A COMPLEX SURFACE FORMATION MODEL ON CHITOSAN ADSORPTION TO METALS

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The aim of the first year research is: to predict a complex surface formation between chitosan and metal ions. This prediction is according to the plot adsorptive capacity and the bonding tendency between chitosan and some metals. Chitosan as adsorbent isolated from Green Crab's shell. Metal ions used in this research are Cr(III), Cu(II), Ni(II), Zn(II), Fe(II) and Pb(II).

The subject of this research is green crab's shell (*Scylla serata*) and the object is the adsorptive capacity chitosan to some metal ions. Chitosan was prepared in three steps: deproteination, demineralization and deacetylation. This chitosan are impurities by 20 %-30%kitin. The adsorption experiment was carried out at room temperature for 24 hours. A half gram of chitosan was added into 50 mL of various metals solution at pH system 5. This experiment was performed in two methods. An each ion metal was adsorbed by chitosan and some metal ions i.e: Cr(III), Cu(II), and Ni(II) (1:1:1) were adsorbed simultaneous. Chitosan was characterized by FTIR. Metal ions concentration before and after adsorption was measured by by AAS. Adsorptive capacity is defined as differences of metal ion concentration due to the adsorption per gram chitosan. Then the obtained data was plotted through Langmuir isotherm and Freundlich isotherm equations.

The result of this work concludes that adsorptive capacity of chitosan in order for some metals ion are Cr(III) > Fe(II)> pb(II) = Zn(II)> Ni(II) = Cu(II). The interaction chitosan with metal ions is indicated complex surface formation by $-NH_2$ groups or $-OH$ groups. A multilayer are formatted by active site chitosan and metal ion interactions, but the interaction of chitosan to copper(II) is prefer a monolayer formation.

Key words: chitosan, adsorption, multilay