S U M M A R Y

In the present work, the factors affecting the grafting of ∝-bromoacrylic acid onto cellulose induced by Ce^{4+} were investigated. The variables studied were the initiator concentration, the reaction temperature, the kind of the inorganic acid used as well as its concentration.

Regarding the initiator concentration, the grafting is characterized by the initial fast rate which reaches a maximum (78%) then decreased gradually by increasing the Ce^{4+} concentration. Also, the kind of the Ce^{4+} plays a role on grafting. Thus, in case of Ce^{4+} obtained by using ceric ammonium sulphate, the maximum was reached at a concentration of 10 m Mole Ce^{4+}, while using ceric ammonium nitrate the maximum was reached at Ce^{4+} concentration of 20 m Mole.

Concerning the reaction temperature, the grafting reactions were carried out at 3 different temperatures: 40^{o}, 60^{o} and $80^{o}C$. It was found that increasing the reaction temperature causes a decrease of the percent grafting in the systems of water and nitric acid, whereas in case of

the systems containing hydrochloric, sulphuric and perchloric acids the percent grafting increased by increasing the reaction temperature.

In the systems containing nitric, hydrochloric, sulphuric or perchloric acids, it is clear that the percent grafting increases at the initial stage in each system and gives a maximum at a certain time, then increases steadily with increasing time.

The effect of the concentration of the inorganic acid was also studied. Thus, the grafting reactions were carried out in presence of 0.05 N, 0.1 N and 0.2 N acid concentrations and it is clear that increase of the acid concentration causes a decrease in the percent grafting. However, in most cases, low yields of grafting are obtained on using acid concentration more than 0.1 N.

Attempts to determine the percent grafting by bromine analysis failed because intramolecular lactone formation has taken place during grafting reaction. This was confirmed by studying the infrared spectra of both α-bromoacrylic acid and the grafted cellulose.