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PREPARATIONS AND APPLICATIONS OF SOME
FRIENDLY ENVIRONMENTAL COMPOUNDS

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ABSTRACT

Preparations and Applications of Some Friendly Environmental Compounds.

Egyptian Petroleum Research Institute(EPRI)

Hydrogels are hydrophilic polymers networks which characterized by hydrophilicity and insolubility in water. Chitin and chitosan are known as biodegradable renewable source of natural polymers based on polysaccharides. In the present work chitin was prepared by treatment of the shells [from waste materials of the sea food such crustaceans as shrimp], with 5-6% hydrochloric acid. The product chitin was treated with 40% boiling aqueous solutions of sodium hydroxide , at 135 oC, for 120 min. & 210 min. to obtain different degrees of deacetylation of chitin(chitosan). Different types of synthetic hydrogels were prepared from synthetic polymers such as PAAm using the glutaraldehyde as crosslinker. The [PAAm, PVA and glutaraldehyde] copolymers crosslinked hydrogels [PAAm, PEG, glut.] copolymers crosslinked hydrogels and [PAAm, PVA and PEG and glut.] copolymers crosslinked hydrogels. These are different copolymers hydrogels of PAAm which prepared. The natural hydrogels and semi synthetic hydrogels were prepared by copolymers crosslinked chitosan with glut., [PVA +glut.], [PEG +glut.], [starch+glut.], [PVA +PEG +glut.] and [PVA+starch+glut.]. Also the synthetic hydrogels were prepared of polyurethanes which based on different M.WT., of polyol(PEG) by using different ratios of NCO/OH of MDI. The physical and mechanical properties measurements of produced gel films were carried out. The chitin and chitosan prepared were subjected to the Elemental analysis and FTIR Spectroscopy analysis to study their M. wt., and deacetylation

of degrees of deacetylated chitin (chitosan) at 120 & 210 min in boiling NaOH. The chitosan film, chitin and selected samples which were chosen, all they are investigated their thermal stability by TGA analysis and to SEM to investigate their surface morphology. The different formulations of chitosan gels of previous prepared hydrogels, were applied as coating to fertilizer and study the releasing measurements to obtain the best compositions.

Contents

	Page
Contents-----	i
List of Tables-----	iv
List of Figures-----	vi
Abbreviations-----	x
Chapter I : introduction	
i.a. MACROMOLECULES-----	1
I.A.1.Hydrogels-----	1
I.B. HISTORICAL DEVELOPMENT-----	4
I.C. TYPES OF HYDROGELS-----	6
I.C.1. Hydrogels Based on Chemical Compositions-----	6
I.C.1.1. Hydrogels Based Methacrylic and Acrylic Esters-----	7
I.C.1.2.Acrylamide Hydrogels-----	7
I.C.1.3. Hydrogels Based on N-vinyl-2-pyrrolidinone-----	7
I.C.2. Hydrogels Based on their Charges-----	8
I.C.3.Hydrogels Based on the Methods of their Preparations--	8
I.C.4.Hydrogels Based on the Physical Structural Features of The System-----	8
I.D.POLYMERIZATION AND PROCESSING-----	9
I.E.CROSSLINKING PROCESS-----	11
I.E.1.Chemically Crosslinking Gels-----	13
I.E.2. Physically Crosslinked Gels-----	14
I.F. PROPERTIES-----	14
I.F.1. Mechanical Properties-----	14
I.F.1.1.Equilibrium Deformation Behavior-----	14
I.F.1.2.Ultimate Properties-----	15
I.F.1.2.1.Tensile strength and elongation-----	15
I.F.2. Physical Properties-----	16
I.F.2.1.Swelling Properties-----	16
I.F.2.2. Permeation and Diffusion-----	18
I.F.3. Optical Properties-----	18
I.G. OCCURRENCE of HYDROGELS-----	19
I.G.1. Natural Hydrogels-----	19
I.G.1.1.Chitosan-----	20
I.G.1.2.Chitin-----	20

I.G.2. Semi-Synthetic Hydrogels-----	22
I.G.3. Synthetic Hydrogels-----	23
I.G.3.1. Polyvinyl Alcohol-----	23
I.G.3.2. Polyacrylamide-----	24
I.G.3.3. Polyethylene Glycol-----	26
I.G.3.4. Polyurethanes-----	27
I.H. APPLICATIONS of HYDROGELS-----	28
I.H.1. Medical and Pharmaceutical Applications-----	28
I.H.1.1. Contact Lenses Hydrogels-----	29
I.H.1.2. Wound Dressing Hydrogels-----	29
I.H.1.3. Hydrogels for Tissue Engineering -----	31
I.H.1.4. Hydrogels for Controlled Release-----	32
I.H.2. Agricultural Applications-----	33
I.H.2.1. Hydrogels as a Water-Delivery System-----	34
I.I. Microgels-----	36
I.J. FRIENDLY ENVIRONMENTAL HYDROGELS---	37
AIM OF THE WORK-----	44
CHAPTER II: EXPERIMENTAL	
II.A. MATERIALS-----	45
II.B. PREPARATIONS-----	46
II.B.1. Chitin Preparation-----	46
II.B.2. Chitosan Preparation-----	47
II.B.3. Preparation of Polyvinyl Alcohol-----	48
II.C. HYDROGELS PREPARATIONS-----	48
II.C.1. Preparation of Synthetic Polymers Gels-----	48
II.C.1.1. Preparation of Polyacrylamide(PAAm) Hydrogels-----	48
II.C.2. Preparation of Natural Polymer Gels-----	49
II.C.2.1. Preparation of Chitosan Hydrogels -----	49
II.C.3. Preparation of Semi -Synthetic Polymer gels -----	49
II.C.3.1. Preparation of Chitosan Copolymers Hydrogels-- --	49
II.C.4. Preparation of Polyurethanes Hydrogels-----	50
II.C.5. Dumbbell Shape Preparation-----	51
II.D. PHYSICAL AND MECHANICAL PROPERTIES MEASUREMENTS -----	57
II.D.1. Degree of Swelling-----	57
II.D.2. Tensile Properties-----	57
II.D.3. FTIR Spectroscopy-----	58
II.D.4. Scanning Electron Microscope(SEM)-----	58

II.D.5. Thermal Properties-----	58
II.D.6. Elemental Analysis-----	58
II.E. APPLICATIONS IN AGRICULTURE -----	59
II.E.1. Irrigation Process Stimulation In The Presence of Different Hydrogels Types -----	59
II.E.1.1. Determination of potassium nitrates concentrations during irrigation process-----	59
II.E.2. Irrigation Process Properties Measurements-----	60
II.E.2.1. Spectrophotometer Analysis-----	60
III. RESULTS AND DISCUSSIONS	
III.A. SYNTHETIC HYDROGELS-----	79
III.A.1. Polyacrylamide Crosslinked Hydrogels-----	79
II.B. NATURAL Hydrogels -----	85
II.B.1. Chitosan Crosslinked Hydrogels-----	85
II.C. SEMI - SYNTHETIC HYDROGELS-----	88
II.C .1. Chitosan Copolymers Crosslinked Hydrogels -----	89
II.D. Polyurethanes Hydrogels-----	126
III.E. Agricultural Applications-----	146
III.E.1. Effect of Hydrogels on Irrigation Process -----	147
III.E.1.1. Applications of Chitosan Hydrogels in Agriculture-----	147
CONCLUSIONS-----	153
SUMMERY-----	155
REFERENCES-----	168
ARABIC SUMMERY-----	

LIST OF TABLES

Tables	Page
Table 1: The samples formulations of synthetic hydrogels-----	52
Table 2: The samples formulations of natural hydrogels-----	53
Table 3: The samples formulations of semi-synthetic hydrogels-----	54
Table 4: The samples formulations of PEG with different ratios (NCO/OH) of MDI-----	55
Table 5 : Chemical analysis of rubber used in the mould manufacture-----	56
Table 6 : The characteristics of chitin and chitosan-----	67
Table 7-a: The results of elemental analysis for chitin-----	69
Table 7-b: The results of elemental analysis for chitosan-----	69
Table 8 : The properties of (PAAm +glut.) crosslinked hydrogels-----	83
Table 9 : The properties of (PAAm+PVA +glut.) copolymers crosslinked hydrogels-----	83
Table 10 : The properties of (PAAm+PEG +glut.) copolymers crosslinked hydrogels-----	84
Table 11 : The properties of (PAAm+PVA+PEG +glut.) copolymers crosslinked hydrogels-----	84
Table 12 : The properties of (chitosan +glut.) crosslinked hydrogels-----	87
Table 13 : The properties of (chitosan+starch +glut.) copolymers crosslinked hydrogels-----	87
Table 14 : The properties of (chitosan +PVA+glut.) copolymers crosslinked hydrogels-----	90
Table 15 : The properties of (chitosan+PEG +glut.) copolymers crosslinked hydrogels-----	92
Table 16 : The properties of (chitosan+PVA+PEG +glut.) copolymers crosslinked hydrogels-----	93
Table 17 : The properties of (chitosan+PVA+starch+glut.) copolymers crosslinked hydrogels-----	93
Table 18 : The properties of different formulations of polyacrylamides crosslinked hydrogels-----	97

Table 19 :The properties of different formulations of chitosan crosslinked hydrogels-----	98
Table 20 :The properties of polyurethanes hydrogels based on PEG , 1500-----	129
Table 21 :The properties of polyurethanes hydrogels based on PEG ,4000-----	129
Table 22 :The properties of polyurethanes hydrogels based on PEG , 6000-----	130
Table 23 :The properties of polyurethanes hydrogels based on PEG , 8000-----	131
Table 24 :The properties of polyurethanes hydrogels based on Different M.wt. of PEG -----	134
Table 25 :The results of releasing measurements for fertilizers with different compositions-----	149

LIST OF FIGURES

Figures :	Page
Fig. 1 : The molecular structures of chitin , chitosan and cellulose-----	65
Fig. 2 : The FTIR spectra of chitin and chitosan-----	66
Fig. 3 :The preparation of chitosan by deacetylation of chitin-----	70
Fig. 4-a : The FTIR spectroscopy of deacetylation of chitin after 120 min.-----	71
Fig. 4-b: The FTIR spectroscopy of deacetylation of chitin after 210 min.-----	72
Fig. 5: The TGA curve of chitin-----	74
Fig. 6: The TGA curve of chitosan-----	75
Fig.7: The SEM of chitin-----	76
Fig.8: The SEM of chitosan-----	76
Fig.9-a : The relations between the weights of different PAAm polymers and copolymers crosslinked hydrogels and their degree of swelling-----	101
Fig.9-b : The relations between the weights of different PAAm polymers and copolymers crosslinked hydrogels and their E.W.C. %-----	102
Fig.9-c : The relations between the weights of different PAAm polymers and copolymers crosslinked hydrogels and their tensile strength-----	103
Fig.9-d : The relations between the weights of different PAAm polymers and copolymers crosslinked hydrogels and their elongation %-----	104
Fig.9-e : The relations between the weights of different PAAm polymers and copolymers crosslinked hydrogels and their weight loss %-----	105
Fig.10-a : The relations between the weights of different chitosan polymers and copolymers crosslinked hydrogels and their degree of swelling-----	106
Fig.10-b: The relations between the weights of different chitosan polymers and copolymers crosslinked hydrogels and their E.W.C. %-----	107
Fig.10-c: The relations between the weights of different chitosan polymers and copolymers crosslinked hydrogels and their tensile strengths-----	108

Fig.10-d : The relations between the weights of different chitosan polymers and copolymers crosslinked hydrogels and their elongations %-----	109
Fig.10-e : The relations between the weights of different chitosan polymers and copolymers crosslinked hydrogels and their weight loss %-----	110
Fig.11-a :The SEM of (PAAm+glut.)crosslinked hydrogel-	111
Fig. 11-b :The SEM of (PAAm+PVA+glut.)copolymers crosslinked hydrogel-----	112
Fig. 11-c :The SEM of (PAAm+PEG+glut.)crosslinked copolymers hydrogel-----	113
Fig. 11-d :The SEM of (PAAm+PVA+PEG+glut.)copolymers crosslinked hydrogel-----	114
Fig.12-a :The SEM of (chitosan+glut.)crosslinked Hydrogel-----	111
Fig.12-b :The SEM of (chitosan+PVA+glut.)copolymers crosslinked hydrogel-----	112
Fig.12-c :The SEM of (chitosan+PEG+glut.)copolymers crosslinked hydrogel-----	113
Fig.12-d:The SEM of (chitosan+PVA+PEG+glut.)copolymers crosslinked hydrogel-----	114
Fig.12-e :The SEM of (chitosan+starch+glut.)copolymers crosslinked hydrogel-----	115
Fig.12-f :The SEM of (chitosan+PVA+starch+glut.) copolymers crosslinked hydrogel-----	115
Fig. 13-a :The TGA curve of (PAAm+glut.)crosslinked hydrogel-----	116
Fig. 13-b :The TGA curve of (PAAm+PVA+glut.)copolymers crosslinked hydrogel-----	117
Fig. 13-c :The TGA curve of (PAAm+PEG+glut.)crosslinked copolymers hydrogel-----	118
Fig. 13-d :The TGA curve of (PAAm+PVA+PEG+glut.) copolymers crosslinked hydrogel-----	119
Fig.14-a :The TGA curve of (chitosan+glut.)crosslinked hydrogel-----	120
Fig.14-b :The TGA curve of (chitosan+PVA+glut.)copolymers crosslinked hydrogel-----	121
Fig.14-c :The TGA curve of (chitosan+PEG+glut.)copolymers	

crosslinked hydrogel-----	122
Fig.14-d:The TGA curve of (chitosan+PVA+PEG+glut.) copolymers crosslinked hydrogel-----	123
Fig.14-e :The TGA curve of (chitosan+starch+glut.) copolymers crosslinked hydrogel-----	124
Fig.14-f :The SEM of (chitosan+PVA+starch+glut.) copolymers crosslinked hydrogel-----	125
Fig.15-a : The relation between the weights of polyurethanes hydrogels based on different M.wt. of PEG and their degree of swelling-----	135
Fig.15-b : The relation between the weights of polyurethanes hydrogels based on different M.wt. of PEG and their E.W.C.-----	136
Fig.15-c : The relation between the weights of polyurethanes hydrogels based on different M.wt. of PEG and their tensile strengths-----	137
Fig.15-d : The relation between the weights of polyurethanes hydrogels based on different M.wt. of PEG and their elongations-----	138
Fig.15-e : The relation between the weights of polyurethanes hydrogels based on different M.wt. of PEG and their weight loss %-----	139
Fig.16-a:The SEM of PU hydrogel based on PEG , 1500---	140
Fig.16-b:The SEM of PU hydrogel based on PEG , 4000---	140
Fig.16-c:The SEM of PU hydrogel based on PEG , 6000---	141
Fig.16-d:The SEM of PU hydrogel based on PEG , 8000---	141
Fig.17-a:The TGA curve of PU hydrogel based on PEG , 1500-----	142
Fig.17-b:The TGA curve of PU hydrogel based on PEG , 4000-----	143
Fig.17-c:The TGA curve of PU hydrogel based on PEG , 6000-----	144

Fig.17-d: The TGA curve of PU hydrogel based on PEG , 8000-----	145
Fig. 18-a: The relation between the conc. of released fertilizer compositions and the watering no. -----	150
Fig. 18-b: The relation between the conc. of released fertilizer compositions mixed with gel and the watering no.	151
Fig. 19 : The collective figures of the SEM for chitosan hydrogels & copolymers hydrogels and PAAm hydrogels & copolymers hydrogels -----	152

ABBREVIATIONS

D.S.	Degree of swelling
E.W.C.	Equilibrium water content
T.S.	Tensile strength
E.L.	Elongation
MDI	Methylene diisocyanates
PEG	Polyethylene glycol
Glut.	Glutaraldehyde
H.B.	Hydrogen bond
H	Hydrogen atom
P.U.	Polyurethanes
PAAm	Polyacrylamides
PVA	Polyvinyl alcohol
ST.	Starch
TGA	Thermogravimetric Analysis
SEM	Scanning Electron Microscope
SAPs	Super absorbent polymers