
Lead removal by using carbon nanotubes

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Abstract: Exposure to lead (Pb) can cause anemia, diseases of the liver and kidneys, brain damage and ultimately death. For these reasons, heavy metals must be removed as much as possible from water. The removal of Pb (II) ions from aqueous solution using carbon nanotubes (CNT) as the adsorbent was investigated. The effects of pH were studied at 25°C. Batch mode adsorption study has revealed that the removal of Pb (II) ions was maximum (85% removal) at pH 5 and achieved 83% removal at 40 mg/L of CNTs. The adsorption continuously increased in the pH range of 3–5, beyond which the adsorption could not be carried out due to the precipitation of metal. This study was also supported by characterisation of CNTs using FESEM. The characterisation suggested that at acidic condition (pH 5), the surfaces of CNTs are more aligned and well-integrated compared to CNTs at different pHs. Finally, it can be concluded that CNTs could be a potential adsorbent for the removal of Pb from wastewater.

Keywords: carbon nanotubes; CNT; lead; pH; water treatment.

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