

Федеральное
агентство по об-
разованию

ISSN 1819-1487

Вестник МИТХТ

5/2006

октябрь

Научно-технический
журнал

Издается с февраля
2006 г.
Выходит один раз в
два месяца

Учредитель:
МИТХТ
им. М.В. Ломоносова

Главный редактор:
В.С. Тимофеев

Зам. главного
редактора:
А.К. Фролкова
В.В. Фомичев

Редакционная
коллегия:
Р.Р. Биглов
Д.В. Дробот
В.Ф. Корнюшко
Н.Т. Кузнецов
А.И. Мирошников
Ю.П. Мирошников
А.Н. Озерин
Л.А. Серафимов
С.М. Сухорукова
В.А. Тверской
А.Ю. Цивадзе
В.И. Швец
В.Д. Юловская

© МИТХТ им. М.В. Ломоносова

СОДЕРЖАНИЕ

СИНТЕЗ И ПЕРЕРАБОТКА ПОЛИМЕРОВ И КОМПОЗИТОВ НА ИХ ОСНОВЕ

В.А. Шершнева, С.В. Емельянов. Реокинетические исследования формирования сетчатых структур в полимерах.....	3
Н.А. Булычев, И.А. Арутюнов, К. Айзенбах, В.П. Зубов. Модификация дисперсных систем полимерами при механическом воздействии...	19
М.А. Гусева, О.Л. Грибкова, А.А. Исакова, В.Ф. Иванов, Ю.А. Федотов, В.А. Тверской. Матричный синтез полианилина в присутствии полимерной сульфокислоты.....	40
Д. А. Дрожжин, Л. Б. Кандырин, В. Н. Кулезнев, Н. Б. Урьев. Структура и физико-механические свойства гибридных композиций на основе ненасыщенной полиэфирной смолы и портландцемента.....	44
Ю.П. Иощенко, Д.А. Кондруцкий, В.Ф. Каблов. Получение и свойства полимолекулярных комплексов хитозана с биоразлагаемыми полимерами.....	49
В.Я.Киселев, С.Ю. Кукушкин, Ю.И.Лякин, И.Н. Скворцов. Кремнеорганические полимерные композиции медицинского назначения	54
Н.Н. Комова, Ю.В. Сыров, М.Д. Григорьев. Физическая природа проводимости этилен-пропиленового сополимера, наполненного хлоридом олова.....	58
А.Е. Корнев, И.М. Агаянц, В.Г. Никольский, И.А. Красоткина, Ю.А. Наумова, И.Б. Кравченко. Резины, содержащие тонкодисперсные эластичные наполнители.....	63
А.Н. Матвиенко, Ю.П. Мирошников. Измерение межфазного натяжения в расплавах смесей полимеров.....	68
Л.А. Меледина, Е.В.Сахарова, К.Л. Кандырин, Е.Э. Потапов. Исследование взаимодействия компонентов в комбинированных промоторах адгезии резины к латунированному металлокорду.....	74
ХИМИЯ И ТЕХНОЛОГИЯ ЛЕКАРСТВЕННЫХ ПРЕПАРАТОВ И БИОЛОГИЧЕСКИ АКТИВНЫХ ВЕЩЕСТВ	
Н.В. Иванова, С.И. Свиридов, А.Е. Степанов. Синтез 2-(1,2,4-триазол-3-ил)бензимидазольной библиотеки.....	78
В.С. Кублицкий, А.Е.Степанов, В.М. Трухан. Использование купратных реагентов на основе хлорида меди (I) для синтеза транс-3-замещенных циклических α -аминокислот.....	82
ХИМИЯ И ТЕХНОЛОГИЯ НЕОРГАНИЧЕСКИХ ВЕЩЕСТВ	
Ю.Г. Аляев, Ю.А. Ефимова, Г.М. Кузьмичева, И.Ю. Ловчиновский, А.С. Олышанская, Е.В.Философова, Л.М. Рапопорт, В.И. Руденко. Методы исследования мочевых камней.....	86
Abstract.....	99

Review MITHT

5/2006

Редакция:
И.М. Агаянц
Ю.А. Наумова
Л.Г. Семерня

Адрес редакции:
119571, г. Москва,
пр. Вернадского, 86,
к. Л-119
телефон: (495) 936-82-88

Подписано в печать
17.10.2006г. Формат
60х90/8. Бумага писчая.
Гарнитура Times.
Печать ризограф.
Уч. изд. листов 4,4.
Заказ № 492.
Тираж 500 экз.

CONTENTS

SYNTHESIS AND PROCESSING OF POLYMERIC COMPOSITES

- V.A. Shershnev, S.V. Emeljanov. Rheokinetic investigations of polymer networks formation..... 3
- N. Bulychiev, I. Arutunov, C. Eisenbach, V. Zubov. Modification of dispersed systems by polymers under mechanical treatment..... 19
- M.A.Guseva, O.L.Gribkova, A.A.Isakova, V.F.Ivanov, Yu.A.Fedotov V.A.Tverskoy. Template synthesis of polyaniline in presence of polymeric sulfoacid..... 40
- D. A. Drozhzhin, L. B. Kandyrin, V. N. Kuleznev, N. B. Uriev. Structure and physico-mechanical properties of hybrid compositions based on unsaturated polyester resin and portlandcement... 44
- V.F.Kablov, Y.P. Ioshchenko, D.A. Kondrutskiy. Production of the multimolecular complexes between chitosan and biodegradable polymers and study of their properties..... 49
- V.Y.Kiselev, S.J.Kukushkin, J.I.Lyakin, I.N.Skvorcov. The application of silicon-based polymers in children stomatology 54
- N.N.Komova, Yu.V.Sirov, M.D.Grigoriev. Physical character conductivity of system, including ethylene-propylene copolymer and SnCl₂..... 58
- A.E. Kornev, I.M. Agayants, V.G.Nikolskii, I.A. Krasotkina, J.A.Naumova, I.B. Kravchenko. The rubbers containing fine elastic fillers..... 63
- A.N. Matvienko, Yu.P. Miroshnikov. Measurement of interfacial tension in melts of polymer blends..... 68
- L.A.Meledina, E.V. Sakharova, K.L. Kandyrin, E.E. Potapov. The study of the components` interactions in the combined brass-to-rubber adhesion promotors..... 74

CHEMISTRY AND TECHNOLOGY OF MEDICAL PRODUCTS AND BIOLOGICALLY-ACTIVE SUBSTANCES

- N.V. Ivanova, S.I. Sviridov, A.E. Stepanov. Synthesis of substituted 2-(1,2,4-triazol-3-yl)benzimidazoles..... 78
- V. S. Kublitskii, A.E. Stepanov, V. M. Trukhan. The use of copper reagents on the base of copper (I) chloride for the synthesis of *trans*-3-substituted cyclic α -amino acids..... 82

CHEMISTRY AND TECHNOLOGY OF INORGANIC MATERIALS

- Yu.Alyayev, Yu. Efimova, G.Kuz'micheva, E.Filosofova, L.Rapoport, V.Rudenko. Experimental study of urinary stones Abstract..... 99

ABSTRACT

V.A. Shershnev, S.V. Emeljanov. Rheokinetic investigations of polymer networks formation. 3

Methods of networks formation in different polymers or oligomers are considered. The possibility of rheokinetic description for chemical network formation in elastomers and their binary blends evaluation was shown. These elastomers differ from each other by polarity, reactivity and crosslinking mechanisms. Rheokinetic method represents the new approach for vulcanization regimes, structure and properties of such materials optimization

N. Bulychев, I. Arutunov, C. Eisenbach, V. Zubov. Modification of dispersed systems by polymers under mechanical treatment 19

The processes of surface modification in aqueous dispersions of hydrophilic inorganic pigments (titanium dioxide, ferrous oxide) as well as hydrophobic organic pigments (copper phthalocyanine and carbon black) by polymers of various nature were reviewed. The pigment surface modification by these polymers was achieved by conventional adsorption as well as by mechanical (ultrasonic and vibrowave) treatment of the pigment dispersion. The efficiency of the pigment surface coating was followed by the IR-analysis, Electrokinetic Sonic Amplitude (ESA) method and transmission electronic microscopy that enabled to gain quantitative data about the thickness and structure of polymer adsorption layers. Ultrasonic and vibrowave techniques have been shown to provide significant improvement of polymer adsorption layer thickness and to be a promising way for the surface modification of pigments with regard to their dispersion stability. Thermo-responsive («smart») polymers were shown to be effective temperature-controlled modifiers for both hydrophobic and hydrophilic pigments

M.A.Guseva, O.L.Gribkova, A.A.Isakova, V.F.Ivanov, Yu.A.Fedotov V.A.Tverskoy. Template synthesis of polyaniline in presence of polymeric sulfoacid. 40

It was investigated the influence of the correlation of sulfoacid and aniline concentration on the polymerization of the latter when it was protonated by polymeric sulfoacid and on electronic structure of forming polyaniline.

D. A. Drozhzhin, L. B. Kandyrin, V. N. Kuleznev, N. B. Uriev. Structure and physico-mechanical properties of hybrid compositions based on unsaturated polyester resin and portlandcement. 44

Strength and deformation properties of cured compositions based on unsaturated polyester resin and portlandcement were investigated in all range of concentrations. Optimal ratio of components which lead to high strength properties and high deformation ability was found

V.F.Kablov, Y.P. Ioshchenko, D.A. Kondrutskiy. Production of the multimolecular complexes between chitosan and biodegradable polymers and study of their properties. 49

The multimolecular complexes were prepared from chitosan and biodegradable polymers. Their mechanical and structural properties were studied; the thermodynamic characteristics were calculated. It was shown that the films based on complexes possess higher strength, sorbtial ability and flame resistance as compared to the films from individual polymers

V.Y.Kiselev, S.J.Kukushkin, J.I.Lyakin, I.N.Skvorcov. The application of silicon-based polymers in children stomatology 54

Our scientific research, concerned with the opportunities of the application of some new silicon-based polymers at carrying out stomatologic procedures, is briefly submitted in this article. The results of the comparative tests with the silicon-based polymeric materials and the materials on the basis of the natural rubber are represented, as well as the graphic dependences confirming legitimacy of made conclusions. At the end of the article, there is the list of the scientific literature used as theoretical basis

- N.N.Komova, Yu.V.Sirov, M.D.Grigoriev. Physical character conductivity of system, including ethylene-propylene copolymer and SnCl₂. 58
Shown that conductivity of ethylene-polypropylene copolymer filled SnCl₂ has ionic character. The feasible mechanism of polymer electrolytes conductivity for system ethylene-polypropylene copolymer – inorganic salt is considered according to experimental data
- A.E. Kornev, I.M. Agayants, V.G.Nikolskii, I.A. Krasotkina, J.A.Naumova, I.B. Kravchenko. The rubbers containing fine elastic fillers 63
Influence elastic filler on properties of rubber mixes and vulcanizates is presented
- A.N. Matvienko, Yu.P. Miroshnikov. Measurement of interfacial tension in melts of polymer blends 68
The apparatus construction and primary techniques used on measurements of surface and interfacial tensions in high-viscous polymer melts has been examined. This method is based on spinning drop theory by Vonnegut. Measured values of surface and interfacial tensions for several polymer systems show good correlation with corresponding data from literature. Relative error of the measurements was in the range of 2-8%
- L.A.Meledina, E.V. Sakharova, K.L. Kandyrin, E.E. Potapov The study of the components` interactions in the combined brass-to-rubber adhesion promoters. 74
Addition of active sulphur-containing component into promoter system along with the use of silica as a substrate allowed us to reduce the amount of metal in rubber. The adhesion improvement using «silica – metal salt – polysulfide» system is a result of reciprocal activation of the system components. However, we found that polysulfide adsorption on the silica surface is accompanied by chemical interaction between the polysulfide molecules and surface reactive groups of silica. Hence, the silica is not the inert substrate for the «polysulfide-metal salt» system
- N.V. Ivanova, S.I. Sviridov, A.E. Stepanov. Synthesis of substituted 2-(1,2,4-triazol-3-yl)benzimidazoles. 78
A solution-phase synthesis for the preparation of substituted 2-(1,2,4-triazol-3-yl)benzimidazoles from triazole aldehydes and ortho-phenylenediamines has been developed for the purpose of producing diverse lead generation libraries.
- V.S. Kublitskii, A.E. Stepanov, V. M. Trukhan. The use of copper reagents on the base of copper (I) chloride for the synthesis of *trans*-3-substituted cyclic α -amino acids. 82
*An efficient synthesis of 3-substituted cyclic amino acids via 1,4-conjugate addition of diorganocuprates to α,β -unsaturated cyclic α -aminoacids is described. The higher reactivity of copper reagents obtained from copper (I) chloride in comparison with CuCN, CuBr, CuI and CuBr*SM₂ has been shown*
- Yu.Alyayev, Yu. Efimova, G.Kuz'micheva, E.Filosofova, L.Rapoport, V.Rudenko. Experimental study of urinary stones 86
Study of urinary stones of surgical removal has been fulfilled by complex methods. Information of phase and element composition have been received, microstructural examination has been made, causes of anomalous hardness of some stones have been found.