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RESEARCH HIGHLIGHTS

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KNF-CHT-ALG BEADS FOR THE ADSORPTION OF PB (II) IONS IN WASTEWATER

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Water is constantly traveling on a never-ending journey and this is referred to the water cycle. The water cycle has no starting point and the only choice for humans is to preserve clean water on earth for future generation. Let's do our part. Take everyday actions to reduce contamination from the usage of pesticides and chemicals products that can seep into the soil, the surface and groundwater. Reduce food waste, dispose of medications properly, join in a river clean-up and the most importantly, educate our child.

We would like to improve knowledge sharing related to water pollution control. Excessive toxic metals in wastewater can affect human, animals and the environment. Adsorption method is known to be flexible in the operation and design process. Kenaf is a crop found in abundance in Malaysia, and I am sure in many other hot-climate countries too.

Previous researcher has found that the chitosan/kenaf fibres as a good adsorbent for metal ions due to high functional groups. However, it has a swelling effect under acidic conditions that limits the metal ion uptake. To overcome the weakness, our team propose Kenaf Beads which contain chitosan and sodium alginate. The alginate is a biological polysaccharide and as the cross-linking agent that enhanced the hydrophobicity of chitosan.

In the present study, KNF-CHT-ALG bead showed highest Pb (II) ions removal. This is believed to be due to the availability of higher surface roughness and larger pores as examined in the FESEM analysis. Meanwhile, FTIR spectra has confirmed the existence of extra functional groups in KNF-CHT-ALG which promoting more Pb (II) ions to bind. For the regeneration study, after five times of the recycling process, the KNF-CHT-ALG beads still showed good adsorption towards Pb(II) ions with maximum removal of 95% and regeneration of 98%. The prime important is, the main part of the adsorbent which is KNF core is known to be a zero cost and abundantly available waste products that could serve as a practical means for Pb (II) ions adsorption.

Thus, we welcome you to collaborate with us to explore more significant outcomes of the kenaf beads on other metal types. The aim focus on minimising the dependency on chemical adsorbents and increasing the adsorption of heavy metals in wastewater. The water we've today is the water we've got yesterday and thus, we all share the responsibility for conserving our earth.

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