

# COMBUSTION AND EXPLOSION

## [GORENIE I VZRYV (MOSKVA)]

Vol. 17 No. 2 Year 2024

Editor-in-Chief S. M. Frolov

### In this issue:

|                                                                                                                                                                                                                                                                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| On the applicability of Zel'dovich estimates to the determination of the Markstein length<br>A. A. Chernov, T. A. Bolshova, and A. G. Shmakov . . . . .                                                                                                                                                                             | 3   |
| Modernization of the ABK-1V bomb calorimeter for measuring the heat of combustion of gas<br>A. V. Inozemtsev, J. O. Inozemtsev, Yu. N. Matyushin, and A. B. Vorob'ev . . . . .                                                                                                                                                      | 10  |
| On the types of combustion process in an ejector double-duct pulsejet engine<br>K. V. Migalin, A. G. Egorov, I. P. Boychuk, K. A. Sidenko, and K. K. Migalin . . . . .                                                                                                                                                              | 17  |
| Some features of temperature fields in the combustion chamber of a gas turbine engine<br>Ya. V. Tropin and S. A. Rashkovskiy . . . . .                                                                                                                                                                                              | 25  |
| Detonation of fuel-rich mixtures of gaseous industrial hydrocarbons with oxygen<br>A. A. Shtertser, I. S. Batraev, D. K. Rybin, and V. Yu. Ulianitsky . . . . .                                                                                                                                                                     | 35  |
| Influence of two-liquid droplet temperature on the characteristics of child droplets<br>during microexplosion and puffing<br>R. M. Fedorenko, D. V. Antonov, and P. A. Strizhak . . . . .                                                                                                                                           | 43  |
| Gasification of oil sludge and petrocok by detonation method<br>S. M. Frolov, V. A. Smetanyuk, I. A. Sadykov, A. S. Silantiev, F. S. Frolov, R. G. Gapar,<br>V. Ya. Popkova, Y. K. Hasiak, A. G. Buyanovskaya, R. U. Takazova, T. V. Dudareva,<br>V. G. Bekeshev, A. B. Vorob'ev, A. V. Inozemtsev, and Ya. O. Inozemtsev . . . . . | 55  |
| Amplification of the shock wave in a two-phase mixture of superheated steam<br>and liquid triethylaluminum<br>S. M. Frolov, I. O. Shamshin, K. A. Byrdin, K. A. Avdeev, V. S. Aksenov,<br>P. A. Storozhenko, and Sh. L. Guseinov . . . . .                                                                                          | 80  |
| Experimental study of the dispersion of condensed combustion products of metallized<br>energy-intensive materials under multidirectional inertial loads<br>V. V. Mironov, M. A. Mishchenko, D. V. Khakimov, and S. A. Degtyaryov . . . . .                                                                                          | 92  |
| Tetramethylammonium perchlorate: Mechanism of action in compositions<br>V. P. Sinditskii, V. Yu. Egorshev, A. O. Chepurnoy, A. N. Chernyi, A. A. Mikhaleva,<br>and E. V. Filonova . . . . .                                                                                                                                         | 101 |
| Energy characteristics and features of laser initiation of pyrotechnic mixture<br>of potassium perchlorate with red blood salt<br>E. S. Varlamov, V. I. Kolesov, E. S. Manakhova, and A. O. Chepurnoy . . . . .                                                                                                                     | 107 |
| The possibilities of using a hardware and software complex "NANO GATE-22/HSC"<br>in physical experiments<br>M. I. Krutik, V. A. Arinin, B. I. Tkachenko, and S. V. Dudin . . . . .                                                                                                                                                  | 117 |