

Contents

Vol. 13, No. 2, 2019

Structure of Chemical Compounds, Quantum Chemistry, and Spectroscopy

Radical Reorganization Energies

*E. A. Miroshnichenko, T. S. Kon'kova, Yu. N. Matyushin, Yu. D. Orlov,
L. L. Pashchenko, A. B. Vorob'ev, and A. V. Inozemtsev*

225

Kinetics and Mechanism of Chemical Reactions. Catalysis

Studying the Mechanism of the Low-Temperature Oxidation of Microsized Aluminum Powder by Water

N. S. Shaitura, O. O. Laricheva, and M. N. Larichev

231

Hydrocarbomethylation of Cyclohexene Catalyzed by $\text{Pd}(\text{OAc})_2\text{-PPh}_3\text{-p-Toluenesulfonic Acid}$. Some Aspects of Reaction Kinetics and Thermodynamics of Ligand Exchange between Palladium Complexes

N. T. Sevost'yanova, S. A. Batashev, and A. S. Rodionova

245

Comparative Advantages of Diffusion Modes in Chemical Technology

A. A. Berlin, K. Yu. Prochukhan, D. Yu. Prochukhan, and Yu. A. Prochukhan

253

Resonance Fluorescence Measurement of the Rate Constant of the Reaction of Chlorine Atoms with CF_3Br at Temperatures of 273–353 K

I. K. Larin, A. I. Spasskii, and E. M. Trofimova

256

Quasi-Invariants of Chemical Reactions with Nonideal Kinetics

V. Kh. Fedotov and N. I. Kol'tsov

262

Combustion, Explosion, and Shock Waves

Theoretical and Experimental Method for Calculating the Conditions of the Convective Mode of Combustion

B. S. Seplyarskii, R. A. Kochetkov, and T. G. Lisina

267

Effect of an Additional Turbulence Source in a Flow Combustion Chamber on the Combustion Mode of Rich Methane–Oxygen Mixtures

N. N. Buravtsev, Yu. A. Kolbanovskii, I. V. Rossikhin, and I. V. Bilera

273

Oscillatory Instability of a Plug Flow Reactor: A Heterogeneous Liquid–Liquid System

E. N. Shatunova, K. G. Shkadinskiy, N. G. Samoylenko, and B. L. Korsunskiy

280

Effect of Oxidation of Fluorohydrocarbons and Fluorocarbons on Their Characteristics as Gas Combustion Suppressing Agents

S. N. Kopylov and T. V. Gubina

291

Thermal Conversions of 2,4-Bis(*N,N*-Dimethylamino)-6-Trinitromethyl-1,3,5-Triazine

*V. V. Zakharov, N. V. Chukanov, G. V. Shilov,
G. V. Malkov, A. V. Shastin, and B. L. Korsunskiy*

297

Study of Combustion of Hydrogen–Air and Hydrogen–Methane–Air Mixtures over the Palladium Metal Surface Using a Hyperspectral Sensor and High-Speed Color Filming

*N. M. Rubtsov, A. N. Vinogradov, A. P. Kalinin, A. I. Rodionov,
I. D. Rodionov, K. Ya. Troshin, G. I. Tsvetkov, and V. I. Chernysh*

305

Physical Methods for Studying Chemical Reactions

Composite Ultrathin Fibers of Poly-3-Hydroxybutyrate and a Zinc Porphyrin:
Structure and Properties

*S. G. Karpova, A. A. Ol'khov, P. M. Tyubaeva, N. G. Shilkina,
A. A. Popov, and A. L. Jordanskii*

313

Chemical Physics of Ecological Processes

Analysis of Breakthrough Curves of Dynamic Adsorptive Removal
of Pollutants from Water

*I. V. Kumpanenko, N. A. Ivanova, M. V. Dyubanov, O. V. Shapovalova,
A. A. Solov'yanov, and A. V. Roshchin*

328

Chemical Physics of Polymer Materials

Intra- and Interphase Crosslinking in Composites of Nitrile–Butadiene Rubber
with Polyvinyl Chloride and Their Ozone Resistance

N. M. Livanova and A. A. Popov

339

Electrical Resistance of Non-Rigid Poly(Vinyl Chloride) Cable Insulation Infected
by the Microscopic Fungus *Aspergillus niger*

*I. G. Kalinina, K. Z. Gumargalieva, S. A. Semenov,
V. V. Kazarin, and O. A. Zhdanova*

345

Effect of Physical Factors during the Preparation of a Reaction Mixture in Turbulent
Flows on the Rate of Butadiene Polymerization in the Presence of $TiCl_4$ – $Al(i-C_4H_9)_3$
and Molecular Mass Characteristics of Butadiene Rubber

*N. V. Ulitin, K. A. Tereshchenko, D. A. Shigan,
A. S. Ziganshina, G. M. Ganiev, and V. P. Zakharov*

349

Solid-Phase Thermal Oxidation of Polyethylene–Polylactide Blends

Yu. V. Tertyshnaya, M. V. Podzorova, T. V. Monakhova, and A. A. Popov

354

Mechanism of Catalytic Polymerization of 2-Hydroxyethyl Methacrylate
under the Influence of Vanadium(IV) Oxo Complex

S. N. Kholuiskaya and A. A. Gridnev

362

Metal-Containing Additives for Polyethylene Oxo-Degradation

Yu. K. Lukina, N. N. Kolesnikova, A. A. Popov, and A. V. Khvatov

369

Kinetics of Polyvinyl Alcohol Thermal Degradation in the Compositions
with Boron Polyoxide: Part I. Kinetics of Thermal Degradation

*S. M. Lomakin, A. Yu. Shaulov, E. V. Koverzanova,
S. V. Usachev, N. G. Shilkina, and Al. Al. Berlin*

374

Chemical Physics of Nanomaterials

Optimization of Synthesis of Nanosized Titanium Dioxide Powder Materials
from Peroxo Titanium Complex

E. M. Bayan, T. G. Lupeiko, and L. E. Pustovaya

383