

CHAPTER V

CONCLUSIONS AND RECOMMENDATION

The main objective of this work is to study on the macrocyclization on acetylene-based benzoxazine dimer which has a reactive alkyne at the aza group. This work proposes a unique compound of acetylene-based benzoxazine dimer since their macrocycles can lead to polymer containing benzoxazine macrocycles.

Therefore, in this research, the macrocyclizations of acetylene-based benzoxazines dimer with diacidchlorides under the heterogeneous, homogeneous and interfacial polycondensation are focused. The first condition is heterogeneous reaction where the reactants are in the different phases. The heterogeneous reaction of acetylene-based benzoxazine dimer and terephthaloyl dichloride provides only [2+1] linear oligoester.

In case of homogeneous reaction which occurs in only one phase system, the products obtained are [2+1] linear oligoester and [2+2] macrocycle. Moreover, we found that by increasing the concentration, the possibility of [2+2] macrocycle is increase.

The interfacial polycondensation of benzoxazine dimer with terephthaloyl dichloride gives [2+1] linear oligoester and [2+2] macrocycle. Furthermore, by changing diacidchloride to adipoyl dichloride which is aliphatic chain, [2+1] linear oligoester and [1+1] macrocycle are obtained.

The present work demonstrates that the macrocyclization of acetylene-based benzoxazine dimer with diacidchloride provides only two compounds, i.e. [2+1] linear oligoester and [1+1] or [2+2] macrocycle.