Effect of Crown Ring Size and Upper Moiety on the Extraction of s-Block Metals by Ionizable Calixcrown Nano-baskets

Bahram Mokhtari and Kobra Pourabdollah^{*}

Department of Chemical Engineering, Shahreza Branch, Islamic Azad University, Shahreza, Iran *E-mail: pourabdollah@iaush.ac.ir Received July 27, 2011, Accepted September 14, 2011

Dear Editor and Reviewers

Thanks for your comments. I find them to be helpful and constructive. The corrections were highlighted in the wordfile of "highlighted-corrections.doc" and the final manuscript was uploaded as the final revision of "manuscript.doc".

Here are the answers to comments base upon the corrections were done in the revised manuscript.

Editorial Board:

1) The observed behavior may be owing to a simple pH change; thus it is necessary to check pH-dependent fluore-scence change.

Raising the pH leads to activation of dangling acid moieties and enhancement of cation binding. Therefore, with increasing the pH the extraction efficiencies are improved. This is obvious in all of the extraction plots. In the other hand, such a simple pH change forms a variety of extraction plots.

Besides, the fluorescence spectroscopy can be used to check the pH dependency of extractant solutions. But owing to the aim and scope of the present project as well as the finance and instrument limitations, this idea was postponed to the future works.

2) The differences of your work in comparison with the related ones must be clarified.

The differences were clarified and are available as the attached file entitled "Objectives and Novelties".

Reviewer 1:

Manuscript is well written and well organized at this stage. So, I recommended this article to publish in Bull. Korean Chem. Soc. with minor revision requested as follows.

1) I found some typo-errors in listing references which should be fit to manuscript policy.

They were corrected based upon the manuscript policy.

2) You need to add more informative references, e.g.,

papers reported by Richard A. Bartsch's group at Texas Tech University which has reported many proton-ionizable calixcrown compounds with their metal ion extraction.

They were included.

Reviewer 2:

1) Some of the compounds reported here seems to be reported previously (compound 12, 13, 24, 25, 26). Richard A. Bartsch groups synthesized these compounds already and they have done similar kind of experiment with alkaline metal ions. It should be mentioned and also should be given as references.

It was mentioned and also they were given as the references.

2) Some of the results seems to be similar (figure 4, page no 14, below left graph) with the reported results in *Org. Biomol. Chem.*, **2006**, *4*, 2938-2944 (Figure 2a).

The paper listed above was checked. In that paper, the solvent extraction of alkaline earth metals has been studied using 10 derivatives (6-15) mainly bearing N-(X)sulfonyl oxyacetamide units. Besides, in the present manuscript 8 derivatives (10-13 and 23-26) have been investigated. Among these 18 (10+8) derivatives, two compounds are repeated inadvertently including 6 and 7 (in above mentioned reference) or 12 and 13 (in present manuscript). The extraction plots of 12 and 13 towards both alkali and alkaline earth metals have been obtained, while the above mentioned reference just reported the extraction plots of 6 and 7 towards alkaline earth metals. Moreover, it is obvious that the extraction plot of 7 is different from the plot of 13, while they confirm the results. Such different can be attributed to the experimental conditions and the random errors during the extractions and measurements. However, the similarity of extraction plots using 6 and 12 led us to repeat the tests four times (n=4), while the same results were obtained again (RSD ≈ 0.0).