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(ARTS, SCIENCE AND EDUCATION)
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PREPARATIONS AND APPLICATIONS OF SOME FRIENDLY ENVIRONMENTAL COMPOUNDS

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(Chemistry-Physical Chemistry)

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ABSTRACT

Preparations and Applications of Some Friendly Environmental Compounds.
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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 glutaraldhyde as crosslinker. The [PAAm, PVA and glutaraldhyde] 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.

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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.	Glutaraldhyde
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