beyond

S. B. Leonov

15:00–15:30

Improvement of ignition system of detonation engines with an initiated
microwave subcritical streamer discharge

*P. V. Bulat, I. I. Esakov, L. P. Grachev, M. E. Renev, K. N. Volkov,
I. A. Volobuev*

15:30–16:00

Coffee Break

16:00–16:30

On the choice of optimal types of combustion chambers for the initiation
of gas detonation

D. V. Voronin

16:30–17:00

Experimental study of the initial stage of the operation process
in detonation rocket and air-breathing engines

I. O. Shamshin, V. S. Ivanov, V. S. Aksenov, P. A. Gusev, S. M. Frolov

18:00–20:00

Welcome Party

Tuesday, April 19, 2022

Session 3: Gaseous detonations

Session Chair: I. O. Shamshin

10:00–11:00 Keynote Lecture:

Studies of the detonation propagation in viscous turbulent flow in a duct
V. V. Vlasenko, S. S. Molev, V. A. Sabelnikov, A. I. Troshin, S. Bakhne

11:00–11:30

On some dynamic phenomena during the propagation of gaseous detonation in a medium with periodic inhomogeneity

A. Yu. Goldin, A. R. Kasimov

11:30–12:00

Coffee Break

12:00–12:30

Testing of a specialized device for video recording of detonation waves
A. N. Samsonov, A. V. Tsar'kova, F. A. Bykovskii

12:30–13:00

Realization of continuously rotating detonation for syngas–air mixtures
A. V. Trotsyuk

13:00–14:00

Lunch

Session 4: Multiphase processes and detonations

Session Chair: V. A. Smetanyuk

14:00–14:30

Critical conditions of droplet puffing and microexplosion modes

D. V. Antonov, P. A. Strizhak

14:30–15:00

Puffing and microexplosion in secondary droplets

P. A. Strizhak, D. V. Antonov

15:00–15:30

Characteristics of microexplosive dispersion of gel fuel particles ignited in a high-temperature air medium

D. Glushkov, A. Nigay, K. Paushkina and A. Pleshko

15:30–16:00

Coffee Break

16:00–16:30

Multidimensional numerical simulation of kerosene spray fragmentation, vaporization and self-ignition in air

K. A. Byrdin, V. A. Smetanyuk, S. M. Frolov, I. V. Semenov

16:30–17:00

Simulation of interaction of homogeneous hydrogen–air detonation with porous filters

D. A. Tropin, K. A. Vyshegorodcev

17:00–17:30

Simulation of interaction of heterogeneous detonation with porous insert

S. A. Lavruk, D. A. Tropin

Wednesday, April 20, 2022

Session 5: Applications of Pulsed and Continuous Detonations

Session Chair: V. S. Ivanov

10:00–11:00 Keynote Lecture:

Pulsed and continuous detonations: review of worldwide patents over 50 years

K. A. Avdeev, S. M. Frolov, V. I. Zvegintsev

11:00–11:30

Transmission of shock and detonation waves in confined and semiconfined channels filled with liquid saturated by inert and chemically active bubbles.

K. A. Avdeev, V. S. Aksenov, I. S. Sadykov, S. M. Frolov, F. S. Frolov, I. O. Shamshin.

11:30–12:00

Coffee Break

12:00–12:30

On the mechanism of aeroacoustic initiation of pulsed quasi-detonation in an ejector pulsed jet engine

K. V. Migalin, A. K. Sidenko

12:30–13:00

Study of detonative combustion in an ejector pulsed jet engine

I. P. Boichuk, K. A. Sidenko, A. V. Grinek

13:00–14:00

Lunch

14:00–14:30

Afterburner with continuous detonation of liquid fuel

*S. M. Frolov, V. S. Ivanov, I. O. Shamshin, V. S. Aksenov, M. Yu. Vovk,
I. V. Mokrynskii, V. A. Bruskov, D. V. Igon'kin, S. N. Moskvitin,
A. A. Illarionov, E. Yu. Marchukov*

14:30–15:00

Gasification of gaseous, liquid, and solid wastes with detonation-born ultrasuperheated steam

*S. M. Frolov, V. A. Smetanyuk, I. S. Sadykov, A. S. Silantiev,
I. O. Shamshin, V. S. Aksenov, K. A. Avdeev, F. S. Frolov,*

15:00–15:30

Shaping of expanding channel for producing planar detonations at open end

*V. S. Aksenov, S. M. Frolov, I. S. Sadykov, I. O. Shamshin,
A. S. Silantiev, V. A. Smetanyuk*

15:30–16:00

Coffee Break

16:00–16:30

Forecasting the possibility of the development of explosive conversion processes in the CSP under different types of external impacts according to the dispersion degree of high-energy materials

E. V. Romanova, B. V. Pevchenko, R. G. Nikitin

16:30–17:30

Panel Discussion

Moderator: S. M. Frolov

19:00–22:00

Conference Dinner

Thursday, April 21, 2022

10:00–14:30

Bus and walking excursion program

“Generous Souls. Philanthropists of St. Petersburg”

with a visit to the mansion of A. A. Polovtsov

The meeting place is at 10:00 near St. Isaac's Cathedral
from the side of Four Seasons Hotel.