CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Removal of DPM from simulated gas condensate on Zeolites Omega, Beta, L and CMG273 was studied. The kinetics model of pseudo 2nd order has been successfully applied to predict the adsorption kinetic of diphenylmercury (DPM) on all adsorbents (zeolite Beta, Omega, L and adsorbent CMG273). Langmuir Model was also found successful to describe the solid and liquid phase concentrations. Zeolite Beta and Omega have shown very good efficiency in removing DPM.

In batch system, the capacity Zeolite Beta, Omega and L for DPM removal decreased with increasing temperature, which indicates that the adsorption of DPM on these Zeolites is mainly physisorption. The Si/Al ratio and structure of Zeolites played an important role in adsorption. Further more, the capacity of Zeolites Beta and Omega decreased to 25% and 40% respectively when heavy naphtha was used in place of n-heptane. This indicates that the complexity of various hydrocarbons in heavy naphtha affects the adsorption capacity.

In continuous system, alumina, CMG273 and Zeolite Beta were tested. Alumina had shown very little adsorption of DPM while impregnation of copper sulfide on alumina (CMG273) improved the efficiency by 50%. However, Zeolite beta has shown same removal efficiency as CMG273 without any impregnation which indicates that Zeolite Beta have good capacity in removing DPM from heavy naphtha.

5.2 Recommendations

It is interesting to check Zeolite Beta (with impregnation of CuS) for better removal efficiency. The sulfur impregnated Zeolite Beta should be attempted and applied to remove metallic mercury along with other organic forms of mercury from real feedstock, as, experiments (section 4.3.3) have shown ability of Zeolite Beta for removing naturally occurring mercury species from real feedstock.