

## CHAPTER V

### CONCLUSIONS

In this work, spirosilicate/benzoxazine comonomers were synthesized as crude products directly from aminospirosilicates, which were synthesized following Chivin's method using paraformaldehyde and phenol. From the results, they showed that the obtained products contain silica and starting material. So the products need to be purified.

In addition, the new benzoxazines were synthesized from 3-amino-1,2-propanediol and 2-amino-2-methyl-1,3-propanediol by protecting hydroxyl groups to form ketals. In the case of benzoxazine C3, the suitable conditions to protect the hydroxyl group of 3-amino-1,2-propanediol are at temperature 110°C, 3 hours reaction time. The benzoxazine C3 was formed by reacting ketal C3 with formaldehyde and phenol.

As for benzoxazine C4, the suitable conditions to protect the hydroxyl groups of 2-amino-2-methyl-1,3-propanediol are at temperature 100°C, 2 hours reaction time. Benzoxazine C4 was further synthesized by reacting ketal C4 with formaldehyde and phenol.