



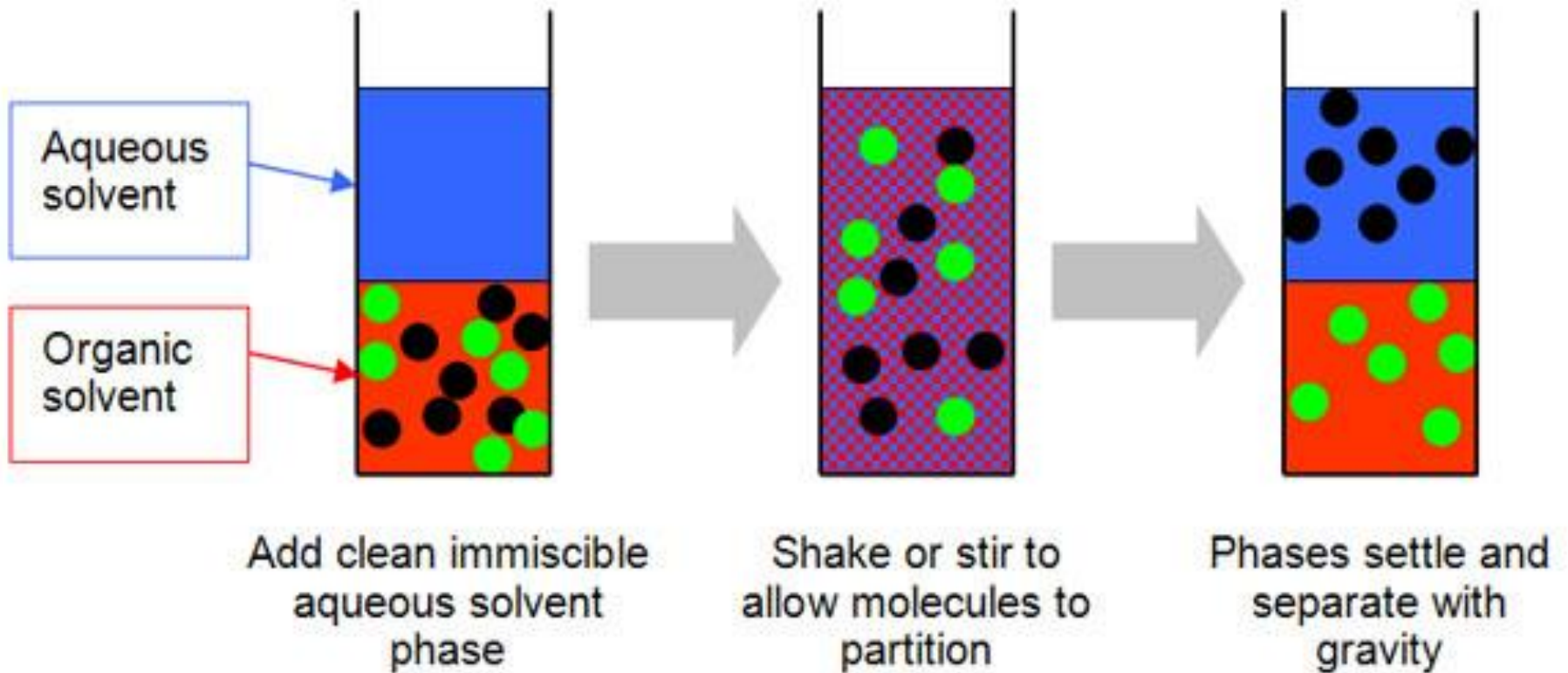
STUDY OF PROSPECTIVE COMPLEXES OF F-ELEMENTS WITH ANILIDES TO CLEAN INDUSTRIAL WASTE WATERS

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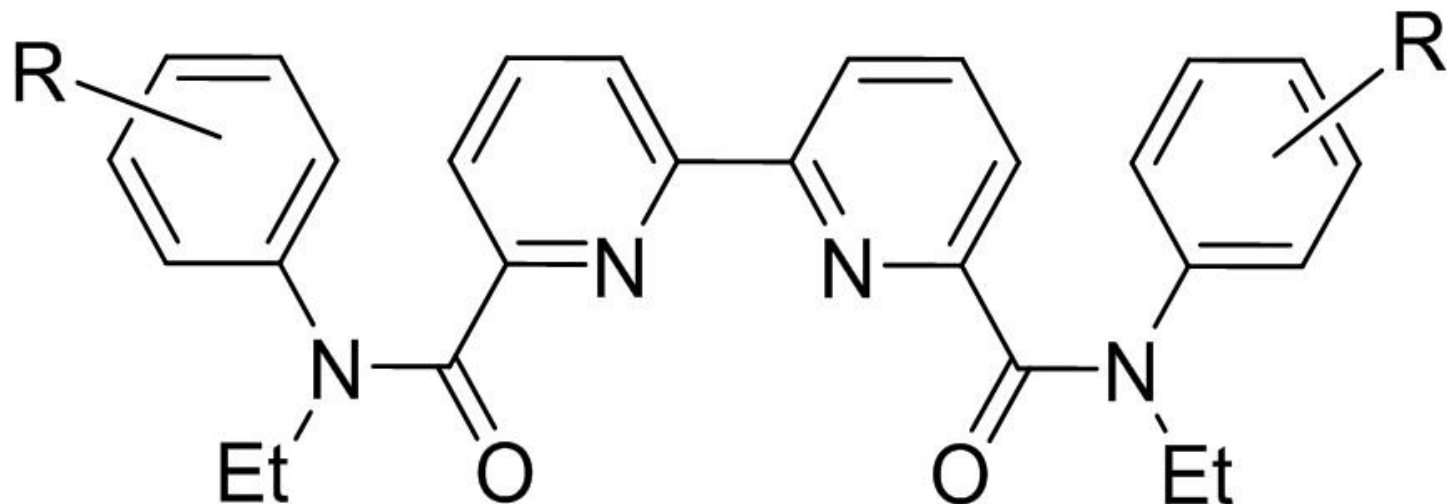
The use of f-elements from wastes separated during the purification of industrial waste water



A selective extraction



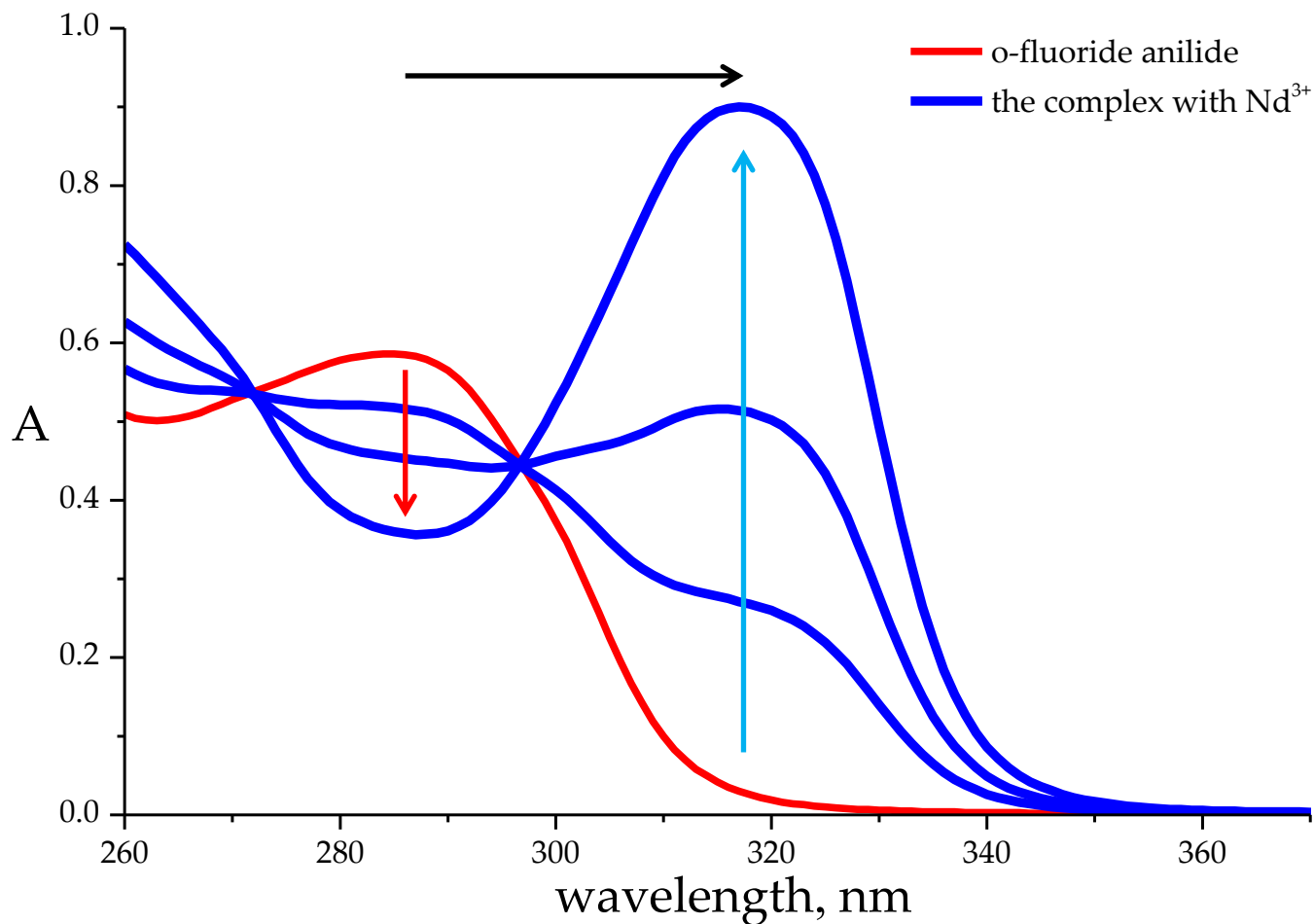
Prospective 2,2'-bipyridyl-6,6'-dicarboxamides



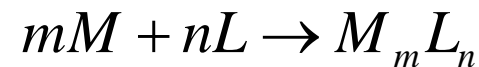
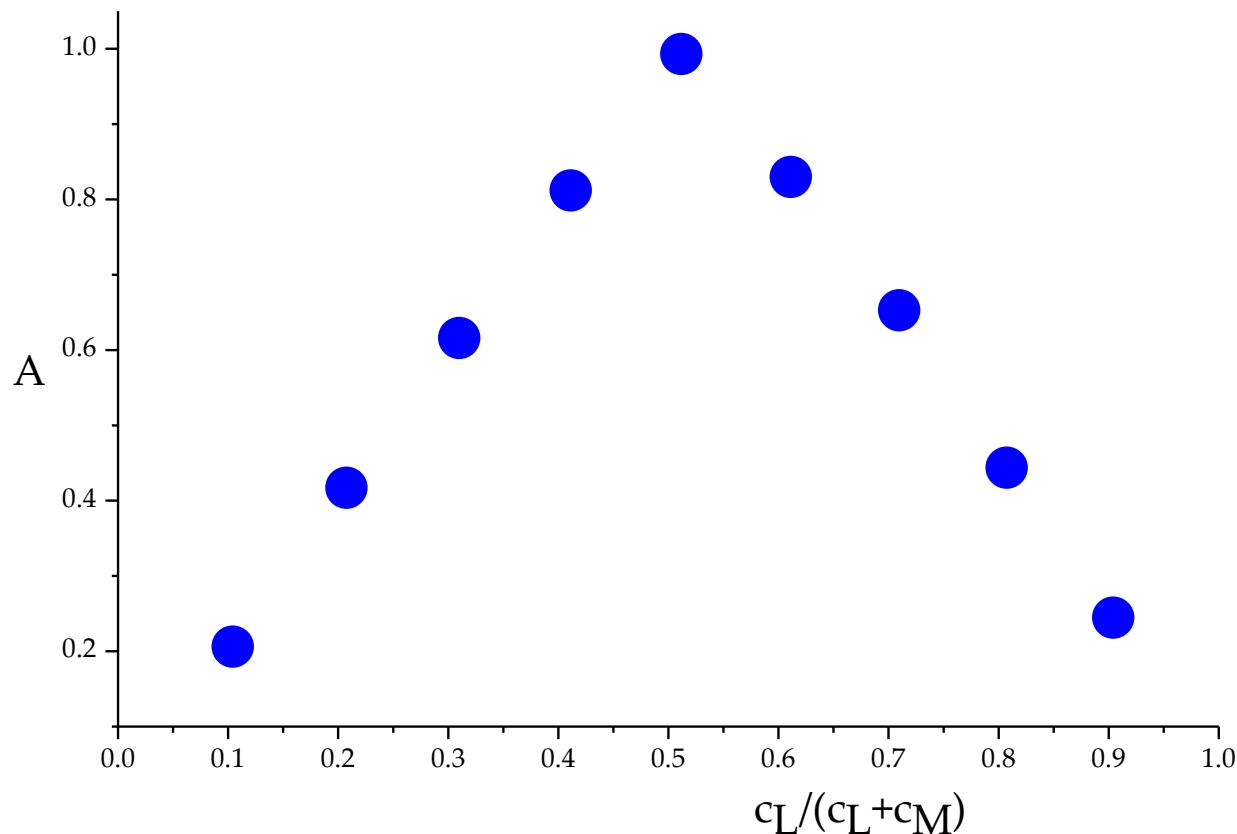
R = *o,p*-diMe (**1**) *o,m*-diMe (**2**); *o,m,m*-triMe (**3**);
p-tert-Bu (**4**); *o*-F (**5**); *m*-F (**6**); *p*-F (**7**); *o*-Br (**8**); H
(**9**^[1])

[1] European Journal of Inorganic Chemistry, 2014, 2219–2229

The absorption spectra of the o-fluoride anilide substituent and the complex with neodymium nitrate in dry acetonitrile



Job's plot for o-fluoride anilide with ion Tb^{3+} (in solution)

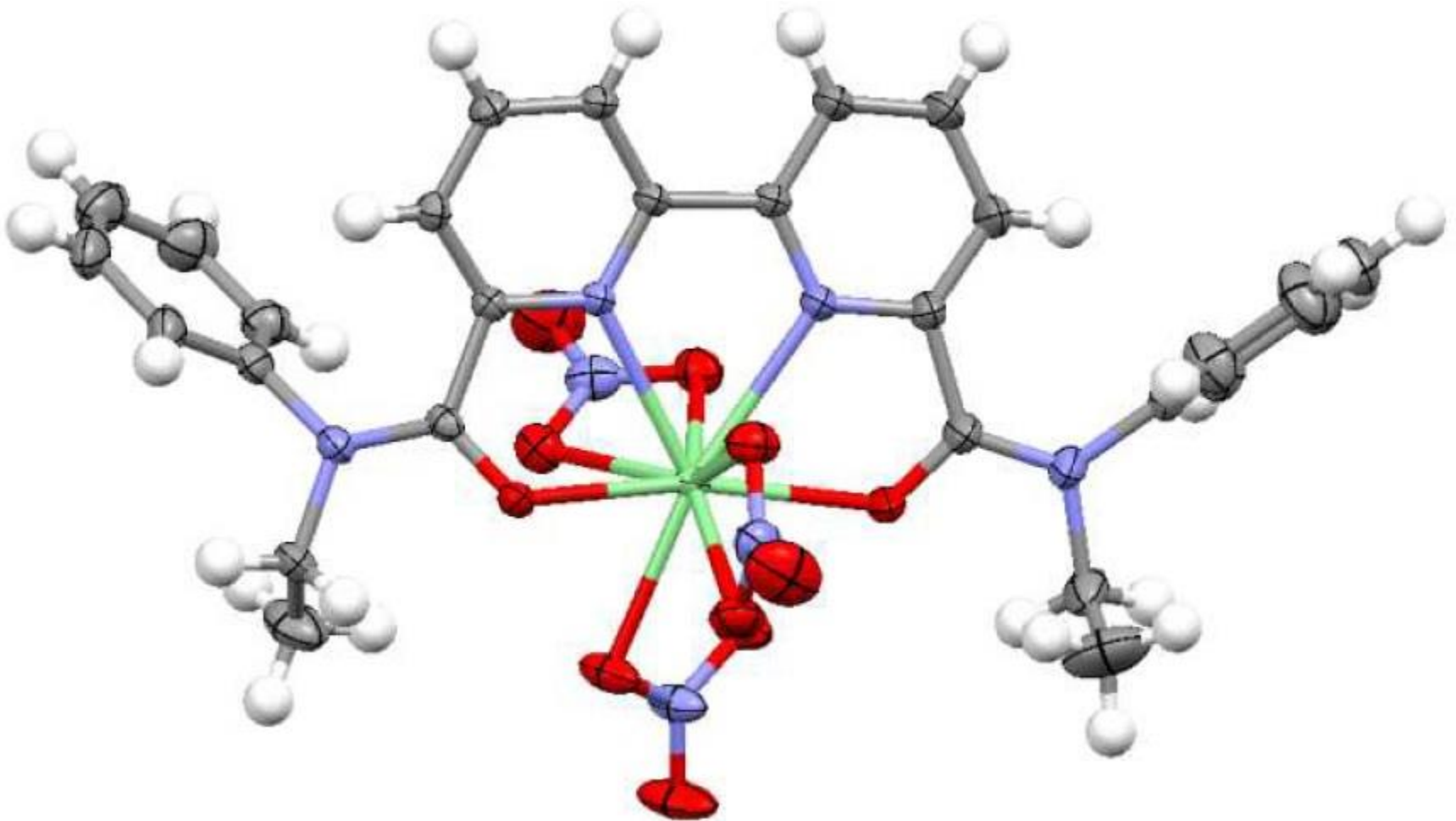


$$X = \frac{C_L}{C_L + C_M} = \frac{n}{n + m}$$

$$\Delta A = A_{\Sigma} - A_L$$

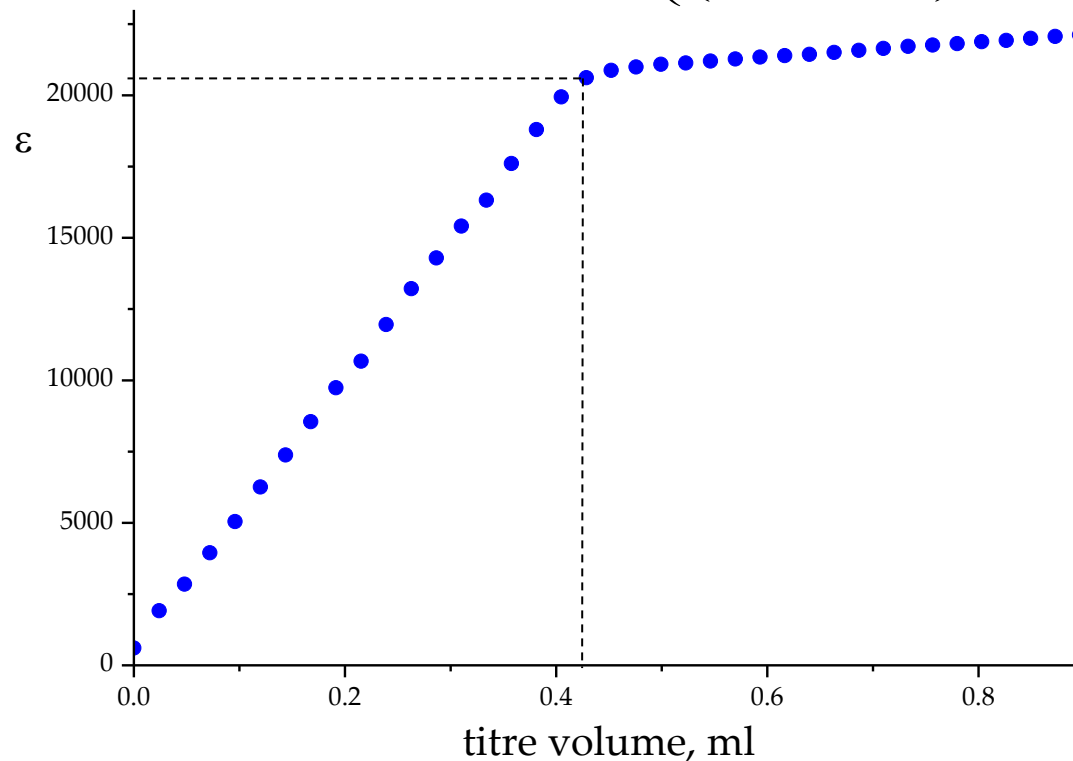
$$\Delta A = f\left(\frac{C_L}{C_L + C_M}\right)$$

The structure of the ligand complex of unsubstituted anilide with gadolinium according to X-ray diffraction analysis (in solid state)

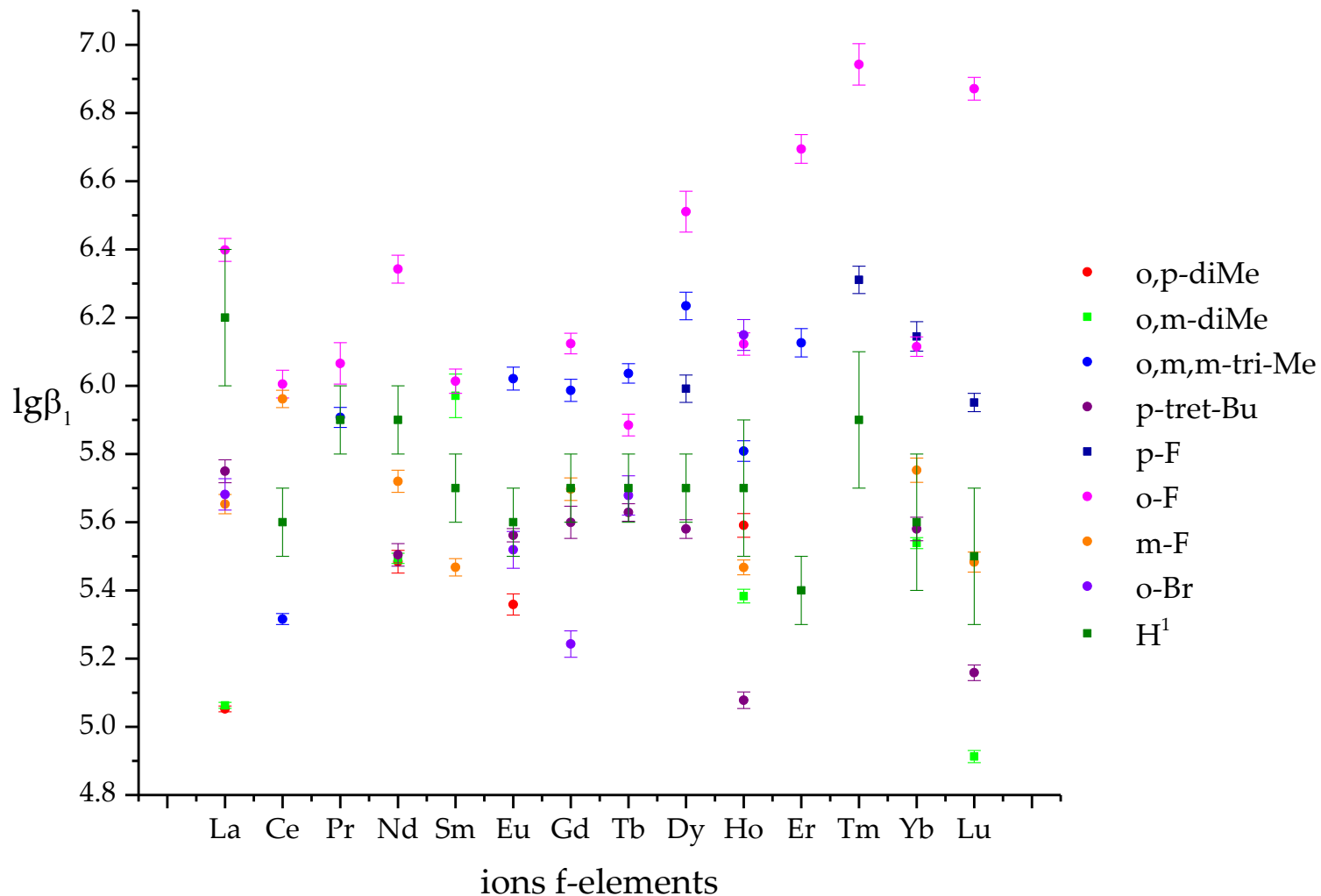


The dependence of the molar absorption coefficient on titre volume of metal for the o-fluoride anilide with Nd^{3+} system

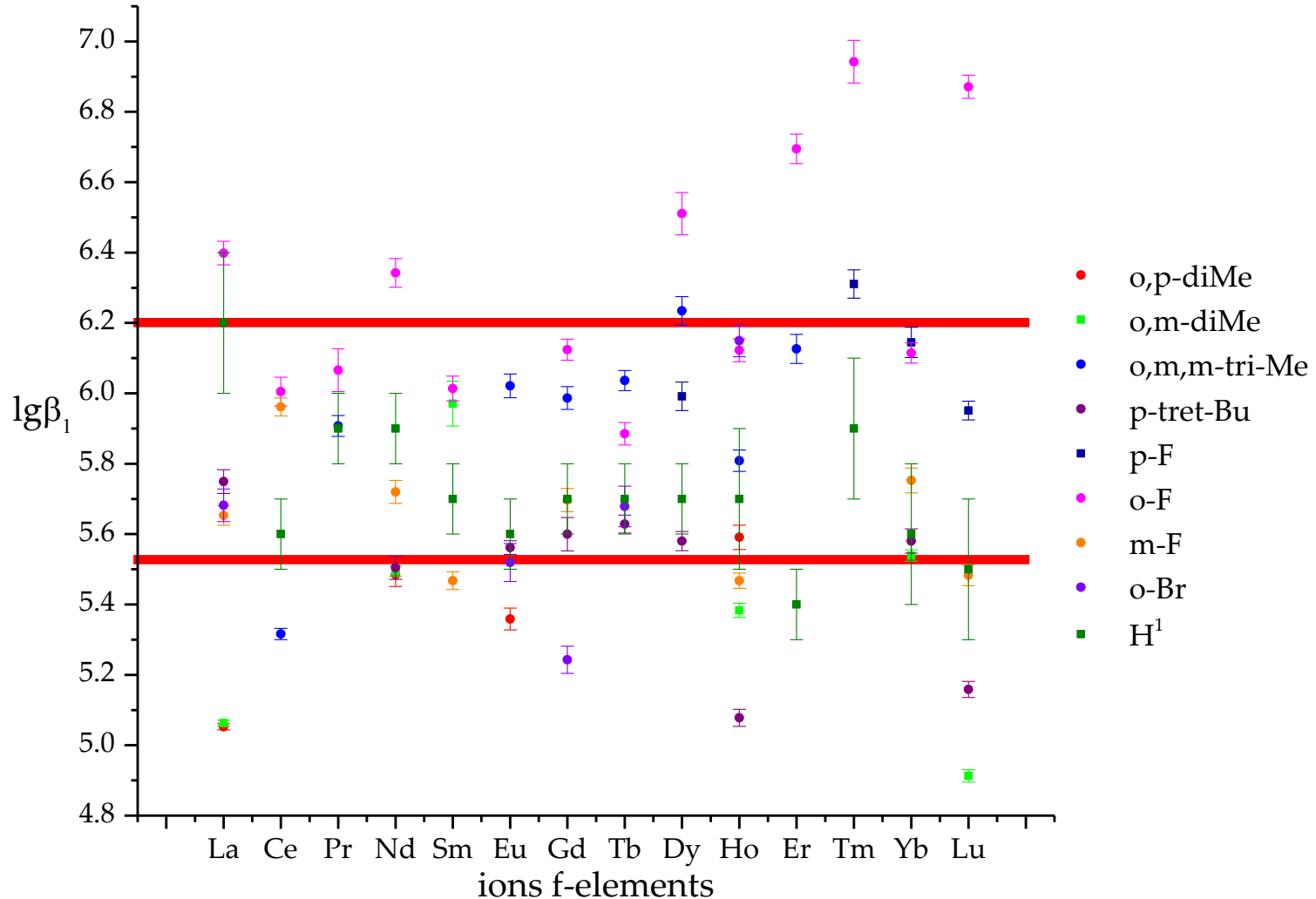
$$\beta_1 = \frac{(A - C_L \varepsilon_L)}{(\varepsilon_{ML} - \varepsilon_L) \cdot (C_L - [LM^{3+}]) \cdot \left(\left(\frac{C_M V_{mump}}{V} \right) - [LM^{3+}] \right)}$$



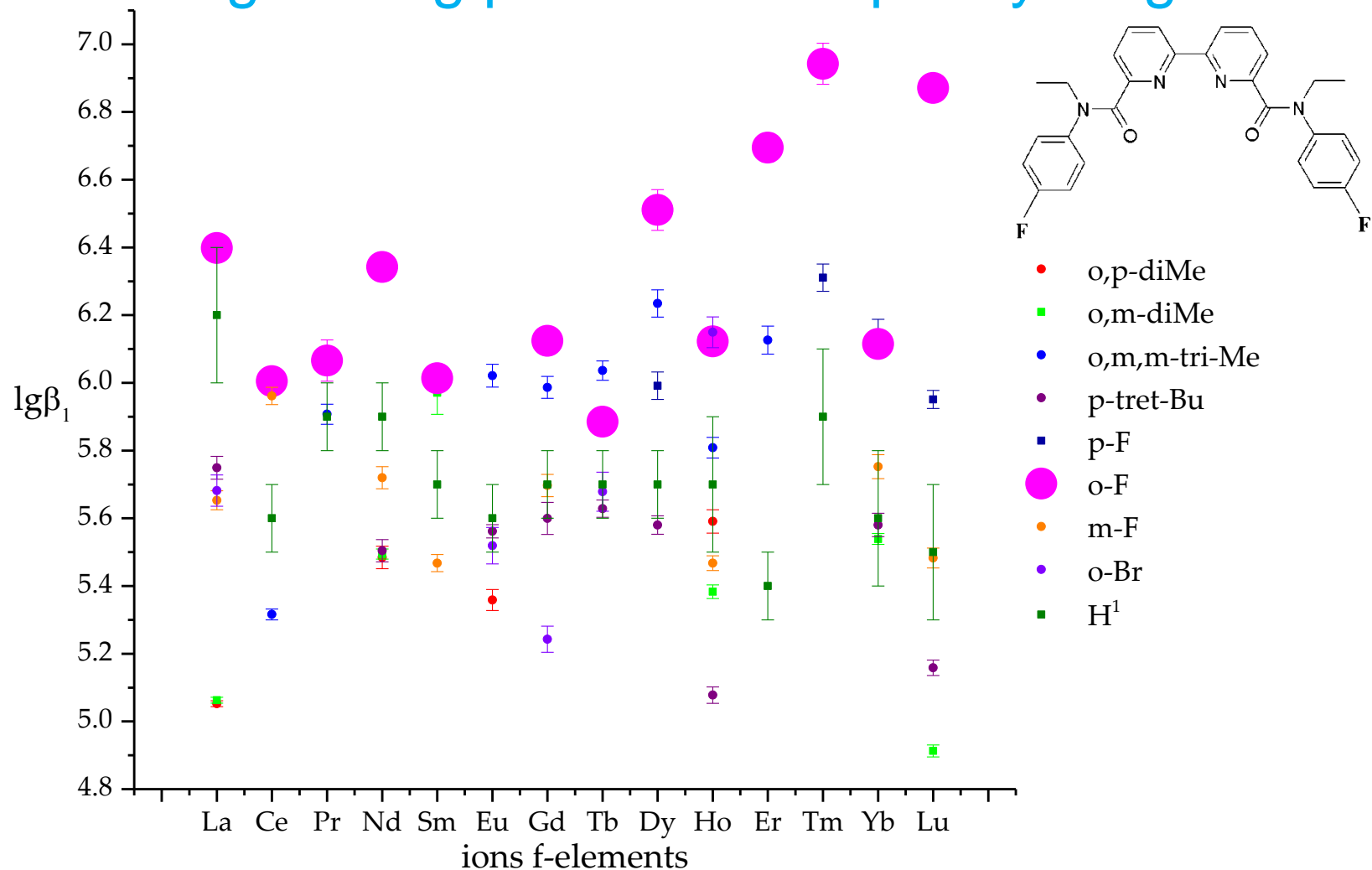
The lanthanide ion dependence of the stability constants values for anilides 1-9



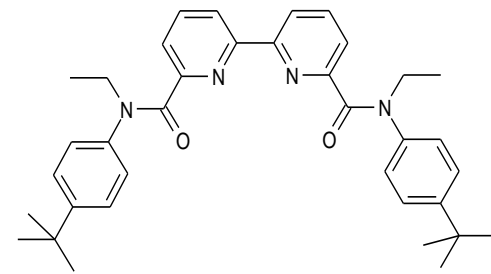
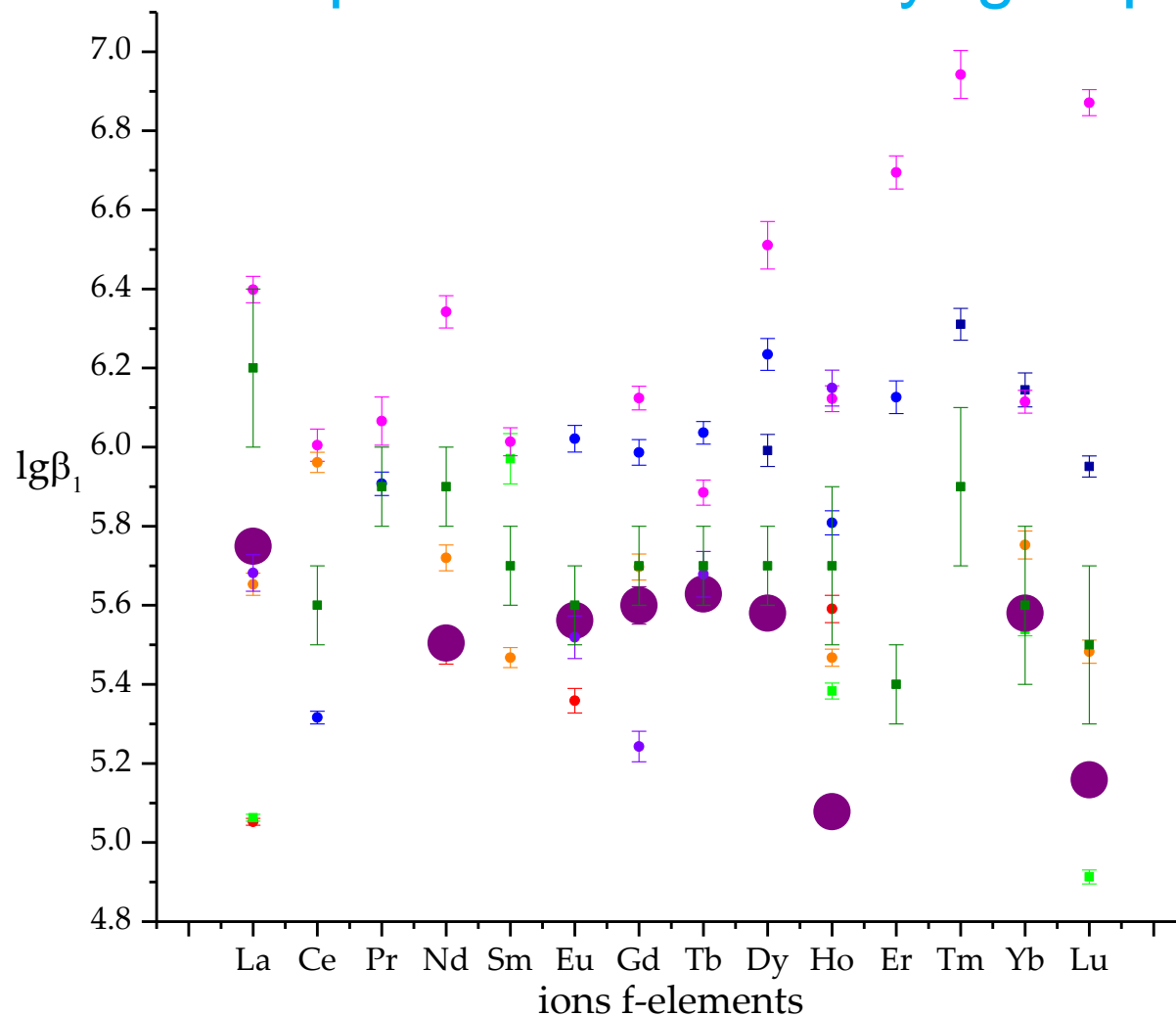
The $\lg\beta_1$ complexes of investigated anilides with lanthanide ions fall into 5,5-6,2 region



The fluorine in the o-position of the anilide stabilizes the complex due to conjugation of halogen lone pairs with the phenyl ring

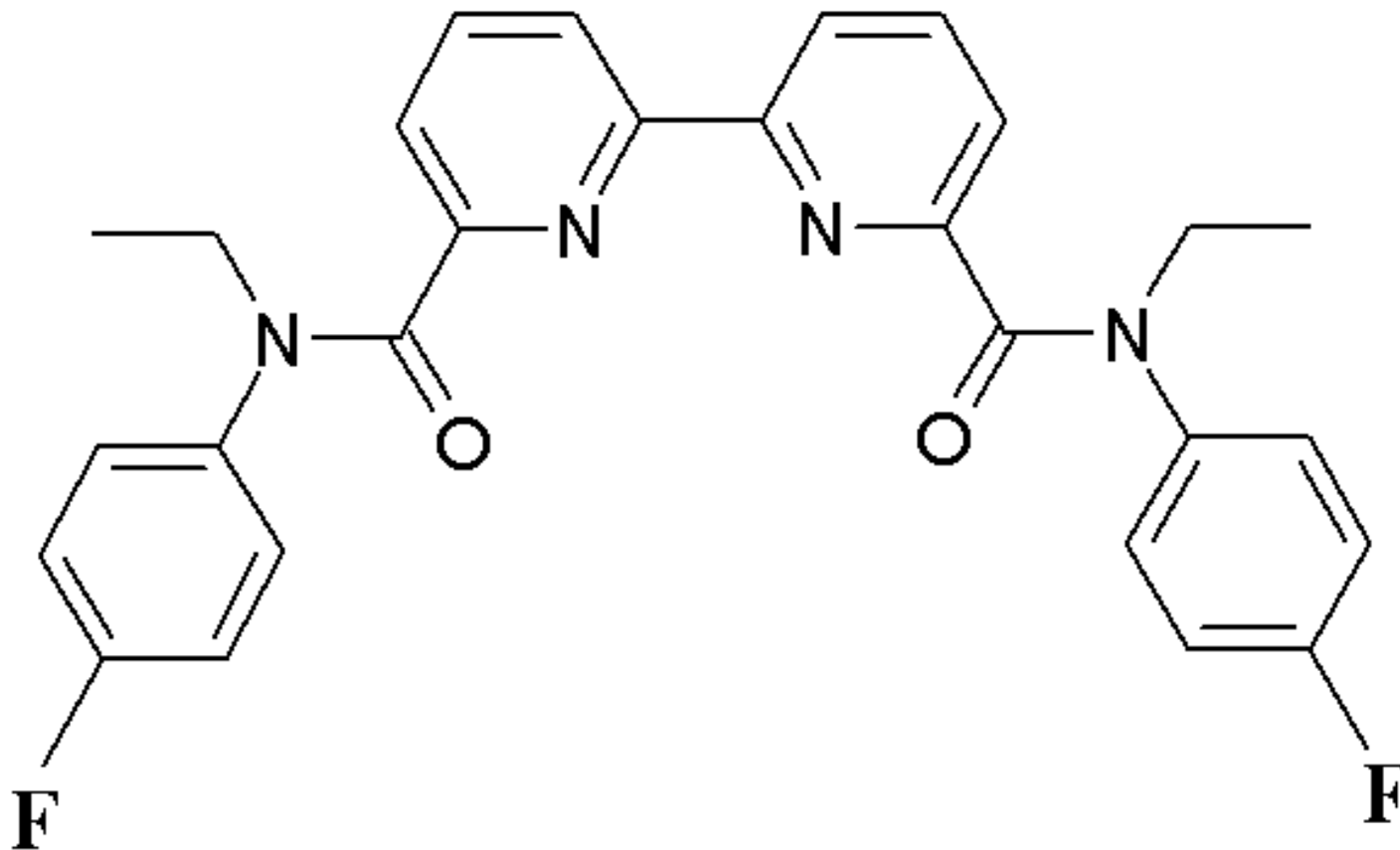


The long-chain substituent (t-Butyl) decrease the stability of the complexes irrespectively the position of the alkyl-group



- o,p-diMe
- o,m-diMe
- o,m,m-tri-Me
- p-tret-Bu
- p-F
- o-F
- m-F
- o-Br
- H¹

The o-fluorine-phenyl-amide could be serving as the most suitable candidate to clean industrial waste waters



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**Thank you for
your attention!**

And to the



**Organizing
Committee**