

**Sudan University of Science and Technology**  
**College of Graduate Studies**



**Methods for the Improvement of Physicochemical Parameters  
of Petrodiesel and *Jatropha curcas L* Biodiesel Using Eco-  
friendly Materials and Gamma Radiation**

**طرق لتحسين المؤشرات الفيزيوكيميائية للديزل الاحفوري وديزل الجاتروفا  
الحيوي باستخدام مواد صديقة للبيئة وأشعة جاما**

**A Thesis Submitted To The College of Graduate Studies In Fulfillment of the  
requirement for the Degree of Doctor of Philosophy in Chemistry.**

**Submitted By**

**Mohamed Ezeldin Abdalla Osman**

**B.Sc. (Honours), M.Sc. Chem.**

**Supervisor**

**Professor. Christina Yacoub Ishak**

**University of Khartoum**

**Co-Supervisor**

**Dr. Elfatih Ahmed Hassan**

**Sudan University of Science**

**and Technology**