



Ain Shams University
Faculty of Science
Department of Chemistry

Using some nitrogenous compounds to prepare some natural coagulants to be used in water treatment

**A Thesis Submitted for the Degree of Doctor of
philosophy in Chemistry**

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LIST OF ABBREVIATIONS

EPA	Environmental Protection Agency
NOM	Natural organic matter
COD	Chemical Oxygen Demand
PAM	Polyacrylamide
PEI	Polyethyleneimine
PDADMAC	Polydiallyldimethyl ammonium chloride
ECH/DMA	Epichlorohydrin/Dimethylamine polymers
CPAMs	Cationic Polyacrylamides
APAMs	Anionic polyacrylamides
PAMs	Polyacrylamides
AFEX	Ammonia fiber expansion
CMC	Carboxymethyl cellulose
QCs	Quaternized cellulose derivatives
DMF	Dimethylformamide
FTIR	Fourier-transform infrared spectroscopy
NTU	Nephelometry turbidity Unit
TOC	Total organic carbon
TDS	Total dissolved solid
ICP-OES	Inductively Coupled Plasma-Optical Emission Spectrometry
EDX	Energy dispersive x-ray
¹ HNMR	Proton nuclear magnetic resonance
TC	Total carbon
IC	Inorganic carbon
MCL	Maximum contaminant level