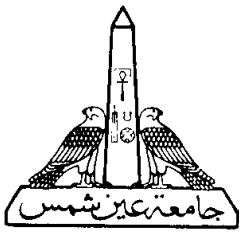

Ain Shams University
Faculty of Science

SYNTHESIS OF HYBRID ORGANIC – INORGANIC MATERIALS FOR POLLUTED GROUNDWATER TREATMENT SAN EL HAGER EAST DELTA EGYPT

Thesis submitted by

FATMA MOHAMED EL-SAYED
(B.Sc. Chemistry& physics, 2007)

For the Partial Fulfillment of the Requirements
of the Master's Degree in Science
(Inorganic Chemistry)

To
DEPARTMENT OF CHEMISTRY
FACULTY OF SCIENCE
AIN-SHAMS UNIVERSITY

2018

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Approval Sheet for Submission

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Abbreviations

Abbreviations	Meaning
BOD	biochemical Oxygen Demand
CuO	Copper Oxide
CB	Conduction Band
COD	Chemical Oxygen Demand
CAI	Chloro-alkaline indices
DRC	Desert Research Center
DO	Dissolved Oxygen
EC	Electrical Conductivity.
ES	Effective salinity
Ebg	Energy band gap
ΔE_g	Energy interval
e^-	Electron
FTIR	Fourier Transform Infra Red
GPS	Global Positioning System
H_2	Hydrogen
h^+	Holes
hυ	Photon energy
ICP	Inductive Coupled Plasma.
MB	Methylene blue
meq/l	Milli Equivalent Per Liter.
NM	Nanomateriales
$OH^·$	Hydroxyl radical
O_2	Oxygen
ppm	Part Per Million

Abbreviations

Abbreviations	Meaning
RSC	Residual Sodium Carbonate
SAR	Sodium Adsorption Ratio
SEM	Scanning Electron Microscopy
TDS	Total dissolved salts
TH	Total hardness
TiO_2	Titanium dioxide
TOC	Total organic carbon
UV	Ultra violet
VB	Valence band
WHO	World Health Organization
XRD	X-ray diffraction

ABSTRACT

Fatma Mohamed Elsayed.Synthesis of hybrid organic – inorganic materials for polluted groundwater treatment San El- Hager – East Delta – EgyptUnpublished MS.C.thesis, Chemistry Department, Faculty ofScience, Ain Shams University, 2018.

The present study deals with the hydrogeochemistry of San El-Hager which is a part of East Delta, Egypt. It is located between longitudes of 31° 49’ to 31° 58’ E and latitudes of 30° 50’ to 31° 30’ N. Throughout the area of consideration the main ground water aquifer is quaternary aquifer, which represented by 10 groundwater samples. Also, the surface water (10 samples) represented the canal and drain is second water resources in this area.The majority of water (groundwater, surface water) samples (50 %) are related to brackish, 40 % is saline to extremely saline and only 10 % is fresh water types. The chemical water type of all of samples is chloride – sodium, except one sample No (9) is sodium- sulfate. According to the total dissolved solid, all water samples (ground, surface water) are unsuitable for human drinking except one sample (No 20, canal) has 829.62 mg/L.According to chemical oxygen demand (COD) , biochemical oxygen demand (BOD) and total organic carbon (TOC), all samples (ground and surface waters) have more than the acceptable level of pollution of COD,TOC. The area suffers from high polluted water and shortage of water resources. So, Nano- materiales titanium dioxide nanoparticle and copper oxide nanoparticle were prepared