5th International Conference on Chemistry and Chemical Education

Sviridov Readings 2010

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Book of Abstracts

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CHEMISTRY OF METAL COMPLEXES AND MOLECULAR SYSTEMS

Influence of subtle differences in molecular structure on transport properties of aromatic polyamide membranes

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Permeability and selectivity of pervaporation membranes consisting of homopolymers, copolymers, and a mechanical mixture of polymers on the base of aromatic amides are studied. It is shown that slight variations in the configuration of homopolymer macromolecules, for example, upon inclusion of benzene rings through meta- and para-positions, considerably change the transport properties of membranes with respect to water-organic solutions. The transmembrane flux of the penetrant through a unit area depends on the membrane area itself. In the nonstationary process upon swelling of the films, structural changes of the polymers take place, which intensify the nonlinear relaxation processes. In particular, in these highly hydrophilic systems a periodic inversion of selectivity is found. Nonlinear character of the processes accompanying the mass transfer can result in the fact that different membranes from the same batch of films in the steady state mode can be selectively permeable both with respect to water and to an organic component. The explanations for the observed effects are offered.

New deep eutectic systems with ionic liquid properties from quaternary ammonium salts

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Deep eutectic solvents (DES) are mixtures of ionic and molecular compounds with unusually low melting points, having properties similar to those of ionic liquids. Until recently, most of DES known were based on choline chloride containing functional hydroxy group. It has been shown that DES can be prepared from unfunctionalized quaternary ammonium salts and some proton-donating molecular compounds such as imidazole derivatives, benzoic acid etc. The prepared solvents can readily dissolve some metal oxides, thus opening up a possibility for their application in electrochemistry and other fields.

Synthesis and complexation properties of novel bisheterocyclic ligand – 1-furfuryltetrazole

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Due to variety of coordination possibilities tetrazoles containing another heterocycle as a substituent are of interest as ligands for synthesis of complexes with transition metal salts possessing unique properties. We have synthesized the novel bisheterocyclic ligand 1-furfuryltetrazole (L) by interaction of 2-furfurylamine with triethyl orthoformate and sodium azide (yield ~90 %). Complexation of L with some Cu(II) and Ni(II) salts have been investigated. The obtained ligand and its complexes have been characterized by elemental and thermal analyses, IR and NMR