

## Iron removal from aqueous solution by oxidation, precipitation and ultrafiltration

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### ABSTRACT

In the present work, the kinetics of the oxidation and precipitation of iron in presence of sulphate and ethylenediamine tetraacetic acid (EDTA) ions during ultrafiltration process was studied. The presence of these ions delayed significantly the kinetics of oxidation—precipitation by the formation of iron–sulphate or more stable iron–EDTA complexes. This increased the solubility of iron during ultrafiltration process. A mechanism was elaborated to explain the complexation of these ions with iron. The ultrafiltration permitted to separate the iron colloids but not the iron complexes with sizes lower than the diameter of the membrane pores. The ultrafiltration of solutions containing iron requires a regular and efficient cleaning process to avoid the membrane plugging.

*Keywords:* Iron; Oxidation; Ultrafiltration; Sulphate; EDTA

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