

## CHAPTER IV

### CONCLUSION

Multifunctional compounds (3), (7), (9), (11), and (13) were synthesized by epoxide ring opening by nucleophiles and were characterized by  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectroscopy, mass spectrometry, infrared spectroscopy and elemental analysis. These compounds contain of multiple hydroxyl and vinyl groups. In order to evaluate the potential application of these compounds as crosslinking agents for polyurethane, the reaction of the hydroxyl groups with the isocyanate group and free radical reaction of the vinyl groups were studied. It was found that the hydroxyl groups of compounds (3), (9), (11), and (13) can react with the isocyanate group of MDI to give urethane linkages. The vinyl groups of compounds (3), (9), (11), and (13) can undergo free radical reactions in the presence of benzoyl peroxide. The results suggested that compounds (3), (9), (11), and (13) can be used as crosslinking agents in the preparation of polyurethane elastomers. From the spectroscopic data, the true nature of the products could not be determined.

#### **Suggestion for Future Work**

Further work is to use compounds (3), (9), (11), and (13) as crosslinking agents in the preparation of polyurethane elastomers and study the properties of these polyurethanes.