DIGEST

Volume 1, 2024

RESEARCH & INNOVATION
COLLEGE OF ENGINEERING

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NaOH-modified *Leucaena Leucocephala* Pods To Remove Pb (II) From Water

Lead (Pb) is a highly toxic and hazardous heavy metal that can be present in significant concentrations in contaminated water. Adsorbent from agricultural by-products is generally considered an effective, relatively inexpensive and eco-friendly treatment technique. Modification has shown great promise in improving the adsorption capacity and pore development of adsorbents. This research investigated the potential of Leucaena leucocephala pods, an agricultural by-product, as an adsorbent for capturing lead (Pb) ions from aqueous solutions. The pods were modified with NaOH, and new chemically modified Leucaena leucocephala pods for sequestration of Pb(II) from an aqueous solution were obtained. Subsequently, the study aimed to determine the optimal conditions for effectively removing Pb (II) ions from synthetic aqueous solutions by analyzing the impact of adsorbent dosage, solution pH, and contact time. The experimental results revealed that the optimum adsorbent dosage was 0.04 g, resulting in a remarkable percentage removal of 99.12%.

Similarly, a pH of 5 exhibited excellent performance, achieving a percentage removal of 98.61%. The contact time was fixed at 80 minutes, while the concentration of Pb (II) solution was maintained at 50 mg/L with a volume of 25 ml. These findings strongly indicate that modified Leucaena leucocephala is an efficient bio-sorbent for removing Pb (II), offering promising potential to mitigate toxic metal pollution in tropical aquatic ecosystems.

eISSN 2805-573X