

## Adsorption of Cu (II) ions from aqueous solution using pyridine-2,6-Dicarboxylic acid cross-linked chitosan as a green biopolymer adsorbent.

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In this study, Cross linked Chitosan (CCS) has been synthesized by anchoring a bi-functional Ligand, namely Pyridine-2,6-Dicarboxylic acid (PDC) with chitosan through ion exchange. The functionalized biopolymer was characterized by elemental analysis (CHN), spectral (UV visible, FTIR and solid state  $^{13}\text{C}$  NMR), thermal (TGA and DSC), structural (powder XRD), surface and morphological (BET and SEM) analyses. The PDC-CCS was employed to adsorb Cu(II) ion from aqueous solutions. The influences of various operating parameters such as PH, temperature, initial concentration of Cu (II) ion and contact time on the adsorption capacity of PDC-CCS have been investigated. The results showed that the maximum adsorption capacity of PDC-CCS for Cu (II) ion was  $2185.64 \text{ mmol g}^{-1}$  and that the adsorption capacity rapidly reached equilibrium within 60 min and strongly depends on PH and temperature. Langmuir and Freundlich adsorption models have been applied to describe the equilibrium data. It was shown that the PDC-CCS had given good correlation with both isotherm models and the adsorption kinetics of Cu (II) ion could be best described by the pseudo-second-order kinetic model.

**Biography:** Ibraheem Olayiwola Bisiriyu is an NRF-TWAS Doctoral fellow at the Department of Chemistry, University of Johannesburg, South Africa. He holds a B.Sc. in Chemistry and M.Sc. in Inorganic Chemistry with first class and distinction respectively. Also, he possesses professional qualification in Management, Health, Safety and Environment (HSE Level II). He has worked as a Chemistry tutor/Laboratory Demonstrator

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