

Program of International Conference  
on Physics and Chemistry of Combustion and Processes  
in Extreme Environments  
dedicated to the 300th anniversary of the Russian Academy of Sciences  
(Samara, Russian Federation, July 2-6, 2024)

**2 July, Tuesday** (Samara time UTC +4)

**10.00-10.20** **Opening and Welcome Remarks**

**Session 1.1 Chair:** Nicolay N. Smirnov (Lomonosov Moscow State University, FSC  
“Scientific Research Institute for System Analysis of RAS”)

**10.20-11.00** Andrey Shmakov<sup>1</sup>, D. Knyazkov<sup>1,2</sup>, T. Bolshova<sup>1</sup>, I. Gerasimov<sup>1</sup>, K. Osipova<sup>1,2</sup>,  
A. Dmitriev<sup>1,2</sup> (<sup>1</sup>Voevodsky Institute of Chemical Kinetics and Combustion SB RAS,  
<sup>2</sup>Novosibirsk State University, Novosibirsk, Russia) **Study of the flame structure of CH<sub>4</sub>/H<sub>2</sub>  
mixtures at elevated pressure and development of reduced reaction mechanism** (*Plenary*)

**11.00-11.25** Vladimir Gubernov, (P.N. Lebedev Physical Institute of RAS, Moscow, Russia) **On  
the role of low temperature reactions in burner stabilized and propagating flames** (*Invited*)

**11.25-11.45** **Coffee Break**

**Session 1.2 Chair:** Alexander Eremin (Joint Institute for High Temperatures of the RAS)

**11.45-12.00** Stanislav Trubachev<sup>1</sup>, O. Korobeinichev<sup>1</sup>, A. Karpov<sup>3</sup>, A. Paletsky<sup>1</sup>, E. Sosnin<sup>1,2</sup>,  
A. Shaklein<sup>3</sup>, I. Kulikov<sup>1</sup>, A. Sagitov<sup>1,2</sup>, A. Shmakov<sup>1</sup>, A. Chernov<sup>1</sup>, O. Tuzhikov<sup>4</sup>, Xin Wang<sup>5</sup>  
(<sup>1</sup>Voevodsky Institute of Chemical Kinetics and Combustion SB RAS, <sup>2</sup>Novosibirsk State  
University, Novosibirsk; <sup>3</sup>Udmurt Federal Research Center, Izhevsk, <sup>4</sup> Volgograd State  
Technical University, Volgograd, Russia, <sup>5</sup> State Key Laboratory of Fire Science, USTC, P.R.  
China) **The influence of flame retardants on the combustion of fiber-reinforced epoxy resin**

**12.00-12.15** Evgenii Sereshchenko, V. Gubernov, S. Minaev (P.N. Lebedev Physical Institute  
of Russian Academy of Sciences, Moscow, Russia) **Dynamics of sporadic combustion waves and  
single ball-like flame in straight channels**

**12.15-12.30** Vladimir Kislov, M. Tsvetkov, Yu. Tsvetkova, M. Salganskaya, A. Zaichenko,  
E. Salgansky, D. Podlesniy (Federal Research Center of Problems of Chemical Physics and  
Medicinal Chemistry RAS, Chernogolovka, Russia) **Neutralization of sulfur compounds by  
calcium-based additives in the filtration combustion processes**

**12.30-12.45** Denis Kasymov<sup>1</sup>, V. Perminov<sup>2</sup>, E. Golubnichiy<sup>1</sup> (<sup>1</sup>Tomsk State University,  
<sup>2</sup>Tomsk Polytechnic University, Tomsk, Russia) **Firebrand Generation and Transport During  
Forest Fires: Experimental Approach**

**12.45-13.00** Tatyana Bolshova, V. Shvartsberg, A. Shmakov (Voevodsky Institute of Chemical Kinetics and Combustion, Novosibirsk, Russia) **Regularities of the combustion chemistry of PMMA in the oxidizer flow in microgravity**

**13.00-13.15** Andrey Cherepanov<sup>1,2</sup>, D. Knyazkov<sup>1,2</sup>, K. Osipova<sup>1,2</sup>, V. Kiselev<sup>1,2</sup>, A. Dmitriev<sup>1,2</sup>, A. Shmakov<sup>1,2</sup> (<sup>1</sup> Voevodsky Institute of Chemical Kinetics and Combustion SB RAS, <sup>2</sup> Novosibirsk State University, Novosibirsk, Russia) **Ion chemistry in ammonia-hydrogen-oxygen flames**

**13.15-14.45** LUNCH

**Session 1.3 Chair:** Vladimir V. Gubernov (P.N. Lebedev Physical Institute of RAS, Moscow)

**14.45-15.10** Vitaly Kiselev,<sup>1,2,3</sup> M. Gorn,<sup>1,2</sup> Sh. Vaddypally,<sup>4</sup> M.J. Zdilla<sup>4</sup> (<sup>1</sup>Institute of Chemical Kinetics and Combustion SB RAS, <sup>2</sup>Novosibirsk State University, Novosibirsk, Russia, <sup>3</sup>Semenov Federal Research Center for Chemical Physics RAS, Moscow, Russia <sup>4</sup>Temple University, United States) **Thermal stability and unusual rearrangements of nitrogen-rich energetic compounds: New insights from predictive electronic structure calculations** (*invited*)

**15.10-15.35** Ksenia Osipova, A. Shmakov (Voevodsky Institute of Chemical Kinetics and Combustion SB RAS, Novosibirsk, Russia) **Kinetics of oxidation and combustion processes of ammonia-based fuel blends** (*invited*)

**15.35-15.50** Vadim Dorokhov, G. Nyashina, D. Romanov, K. Vershinina (Heat and Mass Transfer Laboratory, National Research Tomsk Polytechnic University, Tomsk, Russia) **Combustion of pellets from biomass and refused derived fuel**

### **3 July, Wednesday** (Samara time UTC +4)

**Session 2.1 Chair:** Valery N. Azyazov (Lebedev Physical Institute of RAS, Samara Branch)

**9.15-09.40** Ivan Antonov (Lebedev Physical Institute (Samara Branch), Samara National Research University, Samara, Russia) **Recent progress in the building of the Cryogenic Surface Processes apparatus: chemistry of interstellar methane ices** (*invited*)

**9.40-10.20** Vladimir Feldman (Lomonosov Moscow State University, Moscow, Russia) **Modeling of cold astrochemical processes through matrix isolation: extremely hot chemistry at extremely low temperatures** (*plenary*)

**10.20-10.45** Dmitri Wiebe (Institute of Astronomy of the RAS, Moscow, Russia) **Cosmic rays as an astrochemical factor** (*invited*)

**10.45-11.10** Maria Murga, (Institute of astronomy of Russian academy of sciences, Moscow, Russia) **Evolution of carbonaceous particles from AGB stars to planetary nebulae: observations and theory** (*invited*)

**11.10-11.30** Coffee Break

**Session 2.2. Chair:** Vladimir I. Feldman (Lomonosov Moscow State University, Moscow)

**11.30-11.55** Igor I. Zinchenko (Federal Research Center A.V. Gaponov-Grekhov Institute of Applied Physics of RAS, Nizhny Novgorod, Russia) **Molecular inventory of the interstellar medium** (*invited*)

**11.53-12.10** Dmitry Riashchikov<sup>1,2</sup>, N. Molevich<sup>1,2</sup>, D. Zavershinskii<sup>1,2</sup>, E. Scoptsova<sup>1</sup> (<sup>1</sup>Samara National Research University, <sup>2</sup>Lebedev Physical Institute, Samara Branch, Samara, Russia) **Propagation features of acoustic-gravity waves in a medium with thermal misbalance**

**12.10-12.25** Ekaterina Borshcheva<sup>1</sup>, A. Vasyunin<sup>2</sup> (<sup>1</sup>Institute of Astronomy of RAS, Moscow, Russia, <sup>2</sup>Ural Federal University, Yekaterinburg, Russia) **Formation of complex organic molecules in prestellar cores: the role of non-diffusive grain chemistry**

**12.25-12.40** Dmitry Zavershinskii<sup>1,2</sup>; N. Molevich<sup>1,2</sup>; D. Riashchikov; S. Belov<sup>2</sup> (<sup>1</sup>Lebedev Physical Institute, Samara Branch, <sup>2</sup>Samara National Research University, Samara, Russia) **Dynamics of slow magnetoacoustic and entropy modes in flaring coronal loops**

**12.40-12.55** Oleg Kuznetsov, M. Evseev, V. Azyazov (Lebedev Physical Institute, Samara Branch, Samara, Russia) **Experimental investigation of naphthalene growth via HACA mechanism**

**12.55-13.10** Sergey Derteev, M. Sapraliev, N. Shividov, B. Mikhalyaev (Kalmyk state university named after B.B. Gorodovikov, Elista, Russia) **Quasi-periodic pulsations in active regions of the solar corona**

**13.10-14.40** LUNCH

**Session 2.3 Chair:** Maria Murga (Institute of Astronomy of the RAS, Moscow)

**14.40-15.20** Valery Nakariakov (University of Warwick, Coventry, United Kingdom) **Solar corona as active MHD media** (*plenary*) (*online*)

**15.20-15.45** Gleb Fedoseev<sup>1,2</sup> (<sup>1</sup>Xinjiang Astronomical Observatory, Chinese Academy of Sciences, <sup>2</sup>Xinjiang Key Laboratory of Radio Astrophysics, Urumqi, China) **Laboratory investigation of interstellar ice analogues in view of the newest open data from JWST observatory** (*invited*) (*online*)

**15.45-16.10** Anton Vasyunin<sup>1</sup>, Ekaterina Borscheva<sup>2,1</sup>, Alexey Mozhegorov<sup>1,3</sup>, Anna Punanova, Maxim Ozhiganov<sup>1</sup>, Mikhail Medvedev<sup>1</sup>, Varvara Karteeva<sup>1</sup>, Ruslan Nakibov<sup>1</sup> (<sup>1</sup>Ural Federal Institute, Yekaterinburg, <sup>2</sup>Institute of Astronomy of the RAS, Moscow, Ekaterinburg Theological Seminary, Yekaterinburg, Russia) **Modeling the Composition of Interstellar Ices observed with the James Webb Space Telescope** (*invited*)

**16.10-16.30** Coffee Break

**16.30-18.30** Poster Session

- P1. Nikita Bystrov, A. Emelianov, A. Eremin, P. Yatsenko (Joint Institute for High Temperatures of the Russian Academy of Sciences, Moscow, Russia) **Measurements of the oxygen dissociation rate constant with verification of modern models of hydrocarbon combustion**
- P2. Artëm Dmitriev, D. Knyazkov, A. Shmakov (Voevodsky Institute of Chemical Kinetics and Combustion SB RAS, <sup>2</sup> Novosibirsk State University, Novosibirsk, Russia) **Chemical structure of laminar hydrogen flames with the addition of tetraethoxysilane**
- P3. A. Eremin, Egor Khodyko, R. Kolotushkin, (Joint Institute for High Temperatures of the RAS, Moscow, Russia) **Investigation of the soot growth process in a flame by the 2D-LII method**
- P4. A.V. Eremin<sup>1</sup>, M. R. Korshunova<sup>1</sup>, E. Yu. Mikheyeva<sup>1</sup>, V.N. Zolotarev<sup>1,2</sup> (<sup>1</sup> Joint Institute for High Temperatures of the RAS, <sup>2</sup> Moscow Institute of Physics and Technologies, Moscow, Russia) **Investigation of soot and PAHs formation during hydrocarbons pyrolysis with kinetic modeling and optical density measurements in UV-VIS range**
- P5. Alina Ponomareva<sup>1,2</sup>, A. Moroshkina<sup>1</sup>, E. Sereshchenko<sup>1</sup>, V. Mislavskii<sup>1</sup>, V. Gubernov<sup>1</sup> (<sup>1</sup>Lebedev Physical Institute of RAS, Moscow, <sup>2</sup>ITMO University, Saint Petersburg) **Activation energy of lean methane-hydrogen-air mixtures**
- P6. Eugene Salgansky, A. Zaichenko, D. Podlesniy, M. Salganskaya, M. Tsvetkov, Yu. Tsvetkova (Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia) **Thermodynamic assessment of the composition of mixed solid fuel for the gas generator of a high-speed flying vehicle**
- P7. M. Tsvetkov<sup>1</sup>, D. Podlesniy<sup>1</sup>, M. Salganskaya<sup>1</sup>, Yu. Tsvetkova<sup>1</sup>, A. Glukhov<sup>1</sup>, E. Latkovskaya<sup>2</sup>, A. Zaichenko<sup>1</sup>, Eugene Salgansky<sup>1</sup> (Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia, <sup>2</sup>Sakhalin State University, Yuzhno-Sakhalinsk, Russia) **Characteristics of algae biomass-derived biochars**
- P8. Vladimir Kislov, M. Tsvetkov, Yu. Tsvetkova, M. Salganskaya, A. Zaichenko, E. Salgansky, D. Podlesniy (Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia) **Thermal decomposition of sulfur brown coal at different heating rates**
- P9. Vladimir Kislov, M. Tsvetkov, Yu. Tsvetkova, M. Salganskaya, A. Zaichenko, E. Salgansky, D. Podlesniy (Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia) **The dynamics of sulfur compounds release investigation at combustion and its absorption by the calcium-based additives**
- P10. Raphael Kryev, A.M. Korobkov, E.G. Belov, S.V. Mikhailov, A.A. Yagofarov (Kazan National Research Technological University, Kazan, Russia) **Energy-saturated materials based on silicon and halogen-containing polymers**
- P11. V. Arkhipov<sup>1</sup>, Nikolay Zolotarev<sup>1,2</sup> (<sup>1</sup> National Research Tomsk State University, Tomsk, Russia, <sup>2</sup> Kutateladze Institute of Thermophysics of the Siberian Branch of the RAS, Novosibirsk, Russia) **Influence of aluminum powder additives on the acoustic conductivity of the burning surface of solid propellant**
- P12. Denis Davydov, E. Umerov, V. Novikov (Samara State Technical University, Samara, Russia) **Preparation of Ti<sub>3</sub>SiC<sub>2</sub> and Ti<sub>3</sub>AlC<sub>2</sub> MAX phases from TiSi<sub>2</sub>-C and TiAl-C by SHS in river sand shield**

- P13. Denis Davydov, A. Amosov (Samara State Technical University, Samara, Russia) **Synthesis of porous MAX phases  $Ti_3SiC_2$  and  $Ti_3AlC_2$  by combustion in air and river sand**
- P14. V. Perminov<sup>1</sup> Denis Kasymov<sup>2</sup> (<sup>1</sup>Tomsk Polytechnic University, <sup>2</sup>Tomsk State University, Tomsk, Russia) **Mathematical and physical modeling of forest fire spread in the presence of firebreaks**
- P15. Alexey Chichinin (Institute of Chemical Kinetics and Combustion, Siberian Branch RAS, Novosibirsk, Russia) **Astropolarimetry: reduced form of statistical equilibrium equations**
- P16. Ivan Pomelnikov<sup>1,2</sup>, D. Riashchikov<sup>1,2</sup>, N. Molevich<sup>1,2</sup> (<sup>1</sup>Lebedev Physical Institute, Samara Branch, <sup>2</sup>Samara National Research University, Samara, Russia) **Study of clumps in atomic zones of photodissociation regions**
- P17. Elizaveta Scoptsova<sup>1</sup>, D. Riashchikov<sup>1,2</sup>, D. Zavershinskii<sup>1,2</sup> (<sup>1</sup>Samara National Research University, <sup>2</sup>Lebedev Physical Institute, Samara Branch, Samara, Russia) **Impact of non-adiabatic heating and cooling on the gravitational stratification of the solar atmosphere**
- P18. Maksim Ozhiganov, U. Sapunova, M. Medvedev, V. Karteeva, R. Nakibov, A. Vasyunin (Ural Federal University, Yekaterinburg, Russia) **The effect of  $N_2$  presence on the interstellar ice analogs infrared spectra**
- P19. Anna Astashova<sup>1,2</sup>, M. Evseev<sup>1</sup>, E. Bashkirov<sup>2</sup> (<sup>1</sup>Lebedev Physical Institute, Samara Branch, <sup>2</sup>Samara National Research University, Samara, Russia) **Synthesis of the simplest alcohols and nitrogen-substituted PAHs in the interstellar medium**
- P20. Mikhail Evseev<sup>1</sup>, A. Astashova<sup>1,2</sup> (<sup>1</sup>Lebedev Physical Institute, Samara Branch, <sup>2</sup>Samara National Research University, Samara, Russia) **Radical substitution reactions between light alkanes and their radicals**
- P21. Anatoliy Nikolayev<sup>1,2</sup>, V. Azyazov<sup>1,2</sup>, A. Mebel<sup>2,3</sup> (<sup>1</sup>Lebedev Physical Institute, Samara Branch, <sup>2</sup>Samara National Research University, Samara, Russia, <sup>3</sup>Florida International University, Miami, Florida, USA) **Gas-phase synthesis of phenylacetylene in the reaction of 1,3-butadiene with the butadiynyl radical**
- P22. Vladislav Krasnoukhov<sup>1</sup>, A. Mebel<sup>2,3</sup> (<sup>1</sup>Lebedev Physical Institute, Samara Branch, <sup>2</sup>Samara National Research University, Samara, Russia, <sup>3</sup>Florida International University, Miami, Florida, USA) **Gas-phase Formation of Phenanthrene and Dibenzofulvene via the Reaction of Fluorenyl and Methyl Radicals**
- P23. Sergey Tuchin, E. Batrakova, D. Trufanov, I. Antonov (Lebedev Physical Institute, Samara Branch, Samara National Research University, Samara, Russia) **Experimental optimization of the time-of-flight mass spectrometer of the cryogenic surface processes: mass spectrum of butadiene**
- P24. Evgeniya Batrakova, S. Tuchin, D. Trufanov, I. Antonov (Lebedev Physical Institute, Samara Branch, Samara National Research University, Samara, Russia) **Reactions in cryogenic methane films initiated by ultraviolet vacuum radiation**
- P25. Danila Trufanov, E. Batrakova, S. Tuchin, I. Antonov (Lebedev Physical Institute, Samara Branch, Samara National Research University, Samara, Russia) **Numerical simulation of the time-of-flight mass spectrometer of the cryogenic surface processes apparatus: influence of the inhomogeneity of the source region field**

- P26. Alina Kuznetsova, D. Porfiriev, V. Azyazov (<sup>1</sup>Lebedev Physical Institute, Samara Branch, <sup>2</sup> Samara National Research University, Samara, Russia) **Theoretical study of 1-acenaphthyl oxidation with molecular oxygen**
- P27. Lubov Krikunova, D. Porfirev, V. Azyazov (<sup>1</sup>Lebedev Physical Institute, Samara Branch, <sup>2</sup> Samara National Research University, Samara, Russia) **The Acetobenzene with methylidyne potential energy surface**
- P28. Mehdi Abbasi, A. Nateghi (University of Tehran, Tehran, I.R. Iran) **Further Development of Multi-component Diesel Surrogate Model on Naphthanes for High Temperature Combustion**
- P29. Aleksei Torbin<sup>1,2</sup>, A. Chernyshov<sup>1</sup>, P. Mikheyev<sup>1</sup> (<sup>1</sup>Lebedev Physical Institute, Samara Branch, <sup>2</sup> Samara National Research University, Samara, Russia) **NO<sub>2</sub> production in a dielectric barrier discharge in air-CH<sub>4</sub> mixtures**
- P30. Ruslan Kuramshin<sup>1,2</sup>, A. Torbin<sup>1,2</sup>, A. Chernyshov<sup>1</sup> (<sup>1</sup>Lebedev Physical Institute, Samara Branch, <sup>2</sup> Samara National Research University, Samara, Russia) **Measuring gas temperature in Ar-He plasma using diode laser absorption spectroscopy**
- P31. Ekaterina Sidorova<sup>1</sup>, A. Shtyrlov<sup>1</sup>, P. Strizhak<sup>2</sup>, D. Antonov<sup>2</sup>, I. Zubrilin<sup>1</sup> (<sup>1</sup> Samara National Research University, Samara, <sup>2</sup> Energy Engineering School, National Research Tomsk Polytechnic University, Tomsk, Russia) **Methodology for plotting a distillation curve for multicomponent fuels with the addition of ethers**
- P32. Andrey Golenko<sup>1</sup>, A. Savchenkova<sup>1</sup>, I. Chechet<sup>1</sup>, S. Matveev<sup>1</sup>, A. Konnov<sup>2</sup>, A. Mebel<sup>1,3</sup> (<sup>1</sup> Samara National Research University, Samara, Russia, <sup>2</sup>Lund University, Lund, Sweden, <sup>3</sup>Florida International University; Miami, USA) **Rate constants for the interaction of para-pyridyl with O<sub>2</sub>: Theoretical study**
- P33. Anna S. Savchenkova, A. M. Golenko, I.V. Chechet, S.G. Matveev, A.A. Konnov, A.M. Mebel (Samara National Research University, Samara, Russia) **Interaction of pyridine radicals with molecular oxygen: Theoretical study**
- P34. Aleksandr Semenikhin, A. Savchenkova, S. Matveev, A. Mebel (Samara National Research University, Samara, Russia) **Singlet potential energy surface of C<sub>3</sub>H<sub>2</sub>+O<sub>2</sub> interaction**
- P35. Vladislav Anisimov, I. Chechet, O. Kolomzarov, M. Anisimov, D. Bobkova (Samara National Research University, Samara, Russia) **The efficiency of combustor perforated plate**
- P36. Nikita Gurakov, A. Popov, S. Matveev, S. Matveev, D. Idrisov, S. Gilyazova (Samara National Research University, Samara, Russia) **Calculation method for lean flame blowout limit of CH<sub>4</sub>/H<sub>2</sub>/air combustion considering laminar flame speed values**
- P37. Sergey Matveev, D. Idrisov, N. Gurakov, A. Litarova, R. Ivanov (Samara National Research University, Samara, Russia) **Numerical and experimental study of NO<sub>x</sub> formation during hydrogen combustion in a model combustion chamber with a cluster microflame burner device**
- P38. Dmitry Idrisov, S. Matveev, V. Abrashkin, S. Lukachev, A. Litarova, D. Kutcher (Samara National Research University, Samara, Russia) **Development of a method for determining the flashback limits when using methane-hydrogen fuel in the combustion chambers of gas turbine engines**

- P39. Maksim Labaev, I. Platonov, I. Muhanova, A. Saltanova (Samara National Research University, Samara, Russia) **Solid-phase extraction of synthetic dyes from wastewater and their analysis by HPLC**
- P40. Aleksandr Bryksin, I. Platonov (Samara National Research University, Samara, Russia) **Testing of monolithic chromato-desorption systems with organic solvents under extreme conditions**
- P41. Igor Liskov, B. Aduiev, D. Nurmukhametov (The Federal Research Center of Coal and Coal-Chemistry of Siberian Branch of the RAS, Kemerovo, Russia) **Ignition of carbon microparticles by continuous laser radiation of various wavelengths**
- P42. Denis Nurmukhametov, B. Aduiev, G. Belokurov (The Federal Research Center of Coal and Coal-Chemistry of Siberian Branch of the RAS, Kemerovo, Russia) **Ignition of microparticles of coals of different ash content by laser pulses**
- P43. Boris P. Aduiev, D.R. Nurmukhametov, I.Y. Liskov (The Federal Research Center of Coal and Coal-Chemistry of Siberian Branch of the Russian Academy of Sciences, Kemerovo, Russia) **Features of laser ignition of carbon particles by laser radiation (overview)**

## 4 July, Thursday (Samara time UTC +4)

### Session 3.1

**Chair:** Andrey G. Shmakov (Voevodsky Institute of Chemical Kinetics and Combustion SB RAS)

**09.15-09.40** Denis Knyazkov, A. Cherepanov, V. Kiselev, A. Dmitriev, A. Shmakov, (Voevodsky Institute of Chemical Kinetics and Combustion SB RAS, Novosibirsk, Russia) **A comprehensive chemical kinetic model for the evolution of charged species naturally occurring in non-sooting flames of hydrocarbons** (*Invited*)

**09.40-10.20** Nickolay N. Smirnov (Moscow Lomonosov State University, Federal Science Center "Scientific Research Institute for System Analysis of Russian Academy of Sciences", Moscow, Russia) **Control of detonation propagation by chemical physics methods** (*Plenary*)

**10.20-11.00** Alexander Eremin (Joint Institute for High Temperatures of the Russian Academy of Sciences, Moscow, Russia) **Passive and active laser methods for studying the kinetics of high-temperature reactions in shock tubes** (*Plenary*)

**11.00-11.20** **Coffee Break**

### Session 3.2

**Chair:** Denis A. Knyazkov (Voevodsky Institute of Chemical Kinetics and Combustion SB RAS)

**11.20-11.45** Leonid L. Fershtat<sup>1</sup>, Nikita V. Muravyev<sup>2</sup> (<sup>1</sup>N.D. Zelinsky Institute of Organic Chemistry, <sup>2</sup>N.N. Semenov Federal Research Centre for Chemical Physics, Russian Academy of Sciences, Moscow, Russia) **Polynitrogen Heterocycle-based Energetic Materials: Synthesis and Property** (*Invited*)

**11.45-12.00** Aleksandr P. Amosov, I. Uvarova, Yu. Titova (Samara State Technical University, Samara, Russia) **Combustion synthesis of highly dispersed powder composition AlN-SiC using sodium azide and polytetrafluoroethylene**

**12.00-12.15** Yulia Titova, G. Belova, A. Yakubova (Samara State Technical University, Samara, Russia) **Application of combustion of Ti-Si-NaN<sub>3</sub>-Na<sub>2</sub>SiF<sub>6</sub>-C powder mixture for the synthesis of highly dispersed Si<sub>3</sub>N<sub>4</sub>-TiC ceramic composition**

**12.15-12.30** Alexander Shevchenko<sup>1,2</sup>, M. Frolov<sup>2</sup>, V. Blatov<sup>2</sup> (<sup>1</sup> Lebedev Physical Institute, Samara Branch, <sup>2</sup> Samara State Technical University, Samara, Russia) **Crystallochemical approach to high-throughput screening of potential ionic electrides**

**12.30-12.45** Eugene Salgansky, A. Zaichenko, D. Podlesniy, M. Salganskaya, M. Tsvetkov, Yu. Tsvetkova (Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia) **Experimental study of low-temperature gasification of urotropine at different flux of filtering gas with obtaining combustible gaseous products**

**12.45-13.00** D. Romanov<sup>1,2</sup>, P. Strizhak<sup>1,2</sup>, Ksenia Vershinina<sup>1</sup>, K. Kartashova<sup>1</sup> (<sup>1</sup>National Research Tomsk Polytechnic University, <sup>2</sup>Kutateladze Institute of Thermophysics SB RAS, Novosibirsk, Russia) **Ignition, combustion, and emission performance of composite fuels from fossil and biomass derived components**

**13.00-13.15** Gabriela Morar, A. Karpov, A. Shaklein (Udmurt Federal Research Center Ural Branch Russian Academy of Science, Izhevsk, Russia) **Numerical Study of the Thermal Structure of Turbulent Diffusion Flame on PMMA surface**

**13.15-14.45** LUNCH

## **5 July, Friday** (Samara time UTC +4)

**Session 4.1 Chair:** Ivan O. Antonov (Lebedev Physical Institute of RAS, Samara Branch)

**09.15-09.40** Sergey G. Matveev, S. Matveev, N. Gurakov (Samara National Research University, Samara, Russia) **Issues of process modelling in aircraft gas turbine engines' combustion chambers** (*Plenary*)

**09.40-10.20** Aleksandrs Prokofjevs (North Carolina Agricultural and Technical State University, Greensboro, USA) **Organic Chemists' Journey into 2D Materials** (*Plenary*)

**10.20-10.45** Anyang Li (College of Chemistry and Materials Science, Northwest University, Xi'an, P. R. China) **Effects of submerged barrier on rate coefficients and microscopic mechanisms of ion-molecule reactions** (*Invited*) (*Online*)

**10.45-11.10** Viatcheslav Bykov, (Karlsruhe Institute of Technology, Institute of Technical Thermodynamics, Karlsruhe, Germany,) **Model reduction of mechanisms of chemical kinetics and the problem of estimation of reaction rate constants** (*Invited*) (*Online*)



## 11.10-11.30 Coffee Break

**Session 4.2 Chair:** Leonid L. Fershtat (N.D. Zelinsky Institute of Organic Chemistry)

**11.30-11.45** Mehdi Abbasi<sup>1</sup>, Ali Chaibakhsh Langroudi<sup>2</sup>, Amirreza P. Shirazi<sup>1</sup> (<sup>1</sup> University of Tehran, Tehran, I.R. Iran, <sup>2</sup> University of Guilan, Rasht, I.R. Iran) **Rearrangement of Combustion Control System of Gas Turbine, Based on the Diesel Surrogate Model**

**11.45-12.00** Vyacheslav Stakhanov, O. Shults, A. Ryakin, I. Sharapov, A. Ushkov (FSUE «RFNC – VNIITF named after Academ. E. I. Zababakhin», Snezhinsk, Russia) **Experimental investigation of combustion limits of hydrogen/ methane/carbon monoxide/air/water vapor mixtures**

**12.00-12.15** Artyom Shostov, K. Fedotova (Bauman Moscow State Technical University, Moscow, Russia) **Numerical simulation of waveguide elements of an experimental microwave setup to determine the burning rate of energy condensed systems**

**12.15-12.30** Savva Yakovlev, E. Bezgodov, S. Pasyukov, A. Tarakanov, M. Nikiforov (FSUE «RFNC – VNIITF named after Academ. E. I. Zababakhin», Snezhinsk, Russia) **Combustion of non-uniformly hydrogen-air mixtures in partially obstructed closed volume**

**12.30-12.45** Egor Sosnin<sup>1,2</sup>, S. Trubachev<sup>1,2</sup>, O. Korobeinichev<sup>1</sup>, A. Karpov<sup>3</sup>, A. Paletsky<sup>1</sup>, A. Shaklein<sup>3</sup>, I. Kulikov<sup>1</sup>, A. Sagitov<sup>1,2</sup>, A. Shmakov<sup>1</sup>, A. Chernov<sup>1</sup>, O. Tuzhikov<sup>4</sup> (<sup>1</sup>Voevodsky Institute of Chemical Kinetics and Combustion SB RAS, <sup>2</sup> Novosibirsk State University, <sup>3</sup>Udmurt Federal Research Center., Izhevsk, <sup>4</sup> Volgograd State Technical University, Russia) **Experimental study of flame spread over flame retardant glass fiber-reinforced epoxy resin in opposed oxidizer flow**

**12.45-13.00** Anastasia Moroshkina, A. Ponomareva, E. Sereshchenko, V. Mislavskii, V. Gubernov (P.N. Lebedev Physical Institute of Russian Academy of Sciences, Moscow, Russia) **Investigation of critical phenomena of the methane-air flames at normal and elevated pressure**

## 13.00-14.30 LUNCH

**Session 4.3 Chair:** Valery N. Azyazov (Lebedev Physical Institute, Samara Branch)

**14.30-15.10** Aleksey Kuznetsov (Universidad Técnica Federico Santa María, Vitacura, Chile) **Graphene composites with various partner species: porphyrinoids, organometallic compounds, metal clusters, etc. (Invited), (online)**

**15. 10-15.50** A. Nikolayev,<sup>1</sup> M. Evseev,<sup>1</sup> V. Krasnoukhov<sup>1</sup>, A. Kuznetsova,<sup>1</sup> P. Pivovarov,<sup>1</sup> D. Porfiriev,<sup>1</sup> Alexander M. Mebel,<sup>2</sup> and R. Kaiser<sup>3</sup> (<sup>1</sup>Samara National Research University, Samara, Russia, <sup>2</sup>Florida International University, Miami, USA, <sup>3</sup>University of Hawaii at Manoa, Honolulu, USA) **Functionalization of pyrimidine and purine to RNA bases in water/ammonia ices via radical substitution reactions (Plenary), (online)**

**15.50-16.05** Andrey Pershin, S. Miroshnichenko (Samara University, Samara Branch of LPI RAS) **Inelastic cross sections for Ar\*-He complex**

**16.05-16.20** Nikita Gurakov, A. Popov, R. Ivanov, O. Kolomzarov, A. Semenikhin (Samara National Research University, Samara, Russia) **Study of the Initial Air-Fuel Mixture Temperature Effect on Ethane Flame Heat Release Rate Pulsation**

**16.20-16.30** Closing remarks