

Studies on Surface Modification of Activated Carbon for Enhanced Caesium Removal

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Abstract—Radioactive caesium (^{137}Cs) has unavoidably turned into a human concern because of introduction from nuclear plants and nuclear accidental discharges. Numerous endeavours have been centered on evacuating caesium and the remediation of the contaminated environment. Out of the several techniques adsorption is the most preferred one. It is cost effective and easy to carry out process. Activated carbon is a family of microporous materials used in a myriad of commercial applications as adsorbents for the removal of gaseous and liquid pollutants as well as many other applications. The adsorption phenomenon of Activated carbon results from its large microporous surface area. This large surface area relative to the size of the actual carbon particle makes it easy to remove large amounts of impurities in a relatively small enclosed space. In the carbon matrix of Activated carbon, oxygen is the predominant heteroatom present in the form of functional group. The unique adsorption properties of Activated carbon can be significantly influenced by these functional groups. From the study of all the parameters like effect of dosage, contact time and concentration; it was observed that the modified spherical Activated carbon has highest adsorption percentage for caesium. The maximum adsorption results for modified spherical Activated carbon, Activated carbon are 50% and 35 % and for unmodified it is 35 % and 28 % respectively.