CHAPTER 4

CONCLUSIONS

The anionic metal-PAPS-fluoride ternary complexes of Zr(IV) and Hf(IV) have been not complete to separate on a C_{18} column using tetrabutylammonium as an ion-interaction reagent in the mobile phase. The separation was governed mainly by the concentrations of tetrabutylammonium, methanol, and fluoride in the mobile phase and also the mobile phase pH. The detection sensitivity was not only dependent upon the composition of the mobile phase, but also the pH, PAPS and fluoride concentrations used in the pre-column preparation of the complexes. The determination of Zr(IV) and Hf(IV) in rock sample can be possible. However, for Hf(IV) determination in rock sample, a lower detection limit for Hf(IV) than the presently obtained is required. In future, if using ultra high performance liquid chromatography (UHPLC) with pressure over 5000 psi, maybe can separate of Zr(IV) and Hf(IV) complexes on a C_{18} reversed-phase column with particle size 3 μm.