

## CHAPTER V

### CONCLUSIONS

In this work, the surface modification of cellulose sheet was operated via DBD plasma in air. The results show that the hydrophilicity of treated-cellulose sheet was increased due to the incorporation of oxygen-containing polar groups, including C-O, C=O and O-C=O. However, the crystallinity of treated-cellulose sheet was not changed because cellulose sheet was modified only the uppermost of surfaces. Therefore, the DBD plasma technique was a suitable process to enhance the coating capability of the sheet surfaces, whereas the bulk properties were remain. After that the plasma-treated cellulose sheet was further coated with natural rubber. The water contact angle of NR-coated cellulose sheet was determined. It was found that the water contact angle of NR-coated cellulose sheet increased from 55.7° to 79.4°. Moreover, the water contact angle of NR-coated cellulose sheet can be improved to 124.43° with the aid of ZnO. As a result, the NR-coated cellulose sheet can be used as the water resistant packaging in order to keep the quality of products.