

# COMBUSTION AND EXPLOSION [GORENIE I VZRYV (MOSKVA)]

Vol. 10 No. 1 Year 2017

Editor-in-Chief S. M. Frolov

## In this issue:

Direct numerical simulation of turbulent combustion of gases in two-dimensional approximation V. Ya. Basevich, A. A. Belyaev, S. M. Frolov, and B. Basara . . . . .	4
Thermokinetic oscillations at oxidation and combustion of methane A. A. Belyaev, A. V. Arutyunov, V. S. Arutyunov, B. V. Lidskii, A. V. Nikitin, and V. S. Posvyanskii . . . . .	11
Detailed kinetic mechanism of methane oxidation and combustion in the presence of sulphur dioxide V. Ya. Basevich, A. A. Belyaev, V. A. Smetanyuk, S. M. Frolov, and F. S. Frolov . . . . .	16
Kinetics of pyrolysis and partial oxidation of hydrogen sulfide V. A. Savelieva, N. S. Titova, and A. M. Starik . . . . .	21
Matrix conversion of methane into syngas with low content of nitrogen A. V. Nikitin, V. I. Savchenko, I. V. Sedov, K. A. Timofeev, V. M. Smelev, and V. S. Arutyunov . . . . .	28
On acetylene synthesis by partial oxidation of simple hydrocarbons K. Ya. Troshin and A. A. Borisov . . . . .	34
Structure of stratified turbulent flow in a swirling jet-flame D. K. Sharaborin, V. M. Dulin, and D. M. Markovich . . . . .	39
Radiation properties of a matrix with the ceramic coating V. M. Shmelev . . . . .	45
Swirling combustion above water surface G. N. Mokhin . . . . .	49
Determination of the values of $\Delta_f H_{298.15}^0$ of $(Al)_n$ clusters with $n = 3-10$ G. A. Poskrebyshchev, A. N. Ermakov, and V. B. Storozhev . . . . .	53
Influence of carbon nanotubes on the combustion laws of low-calorie propellant A. P. Denisjuk, L. A. Demidova, V. A. Sizov, and A. O. Merkuskin . . . . .	59
Onset of convective burning in the pressed charges of 5/7 pyroxylin propellant grains V. E. Khrapovskii and A. A. Sulimov . . . . .	64
Combustion of nanothermites at subatmospheric pressure V. I. Kolesov and D. I. Patrikeev . . . . .	69
Behavior of furazano[3,4-e]tetrazine-4,6-di-n-oxide crystals during long-term storage. Density as an indicator of thermal stability N. V. Chukanov, P. I. Kalmykov, G. V. Shilov, A. V. Shastin, V. V. Nedelko, S. A. Vozchikova, and B. L. Korsunskiy . . . . .	73
Association between the defect structure of mechanically activated $MoO_3$ and the chemical activity of MICs Al/ $MoO_3$ M. V. Sivak, A. N. Streletskii, I. V. Kolbaney, and E. N. Degtyarev . . . . .	79
Pseudoideal detonation mode in the compositions on the basis of ammonium perchlorate with nanoaluminum A. A. Shevchenko, V. G. Kirilenko, M. A. Brazhnikov, and A. Yu. Dolgoborodov . . . . .	84
Method of estimation of sensitivity indicators for solid high explosives to impact. II. Mixtures of type HE-HE A. V. Dubovik . . . . .	89
Foreign investigations of new high-density reactive materials for different advanced munitions N. A. Imkhovik, A. V. Svidinsky, A. S. Smirnov, and V. B. Yashin . . . . .	93
Application perturbation theory for calculation of the thermodynamic properties of metals Yu. A. Bogdanova, S. A. Gubin, I. V. Maklashova, A. V. Kudinov, and I. N. Melnikov . . . . .	102