

### Influence of the ionic strength on the acid-base properties of polycyclic weak acids binding to the poly (sodium 4-styrenesulfonate) macromolecules in water solutions

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For many biologically active compounds the acid-base properties near the surface of nanoscale colloidal particles (particularly, biopolymer macroions) are substantially different from their properties in water solutions. Otherwise, the polyion conformations depend strongly on the counter-ion concentration [1]. Therefore, it is of great interest to study the model system “polycyclic weak acid – poly (sodium 4-styrenesulfonate) (NaPSS)”. In this research, the apparent ionization constants of the acids ( $K_a^a$ ) were determined at different ionic strength in NaPSS dilute water solutions. The cationic indicator dyes with charge type 2+/+ (pseudoisocyanine), +/± (rodamine B) and +/0 (neutral red) were used as acids. The  $pK_a^a$  values are represented in Fig. 1.

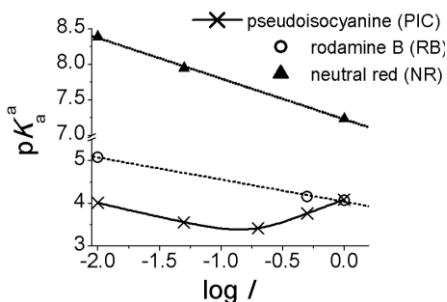


Fig. 1. The dependences of  $pK_a^a$  values of dyes on the logarithm of ionic strength,  $\log I$ , of NaPSS solution;  $[\text{NaPSS}]/[\text{Dye}] = 60$  (NR) and 100 (RB and PIC).

It can be observed a monotonous decrease of the  $pK_a^a$  values for the monocationic acid. Although, the  $pK_a^a$  values of PIC increase starting with  $I \sim 0.2$  M. It is probably caused by the influence of the charge type and will be discussed in the report.

1. Adamczyk Z., Zembala M., Warszyński P., Jachimska B. Characterization of polyelectrolyte multilayers by the streaming potential method // Langmuir.-2004.-20.-P. 10517-10525.