

## عنوان مقاله:

Application of Electron Beam/MnII Process for Humic Acid Removal from Aqueous Solutions

## محل انتشار:

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## خلاصه مقاله:

**Introduction:** Natural organic matters (NOMs) existing in water resources led to various problems such as formation of disinfectant by-products (DBPs). Humic matters like humic acid (HA) are component of NOMs that should be removed from water. Advanced oxidation process (AOPs) is one of the NOMs removal methods. The aim of this study was to survey the degradation of humic acid by electron beam irradiation/Mn II ion from aqueous solutions. **Materials & Methods:** This experimental study was performed in laboratory batch study. In this study, effect of pH (۴ to ۱۰), different doses of electron beam radiation (۱ to ۱۵ kGy), initial concentration of manganese ions (۰.۱ to ۰.۴ mg/l) and the initial concentration of humic acid (۱۰ to ۵۰ mg/l) in degradation of humic acid were investigated. Electron irradiation was performed using an electron accelerator model TTY۰۰ (IBM company, Belgium). Residual concentrations of humic acid in the samples were determined by spectrophotometer UV/Visible (Optima SP-۳۰۰۰ Plus model, Japan) at wavelength of ۲۵۴ nm. **Results:** According to results, pH changes had no effect on removal efficiency of humic acid. Results showed that increase of absorbed dose led to increase of removal efficiency. With increase of MnII ion concentration to ۰.۲ mg/l, removal efficiency was increased but in higher concentrations, removal efficiency decreased. So that in concentration of ۰.۲ mg/l and ۰.۴ mg/l of MnII ions, removal efficiencies were equal to ۶۵.۸۳% and ۵۰.۲۶%, respectively. Survey on the experimental data showed that degradation of humic acid by e-beam irradiation in presence of MnII ions follows second-order kinetic. **Conclusion:** The results of this research showed that electron beam irradiation coupled MnII ions is an effective method for removal of humic acid from aqueous solutions.

## کلمات کلیدی:

Degradation, Humic acid, Electron beam irradiation, MnII ion, Water treatment

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