Abstract

Three compounds were synthesized in this bachelor thesis– hydroxy(phenyl)methandiyl-bis(phosphonic) acid – disodium salt (**$Na_2H_2L^1$**), 1-hydroxy-2-phenylethan-1,1-diyl-bis(phosphonic) acid – disodium salt (**$Na_2H_2L^2$**) and tetraethyl hepta-1,6-diyne-4,4-diyl-bis(phosphonate) (**L^4**).

The next part of the thesis is focused on sorption towards to powdered titanium dioxide surface. Following compounds were used for these sorption experiments: **$Na_2H_2L^1$**, **$Na_2H_2L^2$** and 1-hydroxy-2-(4-nitrophenyl)ethan-1,1-diyl-bis(phosphonic) acid (**H_4L^3**).

The experimental results show that compounds **$Na_2H_2L^1$** and **$Na_2H_2L^2$** have the ability to solubilize titanium dioxide into solution - for this reason there is no possibility to use UV-Vis spectroscopy to evaluate their sorption. In the case of **H_4L^3** there are no solubilizing properties. The compound interacts intensively with titanium dioxide surface and forms monomolecular layer.

Keywords: Bis(phosphonates), sorption, titanium dioxide.