

Успехи химии

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- Advances in the chemistry of monocyclic amino- and nitrofucoxans** 1007
N.N.Makhova, A.S.Kulikov
N.D.Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, Russia
Published data of the last 20 - 25 years dealing with the development of methods of synthesis and study of the reactivity of monocyclic amino- and nitrofucoxans are considered. The regularities of the synthesis of aminofucoxans by Schmidt and Curtius rearrangements with participation of acetyl- and azido-carbonylfucoxans, respectively, and features of the transformation of functional substituents in aminofucoxans are discussed. In consideration of the reactivity of aminofucoxans, the attention is focused on the oxidation and diazotization and the Mannich reaction. The methods of synthesis of nitrofucoxans based on oxidation of nitroglyoximes and nitrosation of unsaturated compounds and dipotassium salts of 2-substituted 2-hydroximino-1,1'-dinitroethanes are considered. The reactivity of nitrofucoxans comprises nucleophilic substitution, reduction and thermal fucoxan ring opening to give nitrile oxides. Bibliography — 111 references.
- Phosphorus derivatives of cyclodextrins. Characteristic features of the synthesis and chemical behaviour** 1034
M.K.Grachev
Department of Chemistry, Moscow State Pedagogical University, Russia
Published data on the preparation of phosphorus derivatives of cyclodextrins are summarized. It is demonstrated that some significant features of their synthesis and chemical behaviour are caused by specific supramolecular interactions involving the inner chiral cavity of cyclodextrins capable of incorporating various guests, which often leads to alteration of customary routes of chemical transformations. The possibilities of practical applications of phosphorus cyclodextrin derivatives are briefly analyzed. Bibliography — 89 references.
- Electrocatalysis of anodic oxidation of ethanol** 1047
M.R.Tarasevich, O.V.Korchagin, A.V.Kuzov
A.N.Frumkin Institute of Physical Chemistry and Electrochemistry, Russian Academy of Science, Moscow, Russia
The results of fundamental and applied studies in the field of electrocatalysis of anodic oxidation of ethanol in fuel cells are considered. Features of the mechanism of ethanol electrooxidation are discussed as well as the structure and electrochemical properties of the most widely used catalysts of this process. The prospects of further studies of direct ethanol fuel cells with alkaline and acidic electrolytes are outlined. Bibliography — 166 references.
- New insight into the spreading dynamics of liquids on rough surfaces using computational fluid dynamics** 1066
H.Alla, S.Freifer, B.A.Talha, T.Roques-Carnes
Université des Sciences et de la Technologie d'Oran, Algeria
Université de Lorraine, Laboratoire Réactions et Génie des Procédés, CNRS, Nancy, France
The potential of modelling of liquid drop spreading on a rough surface by various approaches is analyzed. A number of examples (silicone oil on glass, mineral oil on stainless steel, etc.) are used to demonstrate good agreement between the results obtained by computational fluid dynamics and experimental data. The effects of various parameters (surface characteristics, properties of the liquid) on the process of spreading and the possibility to take account for these factors in the modelling are considered. Data on different spreading mechanisms on rough surfaces are presented. Bibliography — 69 references.