

Contents

Vol. 12, No. 2, 2018

A simultaneous English language translation of this journal is available from Pleiades Publishing, Ltd.
Distributed worldwide by Springer. *Russian Journal of Physical Chemistry B* ISSN 1990-7931.

Structure of Chemical Compounds. Spectroscopy

Composition and Structure of Complexes Formed in Aqueous Solutions
of Trifluoroacetic Acid According to IR Spectroscopy Data

V. D. Maiorov, G. I. Voloshenko, and I. S. Kislina

185

Influence of External Factors on Physicochemical Transformations

Calculation of the Parameters of the Dimeric Association of Water Molecules
and Determination of Their Temperature Dependence

A. A. Abdullaev and G. A. Rabadanov

192

Kinetics and Mechanism of Chemical Reactions. Catalysis

Steady States of a Plug Flow Reactor Operating on a Heterogeneous Liquid–Liquid System

N. G. Samoilenco, E. N. Shatunova, V. A. Bostandzhyan, and B. L. Korsunkii

196

Formation of Color Centers and Molecular Complexes with a Weak Hydrogen
Bond in Lithium Fluoride Crystals Depending on the Form of OH[−] Inclusion

S. A. Nebogin, L. I. Bryukvina, N. A. Ivanov, and M. D. Zimin

200

Simulation of the Oxygen Dissociation Reaction under Thermally
Nonequilibrium Conditions: Models, Trajectory Calculations, and the Experiment

M. Yu. Pogosbekyan and A. L. Sergievskaya

208

Combustion, Explosion, and Shock Waves

Quasi-Hydrostatic Model of the Combustion of Compositions Forming
Molten Reaction Products in the Presence of Centrifugal Forces

K. G. Shkadinskii, N. I. Ozerkovskaya, and P. M. Krishenik

219

Implementation of the Effective Combustion of Gas Mixtures
with a Low Emission of NO_x and CO

V. M. Shmelev and V. M. Nikolaev

225

Effect of the Initial Temperature on the Characteristics
of the Shot with a Block Charge

B. S. Ermolaev, A. A. Sulimov, A. V. Roman'kov, and V. P. Korolev

232

Thermal Explosion of a Heterogeneous Liquid–Solid System in a Semibatch Reactor
with Consideration for the Temperature Dependence of Distribution Coefficient

N. G. Samoylenko, B. L. Korsunskii, V. A. Bostandzhyan, and L. V. Kustova

239

Low-Temperature Flameless Combustion of a Large Drop of *n*-Dodecane
under Microgravity Conditions

S. M. Frolov, V. Ya. Basevich, S. N. Medvedev, and F. S. Frolov

245

Acceleration Ability of Aluminum-Containing Explosive Compositions

M. N. Makhov

258

Electric and Magnetic Properties of Materials

Interaction of a Charge with the Metal

M. A. Kozhushner, V. S. Posvyanskii, B. V. Lidskii, and I. I. Oleynik

266

Chemical Physics of Biological Processes

Calculation of the Characteristics of the Ionic States of Cytochrome *c* Biomolecules by a Decomposition Method with Separation of One- and Two-Dimensional Ion Charge Distributions

M. O. Raznikova and V. V. Raznikov

271

Chemical Physics of Ecological Processes

Molecular Modeling and Quantum Chemical Calculations of Interaction of Gas Pollutants with Polyacrylonitrile

M. M. Avilova and V. V. Petrov

281

Chemical Physics of Polymer Materials

Influence of the Solvent on the Formation of CNR/BNR Polymer Blends

S. G. Karpova, E. G. Milyushkina, L. R. Lusova, Yu. A. Naumova, and A. A. Popov

285

Effect of the Concentration of the Spinning Solution on the Morphology and Properties of Nonwoven Poly-3-Hydroxybutyrate Fibers

A. A. Ol'khov, Yu. V. Tertyshnaya, A. S. Chizhov, S. G. Karpova, and A. L. Jordanskii

293

Quantum-Chemical Study of Stressed Polyethylene and Butadiene Rubber Chain Scission

B. E. Krisyuk, E. A. Mamin, and A. A. Popov

300

Chemical Physics of Polymer Materials

Composites Based on Polyethylene and Keratin Hydrolysates

E. V. Prut, L. A. Zhorina, O. P. Kuznetsova, D. V. Kolotilin, V. G. Krasheninnikov, A. I. Sergeev, V. V. Ermilov, E. E. Potapov, and V. G. Volik

308

Chemical Physics of Nanomaterials

Interaction of Gaseous Reagents on Gold and Nickel Nanoparticles

A. K. Gatin, M. V. Grishin, S. Yu. Sarvadi, and B. R. Shub

317

Absorption of Radiation by ITO Semiconductor Nanoparticles in Plasmon Resonance Region

V. A. Astapenko, E. S. Manuilovich, S. V. Sakhno, E. S. Khramov, and A. V. Yakovets

325

Structure and Photocatalytic Properties of TiO₂/MoO₃ and TiO₂/V₂O₅ Nanocomposites Obtained by Mechanochemical Activation

A. I. Kokorin, T. V. Sviridova, I. V. Kolbanov, L. Yu. Sadovskaya, E. N. Degtyarev, G. A. Vorobieva, A. N. Streletskaia, and D. V. Sviridov

330

Dynamics of Phase Transitions

Study of the Mechanism of the Transformation and Transfer of Contact Layers in the Lubricating Medium—Surface Tribopair System

V. V. Ostrikov, S. N. Sazonov, V. V. Safonov, A. V. Roshchin, S. S. Khokhlov, A. V. Kutkin, and V. I. Balabanov

336

Chemical Physics of Atmospheric Phenomena

Kinetics of NO₃ Uptake on Pyrene as a Representative Organic Aerosols

V. V. Zelenov, E. V. Aparina, V. I. Kozlovskiy, I. V. Sulimenkov, and A. E. Nosyreva

343

Mechanism of CF₃Br Photolysis at the Wavelength of 253.7 nm

T. I. Belyakova, I. K. Larin, N. A. Messineva, and E. M. Trofimova

352