Abstract:
The present invention relates to novel microporous zirconium silicate compositions that are formulated to remove toxins, e.g. potassium ions, from the gastrointestinal tract at an elevated rate without causing undesirable side effects. The preferred formulations are designed to avoid increase in pH of urine in patients and/or avoid potential entry of particles into the bloodstream of the patient. Also disclosed is a method for preparing high purity crystals of UZSi-9 exhibiting an enhanced level of potassium exchange capacity. These compositions are particularly useful in the therapeutic treatment of hyperkalemia.

[Continued on next page]
before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:
18 October 2012
INTERNATIONAL SEARCH REPORT

According to International Patent Classification (IPC) or to both national classification and IPC

Minimum documentation searched (classification system followed by classification symbols)

IPC(8)- A61K 33/24; B10D 15/04; C01B 39/06, 39/46; C02F 1/42 (2012.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase, Google Patents, Google, PubMed

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 6,579,460 B1 (WILLIS et al) 17 June 2003 (17.06.2003) entire document</td>
<td>1-38, 45, 46</td>
</tr>
<tr>
<td>Y</td>
<td>US 20070202180 A1 (LIVERSIDGE et al) 30 August 2007 (30.08.2007) entire document</td>
<td>33</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

Date of the actual completion of the international search 27 July 2012

Date of mailing of the international search report 07 AUG 2012

Authorized officer: Blaine R. Copenhaver

Form PCT/ISA/2 10 (second sheet) (July 2009)
INTERNATIONAL SEARCH REPORT

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.☐ Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2.☐ Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3.☐ Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

This International Searching Authority found multiple inventions in this international application, as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees need to be paid.

Group I, claims 1-38, 45, and 46 are drawn to a cation exchange composition. Group II, claims 39-44 are drawn to a reactor.

The inventions listed in Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1, because under PCT Rule 13.2 they lack the same or corresponding special technical features for the following reasons: The special technical features of Group I, a cation exchange composition comprising a zirconium silicate of Formula I as shown in claim 1, are not present in Group II; and the special technical features of Group II, a reaction vessel including an agitator, a cooling jacket, and at least one baffle-like structure, are not present in Groups I.

Since none of the special technical features of the Groups I and II inventions are found in more than one of the inventions, unity is lacking.

1.☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2.☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3.☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4.☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-38, 45, 46

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/2 10 (continuation of first sheet(2)) (July 2009)