

Characterization of Extracted Chitin Upon Adsorption of Ferrous Ions

Mark Tristan Quimque^{a*} and Grace Angelie Dal^a

^a Mindanao State University-Iligan Institute of Technology, Iligan, Philippines

*E-mail: mtjquimque@gmail.com

ABSTRACT

In this study, the possibility of chitin as an organic adsorbent of iron is preliminarily studied by understanding the adsorption process of iron on chitin, particularly focusing on the physical characterization of the extracted chitin and the chitin-Fe²⁺ complex obtained through adsorption. Chitin was extracted from crab shells using a conventional chemical method, which yielded 8.21% chitin.

In the FT-IR analysis, the spectrum of the extracted chitin showed an obvious split in the amide I band which proves that it is in the alpha form. The spectrum of the 'complexed' chitin, as compared to that of the 'free' chitin, showed attenuation of the O-H and N-H stretching bands which attributes to the probability that the attachment of the ferrous ions is in these functional groups. The SEM analysis of the 'free' chitin showed a hairy and fibrillous morphology. However, upon complexing with the metal ion, its morphology has become more compressed, swollen and aggregated. The zero-point charge of the extracted chitin, determined through pH-draft method, was estimated at pH 4.6.

KEYWORDS: extracted chitin; ferrous ion adsorption; FT-IR and SEM characterization; zero-point charge