



17th Radiochemical Conference

11 – 16th May 2014, Mariánské Lázně, Czech Republic

c/o Department of Nuclear Chemistry, Czech Technical University in Prague, Břehová 7, 115 19 Prague 1, Czech Republic

Dear Colleague,

The Organising Committee of the 16th Radiochemical Conference appreciates your kind co-operation in reviewing the papers submitted for publication in the Conference Proceedings (Select Papers) in the Journal of Radioanalytical and Nuclear Chemistry (JRNC). You will get a printed manuscript at the Conference (if available), but then the whole reviewing process will be managed electronically. You will get access to manuscripts that have been assigned to you for the review on the INDICO web page. Then you can download the particular manuscripts (see instructions below). To facilitate your task, we have developed an evaluation form which is enclosed. We would be grateful if you could answer the indicated questions in the evaluation form, send a scanned copy of the form to the respective session organiser, write additional comments to the authors (if any) on a separate sheet and upload this sheet to the INDICO web page (see instructions below) and send it also to the session organiser. In the case that either minor or major revisions are needed, the manuscript will be sent back to author(s) together with your comments, your anonymity being preserved. We would like to encourage you to correct also English errors in the manuscript, especially as regards English formulations that could cause scientific misunderstanding. However, papers with very poor English should be classified for major revision with recommendations to authors to have them corrected by a native speaker. We would appreciate if you strictly stick to the JRNC standards in your reviews to help us in selecting a maximum of 75 worthy/best papers allotted for publication in the conference proceedings. The final decision whether or not to publish a manuscript will be taken by the Editor-in-Chief of JRNC. The deadline for returning of the review is 30th June 2014. To be able to publish the Conference proceedings timely, we kindly ask you to adhere to this deadline. We thank you very much for your help.

With kind regards,

Yours sincerely,


Jan John
General Chairman


Jan Kučera
Chairman, Editorial Board

1. Is the abstract and title informative	<input type="checkbox"/> No	<input type="checkbox"/> Partly	<input checked="" type="checkbox"/> OK
2. Originality and/or novelty of concept or approach	<input type="checkbox"/> None	<input type="checkbox"/> Some	<input checked="" type="checkbox"/> Superior
3. Applicability and usability	<input type="checkbox"/> Useless	<input checked="" type="checkbox"/> Conditional	<input type="checkbox"/> Significant
4. Method calibrated and validated (when appropriate)	<input type="checkbox"/> Neither	<input checked="" type="checkbox"/> No validation	<input type="checkbox"/> Both OK
5. Accuracy and soundness of conclusions	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Excellent
6. Clarity and overall length*	<input checked="" type="checkbox"/> Poor	<input type="checkbox"/> Wordy	<input type="checkbox"/> OK
7. Quality and quantity of references	<input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Missing some	<input type="checkbox"/> OK
8. Tables	<input type="checkbox"/> Too many	<input type="checkbox"/> Missing some	<input checked="" type="checkbox"/> OK
9. Figures	<input type="checkbox"/> Too many	<input type="checkbox"/> Missing some	<input checked="" type="checkbox"/> OK
10. Are figures of high quality for reproduction	<input type="checkbox"/> No		<input checked="" type="checkbox"/> OK

* The maximum length of a contributed or plenary/invited paper is 20.000 or 30.000 characters (including spaces), respectively, including tables and references, plus a reasonable number of figures.

N.B. One normalised page (30 lines per 60 characters including spaces) corresponds to 1.800 characters.

Overall recommendation:

- Excellent paper
 Very good paper
 Fair paper
 Unacceptable paper

Revisions needed:

- No revisions
 Minor revisions
 Major revisions
 To be rejected

Comments to the editors (additional comments to the authors may be attached on a separate unsigned sheet): Thiocalixarenes: radiation stability and Eu/Am extraction in synergistic systems with COSANs,

by: I. ŠPENDLÍKOVÁ, J. JOHN, V. ČUBA, J. JIRÁSEK, P. LHOTÁK

The manuscript can be regarded as a pilot study addressing issues connected with the chemical and radiation stability of two different thiocalixarenes designed for Am/Eu extraction. The results represent an important point for future considerations about usability of compounds in further development of the process. A wide series of conditions has been selected for the determinations of the distribution ratios that included three types of synergic mixtures with differently protected COSAN molecules, three different types of solvents and two different sources of irradiation. Data from determination of extraction efficiency are compared with shown in parallel with quantitative analysis by HPLC. Therefore, the subject of this MS and selected methodology deserves positive evaluation and the article is ideally suited for acceptance in the Special Issue of the Journal Radioanalytical and Nuclear Chemistry. Nevertheless, both handling of the data and clarity of their presentation would have to be carefully improved before final acceptance of the manuscript. Also, some minor points outlined below would be adequately addressed.

Major points:

The use of COSAN acids in aqueous phase is quite unusual; apparently a large part of this ion is extracted into organic phase immediately after contact. Authors would give some comments why this approach was selected and also carefully point out this in any part of the text for improving clarity and legibility. Particular care have to be paid for definitions what was the synergic mixture and what was the solution of the calixarene alone; expressions using only abbreviations T1 and T2 seem ambivalent and not sufficient in this case.

P4, Results and discussion, 3rd paragraph, last three lines and Tab. 1: Little or no influence of D values on COSAN substitution would correspond to the expected behaviour and also data given on the last two lines seems to indicate this. However, these data are not presented in Tab. 1. Surprisingly enough, large differences exist between the data given in the first row only for the COSAN derivatives alone, i.e. apparently without thiocalixarene. This is quite unexpected and should be adequately revised or explained. Table 1: High D values above 10³ have little meaning, but their presentation as >10³ seems still better than triple plus +++. Of course, a better solution could be, if the experiments were conducted with more diluted solutions to get D values into a reasonable range. The data for D equal or lower than 10 would be given in their real measured values.

Tab. 1 captions: concentration for COSAN solution should be given here.

P5: Radiolytic stability, 1st paragraph: Essential information about original concentrations and if the calixarenes were irradiated without contact of with presence of the aqueous phase and with/without presence of COSAN would improve legibility. From Fig. 2 captions follows that the samples were in contact with the aqueous phase containing chlorinated COSAN, but this is not stated in the Experimental part.

Conclusions: L3: Considering high demands on robust properties of compounds designed as extractants for the reprocessing of spent fuel, 75% degradation observed for T2 upon standing in solution in neat solvent (or in contact?) can hardly be seen as only "slight" instability.

Minor points:

Introduction:

1st Paragraph, Last line: The abbreviation "COSAN" should be explained.

When calix[4]arenes are discussed in parallel, a short description of their extraction properties with some relevant references would also appear here.

The symbols T1 and T2 are somehow in clash with T defined later for gross area. Better seems to use e.g. systems A and B or calix1 and calix2, etc.

3rd, paragraph, L5: Giving dose and source would provide better information for the observed 90% degradations.

4th Paragraph, last sentence: The statement about lower stability in halogenated solvents is in contradiction with the previous paragraph and results presented in this article. Apparently, this depends on particular extractant and its reactivity towards reactive particles formed from solvent by radiation. Either this sentence should be omitted or moved to the preceding paragraph and adequately supported by references on published results.

Experimental

1st paragraph, L4/5: Typically used term is conjugated acids of cobalt bis(dicarbollide)(1-) ion. Their formula is usually written as $(\text{H}_3\text{O})[(1,2\text{-C}_2\text{B}_9\text{H}_{11})_2\text{-3,3'-Co}]\cdot n\text{H}_2\text{O}$. Used abbreviation CCl and

CBr may rather imply considerations about halogenated hydrocarbons. For avoiding this, abbreviations like CbCl, CCB, BrCb can be found in the literature. The word acid should be omitted from L4 for clarity; caesium salts of different COSAN derivatives were purchased from which stock solutions of the conjugated acids of a formula... have been prepared. Last part of the last paragraph would be merged with this text.


3rd Paragraph, last two lines: Chromatographic conditions and details on quantitative analysis should be described here; in particular: composition of buffer used for HPLC separation and method of detection, standards, calibration, injection statistics and reliability.

Results and discussion

P4, 2nd paragraph, last line: The formula $\text{MeH}(\text{T2})\text{CCl}_4$ can imply that this is metal (or methyl?) hydride complex, If the slope was measured for Am, the formulation would correspond to $\text{Am}(\text{T2})(\text{CbCl})_4^-$ or $\text{Am}(\text{H}_3\text{O})(\text{T2})(\text{CbCl})_4$, if a need for charge compensation by a proton is assumed. However presence of four anions in the extracted particle might indicate more complex pathways.

P4, 3rd paragraph, L1: The statement about three COSAN molecules is apparently incorrect, this should be replaced with: three different types of COSAN derivatives or: parent and two different halogenated COSANS, etc. The same corrections should be made on L5. L3: a literature reference on T2/CbCl system is missed.

Date and signature:

..... June 10th 2014 

Instructions for downloading the manuscripts:

- 1) Log in the INDICO web page of the 17th Radiochemical Conference, go to the Contribution list.
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