# CHAPTER V
# CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Conclusions

- Both the inner and outer oxide layer formed at each velocity had approximately similar composition. Therefore, the coolant velocity does not have an affect on oxide composition.
- The significant difference of outer oxide morphology at each velocity indicated that the coolant velocity had an affect on the outer oxide structure.
- There were fine particles overlay on the outer oxide formed under the high coolant velocity.
- Electron diffraction patterns indicated that the inner and outer oxide particles have the same molecular structure, $Fe_3O_4$, regardless of velocity. However, high Ni contamination values can affect on the oxide molecular structure which was found for the 20 m/s experiment.
- The simulated shear stress form Fluent correspond the oxide thickness in outlet feeder pipe, S08, taken from the Point Lepeau reactor. The oxide thickness increase with inversely to the shear stress exerted.
- A high shear stress yields a thin oxide layer thickness and thus a high corrosion rate.

## 5.2 Recommendations for the Future Work

- Investigate the required time for the oxide film form at different coolant velocity and reach its steady state value.
- Study the actual corrosion rate distribution of the S08 outlet feeder taken from the CANDU reactor.