

Faculty of Science

Department: Chemistry

Name: Ahmad Borhan El Din Zaki

Title: Novel mechanistic aspects on the reaction between low spin Fe(II) Schiff base amino acid complexes and hydrogen peroxide-Spectrophotometric tracer of intraperoxo intermediate catalyzed reaction.

Authors: Aida M. Awad, Ali Mohamad Shaker, Ahmad Borhan El Din Zaki & Lobna Abdel-Mohsen Ebaid Nassr.

Published In: Spectrochimica Acta part ,A 71 (2008) 921-928

Impact Factor:1.511

Abstract:

The kinetics and mechanism of the reaction of hydrogen peroxide with some Fe(II) Schiff base complexes were investigated spectrophotometrically in aqueous solution of pH 8 and 35 °C under pseudo-first-order conditions. The used ligands were derived from salicylaldehyde or o-hydroxynaphthaldehyde and some amino acids (L-leucine, L-iso-leucine, L-serine, L-methionine and DL-tryptophan). It was found that the formation of the purple intraperoxo complex appears only above pH 7.5. The reaction consists of two steps. The first step involves reversible formation of the intraperoxo intermediate which renders irreversible at pH 8. The second step consists of inner-sphere electron transfer. The suggested scheme illustrated first-order kinetics at low {H₂O₂} and zero-order at high {H₂O₂}. Moreover, the activation parameters of the reaction were evaluated. Moreover, the activation parameters of the reaction were evaluated.