METHODS AND APPARATUS FOR CONTROLLING CATALYTIC PROCESSES, INCLUDING CATALYST REGENERATION AND SOOT ELIMINATION

(57) Abstract: The present invention provides methods and apparatus for controlling catalytic processes, including catalyst regeneration and soot elimination. An alternating current is applied to a catalyst layer and a polarization impedance of the catalyst layer is monitored. The polarization impedance may be controlled by varying the asymmetrical alternating current. At least one of water, oxygen, steam and heat may be provided to the catalyst layer to enhance an oxidation reaction for soot elimination and/or to regenerate the catalyst.
Published:
— with international search report

Date of publication of the international search report:
21 December 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
INTERNATIONAL SEARCH REPORT

International application No
PCT/US 06/42248

A CLASSIFICATION OF SUBJECT MATTER
IPC(8): C25B 3/00 (2007.01)
USPC: 205/341

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

B FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC 205/341

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC 205/341, 335, 413, 204/228 1,502/20 (see search terms below)
IPC(8) C25B 3/00

Electronic database consulted during the international search (name of data base and, where practicable, search terms used)
Electronic database searched USPTO WEST (PGPUB, USPT, EPAB, JPAB), Google, Thomson dialog
Search Terms used asymmetry$, current, polarizat$, control$, catalyst or layer

C DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 6,214,195 B1 (Yadav et al) 10 April 2001 (10 04 2001) Fig 4, table 1-7A, col 1, in 15 - col 17, in 11</td>
<td>1-34</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C

D

Date of the actual completion of the international search
17 March 2007 (17 03 2007)

Date of mailing of the international search report
17 SEP

Name and mailing address of the ISA/US
Mail Stop PCT, Arm ISA/US, Commissioner for Patents
P O Box 1450, Alexandria, Virginia 22313-1450
Facsimile No 571-273-3201

Authorized officer
Lee W Young
PCT H/ps@jik 571-272-4300
PCT/OS P 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2005)