



## Review

## An overview of the modification methods of activated carbon for its water treatment applications

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## HIGHLIGHTS

- ▶ Various modification methods of activated carbon (AC) have been reviewed.
- ▶ Application of modified carbons in water treatment has been reviewed.
- ▶ Comparison of virgin and modified AC in pollutants removal has been discussed.
- ▶ Future perspectives in this direction have been proposed.

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## ABSTRACT

Activated carbon has been recognized as one of the oldest and widely used adsorbent for the water and wastewater treatment for removing organic and inorganic pollutants. The application of activated carbon in adsorption process is mainly depends on the surface chemistry and pore structure of porous carbons. The method of activation and the nature of precursor used greatly influences surface functional groups and pore structure of the activated carbon. Therefore, the main focus of researchers is to develop or modifies the activation/treatment techniques in an optimal manner using appropriate precursors for specific pollutants. In recent years, emphasis is given to prepare the surface modified carbons using different procedures to enhance the potential of activated carbon for specific contaminants. Various methods such as, acid treatment, base treatment, impregnation treatment, ozone treatment, surfactant treatment, plasma treatment and microwave treatment have been studied to develop surface modified activated carbons. In this paper, these modification methods have been reviewed and the potential of surface modified activated carbons towards water treatment has been discussed. This review article is aimed at providing precise information on efforts made by various researchers in the field of surface modification of activated carbon for water pollution control.

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