## Kinetic Studies on the Oxidation of Substituted Phenols in Wastewater by Hydrogen Peroxide Activated by Polyoxometalates Catalysts.

A thesis submitted to the College of Graduate Studies, Sudan University of Science and Technology on candidature for the degree of

### **DOCTOR OF PHYLOSOPHY**

BY

### MARWAN ABDALLA DIAB HAMADNEH

B.Sc. (Chemistry), M.Sc. (Physical Chemistry)

#### Supervised by:

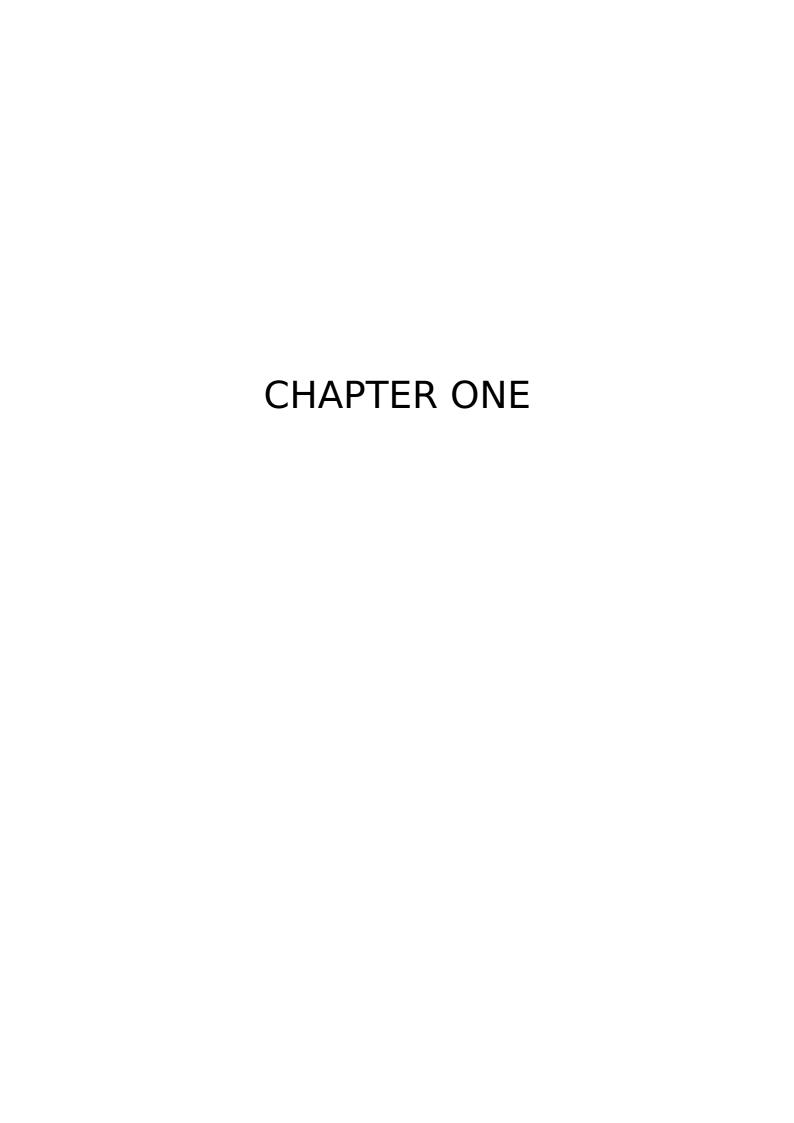
Dr. Mohammed Adam Abbo Hussein

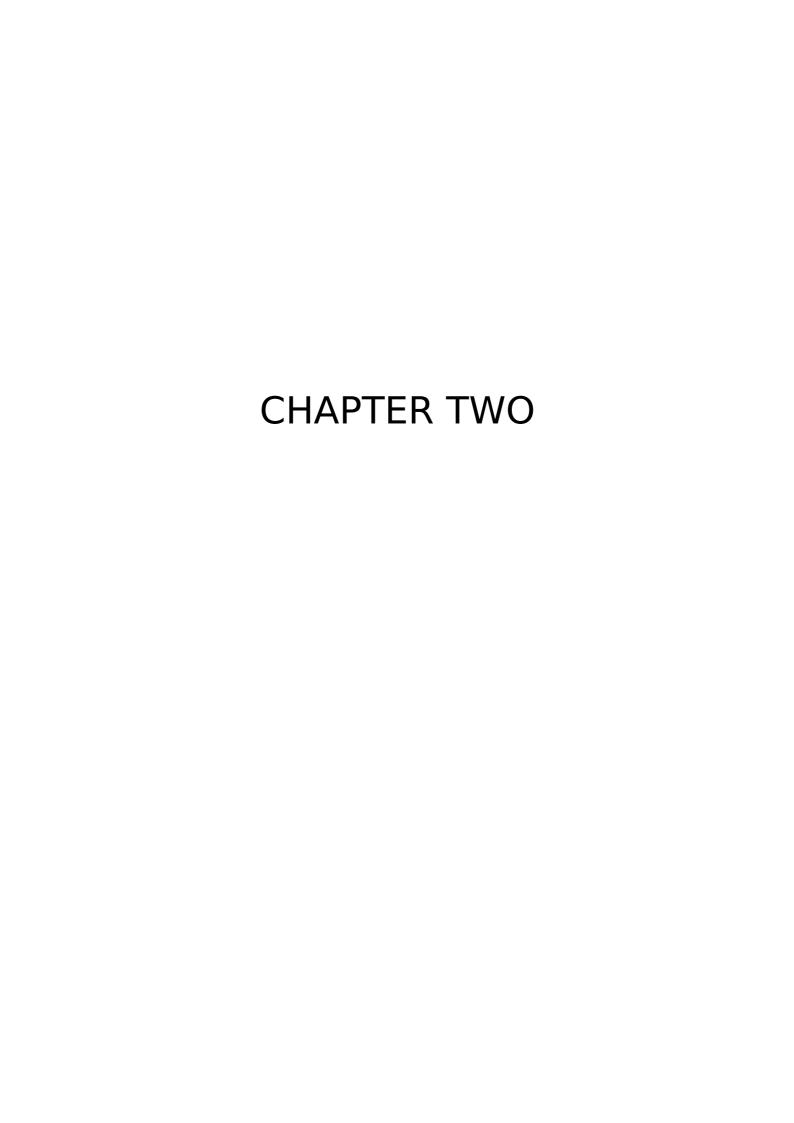
Associate Professor, Sudan University of science and Technology

Dr. Elfatih Ahmed Hassan

Assistant Professor, Sudan University of Science and Technology

February 2004





# **CHAPTER THREE**

# CHAPTER FOUR

**CHAPTER FIVE**