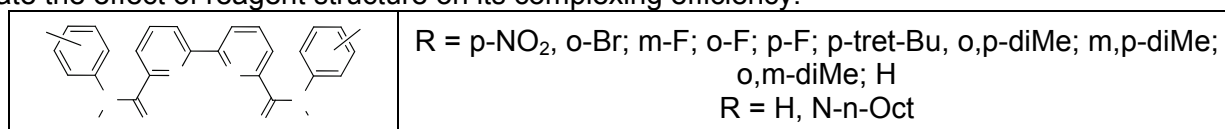


STUDY OF PROSPECTIVE COMPLEXES OF F-ELEMENTS WITH ANILIDES TO CLEAN INDUSTRIAL WASTE WATERS

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The rare earth elements (REE) have found their wide application as luminophores, magnets and catalysts. An important part of the global transition to a "green" economics is the use of f-elements from wastes separated during the purification of industrial waste water. One of the methods for separating and reusing of REEs is a selective extraction. In order to increase separation it is necessary to choose the correct complexing agent having significant differences in the stability constants with different f-elements. We propose to use prospective 2,2'-bipyridyl-6,6'-dicarboxamides and present the in deep study of the stability of their complexes with trivalent lanthanides to elucidate the effect of reagent structure on its complexing efficiency.



The stability constants of complexes with gadolinium (III) nitrate was measured spectrophotometric method it is shown on figure 1. The fluorine in the o-position of the anilide stabilizes the complex due to conjugation of halogen long pairs with the phenyl ring. However it does not occur in the case of the m- and p-isomer, which demonstrate mostly the electron-withdrawing properties. The electron-rich substituents have a less effect on the stability of complexes. This might be so because of the examination only o-substituted anilides, which may cause a decrease in the stability of complexes due to steric effects. The long-chain substituents (n-Octyl and t-Butyl) also decrease the stability of the complexes irrespectively the position of the alkyl-group (N-Octyl-Phenyl-amide or N-ethyl-p-tert-butylphenyl-amide) but largely induce their solubility. Thus, o-fluorine-phenyl-amide could be serving as the most suitable candidate to clean industrial waste waters.

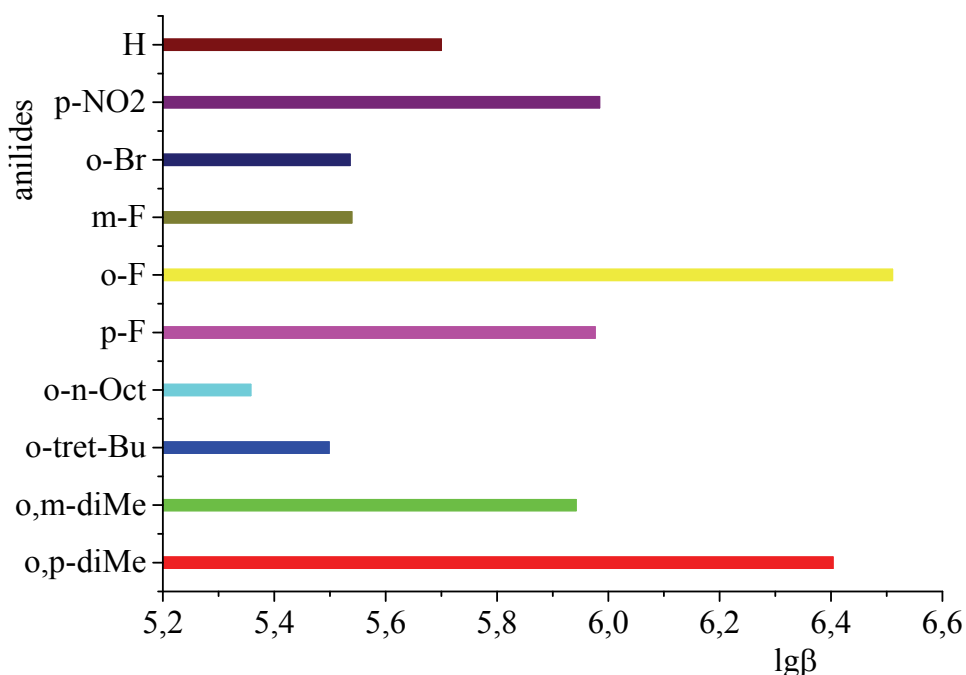


Figure 1: The values of stability constants for complexes of anilides with dysprosium nitrate in absolute acetonitrile.

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