CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

After the experiment and CFD analysis, the following conclusions have been made.

1. The 2D FLUENT CFD model for scalloped surface has been validated.
2. SST K-ω model is the most appropriate viscous model for predicting flow hydrodynamics near 2D scalloped surface.
3. Flow separation causing flow recirculation was observed in congruence with the previous study.
4. Pressure drop of 2D scalloping surface is proportional to its surface area and this surface behaves like a regular roughness, but is not a function of a distribution of scallop.
5. The Von Karman equation for fully roughness in turbulence flow can't predict the friction factor for scalloped surface accurately.
6. The values of friction factor obtained from backward and forward flow are not the same even though they have the same roughness height.

5.2 Recommendations

Through the experiment, there are some recommendation for the future work.

1. The experiment for 3D scalloped surface should be conducted to confirm the results from 2 dimensional scalloped surface.
2. In order to get close to the real system, it is a good idea to make a 2D scallop smaller and use a faster flow rate.
3. It is interesting to perform CFD simulation for 3D scalloped surface and compare with the literature survay (Allen, 1971)
4. The shear stress analysis using FLUENT is possible to provide a better understanding of how the scallop get its shape and size.

5. The effect of surface dissolution rate to the scallop characteristic should be investigated in order to confirm the existance of flute's universal stable wavelength Reynolds number of 23,000.