CHAPTER V

Conclusions

The results of the present study showed that dyeability modification and bleaching of cotton fabric in single-bath could be practically achieved. The technique used in this study was to introduce reactive group into cellulose backbone. By doing this so, cellulose was treated with modifying agent: 3-amino-2-hydroxyl-propyl trimethyl ammonium(3,5)-dichlorotriazine. NMR technique was employed to confirm the characteristic of the prepared modifying agent. Bleaching performance of H_2O_2 in the presence of the modifier expressed as whiteness index value was comparable to that obtained from the conventional method, though slightly lower whiteness index. This was because residual solution of modifying agent that exhibited pale yellowish color also consumed H_2O_2 during consequent bleaching, reducing the bleaching effect on whiteness. The dye uptake and color strength of dyed modified fabric were markedly increased with an increase in the concentration of modifying agent. It was thought that the cationic groups of the modifying agent played an important role in attracting the anionic dyes from the dyebath. The results showed that the dye uptake of cationic cotton fabric in the absence of salt was closely dependent on the extent of fixed the modifying agent, not the concentration of dye applied like conventional dyeing.

It is important to achieve the high degree of fixation of the modifying agent at the minimum concentration applied therefore meet commercial interest. In contrast, from experimental results, build-up of cationic charges probably acted as a charge barrier to prevent further absorption of modifying agent inside the fiber resulting in the low fixation of the modifying agent. Consequently, high amount of the modifying agent may be necessary in practice. After being modified, the dye exhaustion and color strength of dyed modified fabric show marked increase with an increase in the

concentration of the modifying agent. As a result, the high degree of dye exhaustion as well as high color depth could be obtained at relatively lower dye concentration than traditional dyeing. The practicular advantages of this process were that the dyeability modification could be concurrently performed in bleaching process, hence attracting interests in terms of energy and water saving as well as solving problems arising from salt added dyeing process.