

**O 19. CR(VI) REMOVAL FROM SYNTHETIC WASTEWATERS USING ALMOND SHELL CHARCOAL (AS400) AND CHITOSAN-COATED ALMOND SHELL CHARCOAL CROSS-LINKED WITH GLUTARALDEHYDE**

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**ABSTRACT:** In this study, biocharcoal produced by pyrolysis of almond shell at 400 °C (AS400) and chitosan-coated, cross-linked with glutaraldehyde almond shell biocharcoal prepared from this bioadsorbent (CAS400) have been used as potential bioadsorbents for the removal of Cr(VI) from aqueous solutions with batch experiments. Composite beads were prepared with chitosan and AS400 to improve the separation performance (CAS400). The results of Cr (VI) removal performance of adsorbents are compared. Batch adsorption experiments were carried out as a function of initial Cr (VI) concentration, contact time, bioadsorbent concentration, and initial pH of solution. The contact time for Cr (VI) adsorption with AS400 and CAS400 was 120 minutes. The maximum Cr (VI) removal was achieved at an initial pH of 2.03 for both adsorbents. Optimum adsorbent doses for Cr (VI) removal were found to be 0.015 and 0.05 g for AS400 and CAS400, respectively. Maximum Cr (VI) removal under optimum conditions is 95-100%. CAS400 bead bioadsorbent has been shown to be able to remove Cr (VI) better than AS400 bioadsorbent. The adsorption capacity of Cr (VI) of CAS400 bead bioadsorbent was found to be higher than that of raw almond shell charcoal (AS400). This is due to the increased adsorption sites on the surface of the adsorbent for Cr (VI) adsorption by coating the biochar with chitosan and cross-linking with glutaraldehyde. Langmuir, Freundlich and D-R models were used for adsorption isotherms and the Langmuir model well defined for the adsorption data.

*Keywords: biocharcoal, composite, Cr (VI), chitosan, adsorption, isotherm*