

Remediation of Hexavalent Chromium Ions from Aqueous Medium By Adsorption On Polypyrrole-Mix Metal (Fe-Mn-Zn) Oxide Nanocomposite

DR. SURBHI SANKHLA

Lachoo Memorial College of Science and Technology

Presenting Author: sankhlasurbhi93@gmail.com

All Hexavalent chromium compounds are carcinogenic. Exposure to hexavalent chromium causes various ill effects on respiratory tract such as septum perforations and ulcerations, bronchitis, decreased pulmonary function, and pneumonia, also causes effects on liver, kidney and immune system.

The present work aim to determine the feasibility of removing chromium ions from the aqueous solution using polypyrrole-mixed (Fe-Mn-Zn) oxide nanocomposite as an adsorbent. Adsorption is considered as one of the most excellent method for the removal of heavy metal ions. A batch adsorption study was conducted to find out the impact related to numerous parameters like pH, contact period, adsorbent dosage, and the concentration of preliminary metal Cr(VI) ions. The results indicate that at pH 3, adsorbent dosage of 0.02g, contact time of 40 min, and initial metal ion concentration of 0.08 mg/L favoured the adsorption. The study shows that synthesized adsorbent can remove Cr(VI) ions with adsorption efficiency of 88.25% and equilibrium data fits both langmuir and Freundlich adsorption isotherm but shows better regression value for the langmuir adsorption isotherm. The nanocomposite synthesized were characterized using FTIR, ICP-MS, FESEM and EDAX analysis to check the removal efficiency of Cr(VI) ion before and after adsorption. All analyses confirmed the adsorption of Cr(VI) ions on the adsorbent.