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МАТЕМАТИЧЕСКИЕ МЕТОДЫ И ИНФОРМАЦИОННЫЕ ТЕХНОЛОГИИ В ХИМИИ И ХИМИЧЕСКОЙ ТЕХНОЛОГИИ

Б.В. Алексеев. Солитоны в обобщенной квантовой гидродинамике и теория шаровой молнии 3

А.А. Горшков, Е.А. Коровайцева. О решении задачи Коши с помощью решетчатых функций в математической физике и химической кинетике 22

ТЕОРЕТИЧЕСКИЕ ОСНОВЫ ХИМИЧЕСКОЙ ТЕХНОЛОГИИ

С.А. Решетов, А.К. Фролкова. Ионные жидкости как разделяющие агенты 27

А.К. Фролкова, Л.А. Хахин. Оценка оптимального расположения уровня питания при ректификации бинарных и многокомпонентных смесей разной природы 45

ХИМИЯ И ТЕХНОЛОГИЯ ОРГАНИЧЕСКИХ ВЕЩЕСТВ

Д.М. Карлинский, А.П. Каплун, М.Е. Попов. Предсказание активности низкомолекулярных ингибиторов активации классического пути комплемента методом компьютерного скрининга 57

Е.А. Коробова, А.В. Гаврилова, Л.О. Белова, А.Д. Кирилин. Карбофункциональные кремнийазотсодержащие органические соединения – исходное сырье в синтезе линейных и гетероциклических продуктов 64

Е.В. Ожимкова, А.И. Сидоров, И.Г. Плащина, Е.И. Мартirosова, И.В. Ущаповский, А.Н. Даниленко. Низкочастотная ультразвуковая экстракция гликанов из *Linum usitatissimum* 70

ХИМИЯ И ТЕХНОЛОГИЯ НЕОРГАНИЧЕСКИХ МАТЕРИАЛОВ

В.А. Бакун, Д.М. Федулов, Е.А. Осипова, Н.К. Зайцев, И.Ю. Ловчиновский. О механизме влияния алифатических спиртов на инверсионно-вольтамперометрическое поведение свинца и кадмия 75

В.А. Бакун, Д.М. Федулов, Е.А. Осипова, Н.К. Зайцев, И.Ю. Ловчиновский. Электрохимическое поведение свинца и кадмия в композициях неионогенного поверхностно-активного вещества и алифатических спиртов 80

СИНТЕЗ И ПЕРЕРАБОТКА ПОЛИМЕРОВ И КОМПОЗИТОВ НА ИХ ОСНОВЕ

И.А. Грицкова, Н.И. Прокопов, Т.С. Соловьева, Е.В. Матвеев, А.Н. Лобанов, А.С. Бирлов. Свойства бутадиен-стирольных латексов, модифицированных кремнийорганическими ПАВ 85

Г.В. Козлов, З.Х. Афаширова, Г.Е. Заиков. Термодинамическая модель эффекта наноадгезии для полимерных нанокомпозитов *В.С. Копытин, В.М. Комаров, А.Н. Трофимов, И.Д. Симонов-Емельянов.* Влияние молекулярно-массового распределения на поверхностное натяжение расплавов олигомеров 89

В.А. Кузнецov, А.И. Сливкин, В.Л. Лапенко, А.А. Болгов. Хитозан и дезоксикрахмал в качестве полимерных матриц для иммобилизации биологически активных компонентов 92

ЭКОЛОГО-ЭКОНОМИЧЕСКИЕ ПРОБЛЕМЫ ХИМИЧЕСКИХ ТЕХНОЛОГИЙ

Е.С. Аверина, Е.Ц. Пинтаева, Л.Д. Раднаева, О. Грахл-Нилсен, Е.А. Петров. Трансформация жирнокислотного состава липидов подкожной жировой ткани морских и пресноводных тюленей 103

О.А. Усанова, М.В. Бушуев, А.В. Невский, В.А. Шарнин. Интегрированная ресурсосберегающая система водопотребления и водоотведения стекольного производства 113

Abstracts 118

Review МИТХТ

3/2009

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CONTENTS

INFORMATION TECHNOLOGIES AND APPLIED MATHEMATICS

- | | |
|--|----|
| B.V. Alexeev. Solitons in the generalized quantum hydrodynamics and the theory of lightning balls | 3 |
| A.A. Gorshkov, E.A. Korovaytseva. Application of identical transformations in Cauchy problem solving | 22 |

THEORETICAL BASED OF CHEMICAL TECHNOLOGY

- | | |
|--|----|
| S.A. Reshetov, A.K. Frolkova. Ionic liquids as entrainers | 27 |
| A.K. Frolkova, L.A. Khakhin. Estimation of an optimal arrangement of a power supply level at rectification of binary and multicomponent mixtures of different nature | 45 |

CHEMISTRY AND TECHNOLOGY OF ORGANIC SUBSTANCES

- | | |
|---|----|
| D.M. Karlinsky, A.P. Kaplun, M.E. Popov. Prediction of activity of low-molecular inhibitors of the classic complement pathway using computational screening approach | 57 |
| E.A. Korobova, A.V. Gavrilova, L.O. Belova, A.D. Kirilin. The carbofunctional organosilicon compounds containing nitrogen as the raw material in synthesis of the line and cycle products | 64 |
| E.V. Ozhimkova, A.I. Sidorov, I.G. Plashchina, E.I. Martirosova, I.V. Uschapovsky, A.N. Danilenko. Low-frequency ultrasonic extraction of polysaccharides <i>Linum usitatissimum</i> | 70 |

CHEMISTRY AND TECHNOLOGY OF INORGANIC MATERIALS

- | | |
|--|----|
| V.A. Bacun, D.M. Fedulov, E.A. Osipova, N.K. Zaytsev, I.Yu. Lovchinovski. About mechanism of aliphatic alcohols' influence on stripping voltammetry behavior of lead and cadmium | 75 |
| V.A. Bacun, D.M. Fedulov, E.A. Osipova, N.K. Zaytsev, I.Yu. Lovchinovski. Electrochemical behavior of lead and cadmium in aqueous solutions containing Triton X-100 and aliphatic alcohols | 80 |

SYNTHESIS AND PROCESSING OF POLYMERIC COMPOSITES

- | | |
|---|----|
| I.A. Gritskova, N.I. Prokopov, T.S. Solovyeva, E.V. Matveev, A.N. Lobanov, A.S. Birlov. Properties of butadiene-styrene latexes modified by silicon surface-active substances | 85 |
| G.V. Kozlov, Z.Kh. Aphashagova, G.E. Zaikov. The thermodynamic model of the nanoadhesion effect for polymer nanocomposites | 89 |
| V.S. Kopytin, V.M. Komarov, A.N. Trofimov, I.D. Simonov-Emelianov. Effect of molecular-mass distribution on surface tension of oligomers | 92 |
| V.A. Kuznetsov, A.I. Slivkin, V.L. Lapenko, A.A. Bolgov. Chitosan and deoxy-starch as polymeric matrixes for immobilization of bioactive components | 97 |

ECOLOGICAL AND ECONOMIC PROBLEMS OF CHEMICAL TECHNOLOGIES

- | | |
|---|-----|
| E.S. Averina, E.Ts. Pintaeva, L.D. Radnaeva, O. Grahl-Nielson, E.A. Petrov. Blubber fatty acids of marine and freshwater seals | 103 |
| O.A. Usanova, M.V. Bushuev, A.V. Nevsky, V.A. Sharnin. Integrated resource-saving water-consumption and water-disposal system of glass-work | 113 |
| Abstracts | 118 |

ABSTRACTS

B.V. Alexeev. Solitons in the generalized quantum hydrodynamics and the theory of lightning balls
Quantum solitons are discovered with the help of generalized quantum hydrodynamics. The solitons have the character of the stable quantum objects in the self consistent electric field. The theory of quantum solitons lead to explanation of the existence of stable atom structures on the microscopic level and lightning balls on the macroscopic level of description of physical systems. The delivered theory demonstrates the great possibilities of the generalized quantum hydrodynamics in investigation of the quantum solitons. The paper can be considered also as comments and prolongation of the materials published in the known author's monograph (Boris V. Alexeev, Generalized Boltzmann Physical Kinetics. Elsevier. 2004). The theory leads to solitons as typical formations in the generalized quantum hydrodynamics.

A.A. Gorshkov, E.A. Korovaytseva. Application of identical transformations in Cauchy problem solving

A polynomial method of Cauchy problem solving is presented. The method allows constructing a fundamental solution in locally analytical form for any type of function of the right part of the equation for normal form of differential equation. A test for well-known functions both for lower and higher among possible orders of polynomial method of solving is carried out. The expediency of using the method of higher order is determined.

S.A. Reshetov, A.K. Frolkova. Ionic liquids as entrainers

In this article presents the review of modern articles about experimental research and modeling of phase equilibrium of liquid – vapor and liquid – liquid in binary and triple component mixtures that are formed by ionic liquids with various organic substances and also application of ionic liquids in separation processes.

A.K. Frolkova, L.A. Khakhin. Estimation of an optimal arrangement of a power supply level at rectification of different nature binary and multicomponent mixtures

On the basis of entropy production criteria components of an estimation of an rectification columns power supply optimum level are developed for a case binary and multicomponent mixtures of any physical and chemical nature. By means of these criteria the levels of optimal power supply confirmed with data of natural experiment are defined.

D.M. Karlinsky, A.P. Kaplun, M.E. Popov. Prediction of activity of low-molecular inhibitors of the classic complement pathway using computational screening approach

Using the molecular docking we estimated the free energy of binding of low-molecular ligands with the first component of complement protein C1q. The theoretically predicted values of IC50 allow selecting ligands with the highest inhibitory potential for further in vitro experiments.

E.A. Korobova, A.V. Gavrilova, L.O. Belova, A. D. Kirilin. The carbofunctional organosilicon compounds containing nitrogen is the raw material in synthesis of the line and cycle products
The results of the study on reactions of reetherification and acylation of 3-aminopropyl-tryethoxysilan and 2-(aminoethyl)-3-(trymethoxysilyl)propylamine are presented. The possibility of preparation of the line and heterocycle organosilicon compounds containing nitrogen is shown. The schemes of processes that pass on the initial steps of preparation of polymerizing adgesives are proposed.

E.V. Ozhimkova, A.I. Sidorov, I.G. Plashchina, E.I. Martirosova, I.V. Uschapovsky,

A.N. Danilenko. Low-frequency ultrasonic extraction of polysaccharides *Linum usitatissimum*

The submitted work observes the ultrasonic low-frequency (30 kHz) extraction and investigates the basic physicochemical properties of flax seeds polysaccharide extracts. The developed technique allows to decrease extraction time (from 24 hrs to 16 min) under retention of structure of polysaccharides.

V.A. Bacun, D.M. Fedulov, E.A. Osipova, N.K. Zaytsev, I.Yu. Lovchinovski. About mechanizm of aliphatic alcohols' influence on stripping voltammetry behavior of lead and cadmium

The stripping voltammetry with the exchange of the solution without of the opening of the electrochemical circuit was applied to study the effect of the composition of the aqueous solutions, containing aliphatic alcohols on the height and potential of the peak current for Pb (II) and Cd (II). The effect of ethyl, n-propyl, n-butyl, and n-amyl alcohols was studied. The interference of the alcohols is increased with the increasing of the length of the hydrocarbon chain within the alcohol, which probably is caused by the adsorption of the alcohol onto the electrode surface.

3

22

27

45

57

64

70

75

V.A. Bacun, D.M. Fedulov, E.A. Osipova, N.K. Zaytsev, I.Yu. Lovchinovski. Electrochemical behavior of lead and cadmium in aqueous solutions containing Triton X-100 and aliphatic alcohols

The stripping voltammetry on the mercury film electrode with the change of the solution without of the opening of the electrochemical circuit was applied to characterize the behavior of Pb (II) and Cd (II) in aqueous solutions, containing Triton X-100 and aliphatic alcohols, namely ethyl, n-propyl, n-butyl, and n-amyl alcohol. The effect of the length of the hydrocarbon chain in the alcohol on the peak current of Pb (II) and Cd (II) was studied. The presence of Triton X-100 eliminates the interference of alcohols while stripping analysis of Pb (II) and Cd (II) due to the formation of mixed micelles.

80

I.A. Gritskova, N.I. Prokopov, T.S. Solovyeva, E.V. Matveev, A.N. Lobanov, A.S. Birlov. Properties of butadiene-styrene latexes modified by silicon surface-active substances

85

The properties of butadiene-styrene latexes, stabilized by the mixes of surface-active substances included silicon SAS, practically unsolved in water, were investigated. It was shown that they are characterized by low foaming, practically unswollen in water and stable in the solutions of electrolytes.

G.V. Kozlov, Z.Kh. Aphashagova, G.E. Zaikov. The thermodynamic model of the nanoadhesion effect for polymer nanocomposites

89

The thermodynamic model of the nanoadhesion effect in polymer particulate-filled nanocomposites was considered, which was demonstrated a good correspondence to experimental data. It was shown that the nanoadhesion effect has dimensional origin, i.e. it is true nanoeffect. A nanofiller particles aggregation influences strongly on indicated effect.

V.S. Kopytin, V.M. Komarov, A.N. Trofimov, I.D. Simonov-Emeljanov. Effect of molecular-mass distribution on surface tension of oligomers

92

Effect of molecular mass (MM) and molecular-mass distribution (MMD) on surface tension of oligomers has been investigated. Narrow fraction of polyethyleneglycols (from 300 to 40000) and their double and triple mixtures of different composition was used as model. Obtained results prove possibility of regulation surface tension of oligomers and polymers by changing MM and MMD and indicated that stability system's behaviour increases with enlargement of MMD of oligomer mixtures.

V.A. Kuznetsov, A.I. Slivkin, V.L. Lapenko, A.A. Bolgov. Chitosan and deoxy-starch as polymeric matrixes for immobilization of bioactive components

97

Introduction in structure of drugs carbohydrate components lead to increasing solubility in water, detoxication and prolongation of biological action in organism. Method of synthesis polymeric forms of isoniazid include reaction oligochitosan, N-hydroxymethylchitosan and N-chloro-2-hydroxypropylchitozan with antiphthisic substance. Hydrophilic polymeric base of streptomycin sulfate was prepared by reactions chitosan with antibiotics sulfate. Synthesized water-soluble analogues of 1,4- β -2-amino-2-deoxy-D-glucan with side chains containing amino acids with the formation of covalent linkage through methylene or hydroxypropylene spacer. As a polymer matrix for the immobilization of glycine, L-lysine and its hydrochloride, L-glutamic acid used chitosan, N-hydroxymethylchitosan, N-chloro-2-hydroxypropylchitosan and 3-hydroxymethyl-3-deoxy-starch.

E.S. Averina, E.Ts. Pintaeva, L.D. Radnaeva, O. Grahl-Nielson, E.A. Petrov. Blubber fatty acids of marine and freshwater seals.

103

Correlation between blubber fatty acid composition of two different kind of seals with their prey and environmental conditions as ecology factors is shown. Regularities of fatty acid layering and its composition in the blubber of Baikal seals and ringed seals of North sea are revealed

O.A. Usanova, M.V. Bushuev, A.V. Nevytsky, V.A. Sharnin. Integrated resource-saving water-consumption and water-disposal system of glass-work

113

The methodology of designing of water resource-saving chemical process of glass works has been proposed. The basis of it is thermodynamic approach to analysis and synthesis (designing) of processes (the application of thermodynamic exergy method). The proposed methodology was approved by water chemical process designing of large-scale glass enterprises (production of glass fiber, glass cloth, hardened glass).

Вестник МИТХТ

Журнал выходит один раз в два месяца и публикует обзоры и статьи по актуальным проблемам химической технологии и смежных наук. Журнал основан в 2006 году. Учредителем журнала является Московская государственная академия тонкой химической технологии им. М.В. Ломоносова (МИТХТ).

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