

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The plasma parameters play an important role for silk degumming. The silk fiber weight loss increases significantly with increase of the discharge power and the exposure time. The silk weight loss increases with increase of the flow rate until it reaches the point that weight loss is not significantly change even increase flow rate which indicates maximum etching condition. The operating temperature at 25°C is the suitable temperature for this research. The optimized plasma treatment for raw Thai silk fiber was at 2000 W, exposure time for 10 min, oxygen gas flow rate at 500 cc/min and temperature chamber at 25°C. The conventional degumming could remove sericin 24.05±1.06 % while the optimized condition of the plasma was 9.17±0.29%. However, the plasma treatment has advantages in term of a cleaner, environmentally friendly technique and lower time operation than that of the conventional degumming.

5.1 Recommendations

In order to improve the degumming efficiency of plasma, other parameters should be studied such as working pressure, different type of gas used, type of plasma reactor and electrode distance.

In addition, it could be combined plasma treatment method with a mild thermal-chemical process in order to achieve similar or even better properties of silk fibers than that of the conventional degumming.