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**CONTENTS / СОДЕРЖАНИЕ**

**Sergei V. Baryshnikov, Victor I. Sharypov,  
Boris N. Kuznetsov, Anatoly M. Zhyzhaev and  
Yuriy D. Alashkevich**

Influence of Preliminary Mechanical Treatments on Acidic  
Hydrolysis of Aspen Wood

— 3 —

**Pavel V. Avramov, Alexander A. Kuzubov,  
Alexander S. Fedorov, Maria V. Serzhantova and  
Vera R. Kuzik**

Strong Electron Correlations Determine the Stability and  
Properties of Er-doped Silicon Quantum Dots

— 12 —

**В.Ф. Одяков\* Е.Г. Жижина**

Титриметрическое определение фосфора в водных растворах  
Мо-V-фосфорных гетерополикислот и катализаторах на их  
основе

— 20 —

**С.В. Сайкова, Г.Л. Пашков,  
М.В. Пантелеева, С. А. Воробьев,  
А.Н. Кокорина**

Анионообменный синтез оксалата никеля (II) с помощью  
анионита в  $C_2O_4$  — форме

— 27 —

**Н.Г. Береговцова,  
В.И. Шарыпов, Б.Н.Кузнецов**

Исследование состава жидких продуктов термических  
превращений лигнина

— 36 —

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**Ю.А. Алемасов, Д.Г. Слащинин,  
М.С. Товбис, С.Д. Кирик**

Димеризация в гексазамещенных пара-нитрозофенолах по  
данным рентгеноструктурного анализа

— 45 —

**Н.Н. Головнев, А.И. Петров,  
Н.В. Дорохова, С.Д. Кирик, И.И. Головнева**

Протонирование и синтез протонированных соединений  
ципрофлоксацина с бромидами d-элементов

— 58 —

**В.Н. Лосев, С.Л. Дидух**

Тест-системы для определения Cu, Fe, Co на основе дисперсных  
кремнеземов, модифицированных полигексаметиленгуанидином  
и сульфопроизводными органических реагентов

— 64 —

**В.Н. Лосев, О.В. Буйко, Б.А. Величко**

Сорбционно-атомно-эмиссионное определение цветных и  
тяжелых металлов с использованием фитосорбентов

— 73 —

**Н.Н. Головнев, А.А. Лешок, А.И. Петров**

Протонирование и комплексообразование с Tl(I)  
селеномочевины в водном растворе

— 79 —

**Irina V. Russkikh, Elena V. Gulaya, Liliya P. Gossen**

Study of an Oil Component in model Solutions of Oil-field  
Waters

— 87 —

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## Influence of Preliminary Mechanical Treatments on Acidic Hydrolysis of Aspen Wood

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*For the mechanical activation of aspen wood in aqueous medium the cutters, jet, vibratory rod mills and mechanochemical activator were used. The influence of treatment conditions on wood structure and on activated wood acidic hydrolysis was studied.*

*It was found that the preliminary mechanical activation on aspen wood increases the yield of easily hydrolyzed polysaccharides and the rate of their hydrolysis to sugars with 2 % HCl. The higher influence on the reaction ability in hydrolysis process was observed after aspen wood treatment in a planetary activator mill AGO – 2.*

*Keywords: aspen wood, mechanical treatment, structure, acidic hydrolysis, intensification.*

Mechanical and mechanochemical processing is widely used in technologies of lignocellulosic raw materials conversion to target materials and chemical products. A variety of equipments like machine of knife grinding, jet grinding, vibrating mills, mechanochemical activators of centrifugal and planetary types, cavitation devices and etc. which differ in nature of action on crushed materials was applied with this purpose.

Theoretical basis of grinding process of fibrous materials are considered in monographs [1–4]. Milling of wood biomass in aqueous medium is a complicated mechanical process which resulted in

the water-fibrous suspension formation. Treatment in disk knife mills can be considered as a set of mechanical and hydrodynamic action on wood biomass which lead to the changes in dispersion of water suspensions and to the disintegration of wood fibers [2]. It is been shown [8], that the destruction and compression of external P and S1 layers of a wood cell, which prevent swelling and fibrillation of fibers take place in the process of knife grinding [5]. Destruction of these layers uncovers bulk structure of a secondary wall of a cell – layer S2, and facilitate the consumption of water. The processes of fibrillation swelling and

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