

# Contents

**Vol. 52, No. 1, 2018**

A simultaneous English language translation of this journal is available from Pleiades Publishing, Ltd.  
Distributed worldwide by Springer. *High Energy Chemistry* ISSN 0018-1439.

## General Aspects of High Energy Chemistry

Hamiltonian for Arbitrary Energy States of Molecules

*L. A. Gribov*

1

## Photochemistry

Bleaching of Solutions of Chlorophylls *a* and *b* with Blue and Red Light

*A. S. Kholmanskiy, A. A. Smirnov, and V. N. Parmon*

6

Changes in the Composition and Properties of Graphene Oxide Films  
under Monochromatic Vacuum UV Radiation

*V. N. Vasilets, S. A. Baskakov, E. N. Kabachkov, G. N. Savenkov, and Yu. M. Shulga*

14

## Photonics

Hybrid Nanosystems Based on Colloidal Quantum Dots and Organic Ligands (Review)

*O. V. Chashchikhin and M. F. Budyka*

19

Spectral–Luminescent Study of a Hydrogel Based on Hyaluronic Acid Dialdehyde  
and Chitosan Succinate Containing the Lucentis Drug

*S. S. Ostakhov, R. R. Kayumova, R. R. Vildanova, N. N. Sigaeva, I. I. Khusnitdinov,  
S. V. Kolesov, and S. L. Khursan*

34

Singlet and Triplet Transitions in UV Absorption Spectra of Pentacene

*L. Z. Khatymova, R. R. Kinzyabulatov, and O. G. Khvostenko*

38

Femtosecond Absorption Spectroscopy of Cytochrome *c* Oxidase: Excited Electronic  
States and Relaxation Processes in Heme *a* and Heme *a*<sub>3</sub> Centers

*I. V. Shelaev, F. E. Gostev, T. V. Vygodina, S. V. Lepeshkevich, and B. M. Dzhagarov*

45

## Radiation Chemistry

Radiation Synthesis of Tetrafluoroethylene Telomers with Functional Hydroxyl  
and Amino End Groups in Freon 113

*P. P. Kushch, G. A. Kichigina, D. P. Kiryukhin, and D. Ya. Barinov*

52

Radiation-Thermal Decomposition of Lignin: Products and the Mechanism  
of Their Formation (Review)

*A. V. Ponomarev and B. G. Ershov*

58

Processes Occurring under the Action of Molecular Bromine on Methyl Acrylate  
at Low Temperatures and During Heating the Resulting Mixture

*D. A. Gordon, G. A. Kichigina, G. A. Estrina, and A. I. Mikhailov*

71

## Nanostructured Systems and Materials

NMR Study of the Graphite–*N,N*-Dimethylformamide System after Ultrasonication

*Y. M. Shulga, S. G. Vasilyev, A. S. Lobach, S. A. Baskakov, N. Yu. Shulga,  
V. I. Volkov, and V. N. Vasilets*

77

## Chemistry of Nanosized Systems

Influence of Amines and Alkanethiols on the Spectral and Luminescent Properties of InP@ZnS Colloidal Quantum Dots

*M. G. Spirin, V. V. Trepalin, S. B. Brichkin, and V. F. Razumov*

81

---

### Plasma Chemistry

Synthesis and Properties of a CO Oxidation Catalyst Based on Plasma-Chemical Silicon Carbide, Titanium Dioxide, and Palladium

*N. N. Vershinin, V. I. Berestenko, O. N. Efimov, E. N. Kabachkov, and E. N. Kurkin*

90

Kinetic Features of Chromium(VI) Reduction and Phenol Degradation in Aqueous Solution by Treatment in Atmospheric-Pressure Air Direct-Current Discharge

*D. A. Shutov, A. V. Sungurova, K. V. Smirnova, and V. V. Rybkin*

95

---

### Short Communications Plasma Chemistry

Features of Mass and Charge Transport to Gas Discharge Plasma from Aqueous Sodium Chloride Solution Serving as a Cathode

*G. Kh. Tazmeev, B. A. Timerkaev, Kh. K. Tazmeev, and M. N. Miftakhov*

99

---

---