CHAPTER IV

CONCLUSION

Novel ammonium calix[4]arene 25,27-[2,2'-[(1,9-(2,5,8-triammonium) nonylene)-2,2'-diphenoxy]diethyl-*p-tert*-butylcalix[4]arene (5c) and methylammoniumcalix[4]arene 25,27-[2,2'-[(1,9-(2,5,8-hexamethylammonium)nonylene) -2,2'-diphenoxy]diethyl-*p-tert*-butylcalix[4]arene (7b) were prepared from their Schiff base derivatives. Both compounds contain three positive nitrogen sites ready for anion interactions. The study of host-guest chemistry between (5c) with nitrate and carbonate ions by ^{1}H-NMR spectroscopy showed that the complex was of 1:1 type. The basicity of carbonate ion did not affect the ammonium protons of (5c). The interaction of carbonate ion was observed to be stronger than that of nitrate ion. The competitive study proved a recognition of (5c) for carbonate ion over nitrate ion. The complexation between the methylammonium derivative (7b) with both anions were almost unnoticeable.

The preliminary studies show that (5c) is a promising compound for anion separation study. Further work can be focused on;

1. Evaluation of K_a values of the ammonium protons, in order to obtain pH-range limitation for complexation study

2. Complexation study of (5c) with a wider range of anions e.g. CH_3COO^-, ClO_4^-, SO_4^{2-}, PO_4^{3-}, HPO_4^{2-}, $H_2PO_4^-$ and other organic / inorganic anions of environmetal concern in order to obtain clearer information about its recognition property

3. Anion separation study by extraction method

4. Preliminary study of host-guest chemistry of (5d) and (5e) towards anions