

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

**Vol. 9 No. 4 Year 2016**

**Editor-in-Chief and Chair of Editorial Council Professor S. M. Frolov**

## **In this issue:**

Matrix conversion of enriched methane–oxygen mixture at elevated pressures <i>A. I. Tarasov, O. V. Shapovalova, K. A. Timofeev, K. A. Shiyanova, V. S. Arutyunov, V. M. Shmelev, and S. N. Antonyuk . . . . .</i>	4
Combustion of fuel–air mixture in gas cavity under the bottom of the high-speed vessel <i>S. M. Frolov, S. V. Platonov, K. A. Avdeev, V. S. Aksenov, V. S. Ivanov, A. E. Zangiev, A. S. Koval', and F. S. Frolov . . . . .</i>	12
Measurement of polycyclic aromatic hydrocarbons in combustion products of a gasoline engine <i>M. S. Assad, V. V. Grushevskii, O. G. Penyazkov, and I. N. Tarasenko . . . . .</i>	22
On modeling of gaseous detonation in porous media by the one-dimensional reactive Euler equations <i>A. R. Kasimov and R. E. Semenko . . . . .</i>	28
Well-posedness of nonisothermal Euler models of two-phase flows <i>R. R. Tukhvatullina and S. M. Frolov . . . . .</i>	36
Shock waves in water with bubbles of reactive gas: Calculation <i>K. A. Avdeev, V. S. Aksenov, A. A. Borisov, D. G. Sevastopoleva, R. R. Tukhvatullina, S. M. Frolov, and F. S. Frolov . . . . .</i>	47
Phenomenology of shock wave propagation in water with bubbles of reactive gas <i>K. A. Avdeev, V. S. Aksenov, A. A. Borisov, I. A. Sadykov, S. M. Frolov, F. S. Frolov, and I. O. Shamshin . . . . .</i>	64
Propagation of high-frequency sequence of shock waves in water with gas bubbles <i>K. A. Avdeev, V. S. Aksenov, A. A. Borisov, S. M. Frolov, I. A. Sadykov, F. S. Frolov, and I. O. Shamshin . . . . .</i>	83
Convective burning: From explosion safety to application in pulse technical devices <i>B. S. Ermolaev, A. A. Sulimov, A. V. Roman'kov, and V. E. Khrapovskii . . . . .</i>	96

# **COMBUSTION AND EXPLOSION**

## **[GORENIE I VZRYV (MOSKVA)]**

Vol. 9 No. 4 Year 2016

Editor-in-Chief and Chair of Editorial Council Professor S. M. Frolov

### **In this issue:**

Study of pressure fluctuations in a solid rocket motor chamber  
in quasi-stationary operation mode

*B. I. Larionov and A. V. Kuzmenko* . . . . . 116

Experimental study of the low-temperature solid-propellant gas generator  
for ramjet

*A. V. Baykov, A. V. Peshkova, A. V. Shihovtsev, and L. S. Yanovskiy* . . . . . 126

On the nature of disturbances as a reason of double-base propellants  
pulsating combustion

*S. V. Chuiko* . . . . . 132

On the issue of testing and application of liquid explosives in industry

*A. A. Dobrynin and I. A. Dobrynin* . . . . . 138

Energy characteristics of underwater explosion of nonideal aluminum-rich  
explosive mixtures: Comparison with conventional high explosives

*P. V. Komissarov, A. A. Borisov, G. N. Sokolov, and V. V. Lavrov* . . . . . 148

Mathematical model for thermolysis of NTO–TNT (1 : 1) mixture

*A. V. Dubovik* . . . . . 155

Effect of properties of HMX particles on combustion-to-explosion transition  
in semiconfined volume

*A. A. Matveev, V. N. Kulikov, A. N. Osavchuk, N. I. Shishov,  
and A. A. Kozlov* . . . . . 163