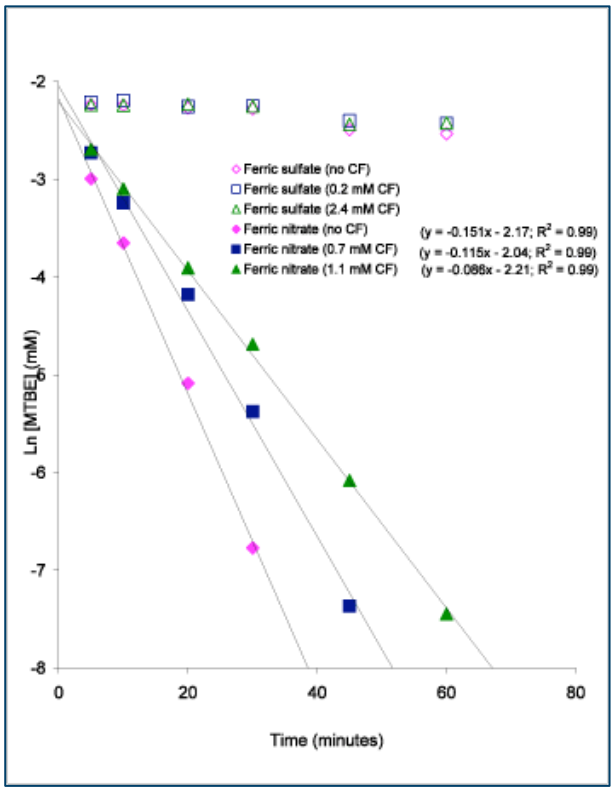
Fenton Oxidation – Fundamentals, Optimization and Applications

Project Overview/Results

Fenton-driven oxidation research is underway to investigate and manipulate environmental conditions to minimize undesirable reactions contributing to process inefficiency and to facilitate favorable transformation reactions. This information is needed to improve and optimize in situ Fenton oxidation and to develop new techniques that enhance Fenton oxidation.

This project includes:

- The investigation of fundamental mechanisms involved in oxidation and reduction transformations
- An assessment of contaminant volatilization during Fenton oxidation
- Contaminant mass balances
- Identification of reaction intermediates and important initiation and termination reactions
- An assessment of the role of pH, iron, hydrogen peroxide and contaminant-specific oxidation reactions



Chloroform-amended, Fenton-driven oxidation of MTBE in ferric nitrate and ferric sulfate-amended treatment systems. H2O2=6 millimolars (mM); MTBE=0.11 mM; Fe=5 mM; pH=3.0–3.1