

The objective of our study was to show the increasing importance of the chemical modification, by grafting, of cellulose in order to get a cellulose material with improved absorption and retention. Acrylic monomers, i.e. acrylic acid and acrylonitrile, were grafted onto cellulose fibres by using a free radical process initiated by two types of redox initiators: persulfate radicals (potassium persulfate, KPS) and ceric ions (ceric ammonium nitrate, CAN). The fibrous celluloses used were: a treated Kraft fluff pulp, rayon fibres (regenerated cellulose) and short cotton fibres (mill waste). Major factors affecting graft co-polymerization onto cellulose (surface morphology of cellulose, initiation process, reaction temperature and hydrolysis of grafted samples) were studied. The grafting has been confirmed by infrared analysis through the apparition of new characteristic lines of monomers on the spectra of grafted samples. The maximum grafting yield was obtained at room temperature by using a CAN initiation technique. Retention values and grafting yield were determined: due to counter ion effect, the retention of a 0.9 % NaCl solution was about 70 % of the water retention value. The swelling of grafted samples is significantly higher than that observed for the native cellulose. The acrylic functions grafted onto cellulose improved the liquid retention of samples