

The Role of Peroxyl Radicals in the Fenton Reaction

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ABSTRACT

It is generally accepted that Fenton reactions involving organic substrates in oxygenated systems produce the respective substrate radicals $\cdot R$. In the presence of dioxygen, the substrate radicals $\cdot R$ are generally converted rapidly into peroxy radicals, $\cdot OOR$, so that these radicals are the main reactive species in aerated aqueous systems under the majority of conditions. It is argued that the reactions of the peroxy radicals with the transition metal complexes present in the solution are the key steps in determining the nature of the products and their yields. Thus for example in Fenton reactions driven by Fe(II) the yield of Fe(III) depends on the nature of the peroxide and the nature of all the organic compounds present in the solution.