

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P12517PC00	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/EP2016/077314	International filing date (<i>day/month/year</i>) 10 November 2016 (10-11-2016)	(Earliest) Priority Date (<i>day/month/year</i>) 10 November 2015 (10-11-2015)
Applicant GRABAT ENERGY S.L.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

☒

It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

☒

the international application in the language in which it was filed

☐

a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐

This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6**bis**(a)).

c. ☐

With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐

Certain claims were found unsearchable (See Box No. II)

3. ☐

Unity of invention is lacking (see Box No III)

4. With regard to the **title**,

☒

the text is approved as submitted by the applicant

☐

the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒

the text is approved as submitted by the applicant

☐

the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 4

☒

as suggested by the applicant

☐

as selected by this Authority, because the applicant failed to suggest a figure

☐

as selected by this Authority, because this figure better characterizes the invention

b. ☐

none of the figures is to be published with the abstract

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International application No

PCT/EP2016/077314

A. CLASSIFICATION OF SUBJECT MATTER		
INV.	H01M4/133 H01M4/38	H01M4/136 H01M4/587
	H01M4/1393 H01M4/66	H01M4/1397 H01M10/052
		H01M4/36 H01M4/62
ADD.		
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) H01M		
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) EPO-Internal, COMPENDEX, INSPEC, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LING HUANG ET AL: "Porous carbon nanofibers formed in situ by electrospinning with a volatile solvent additive into an ice water bath for lithium-sulfur batteries", RSC ADV., vol. 5, no. 30, 25 February 2015 (2015-02-25), pages 23749-23757, XP055261783, DOI: 10.1039/C4RA14680H	1-3,5,6, 10-14, 17,18
Y	abstract page 23749, 1. page 23750, 2.3 pages 23750-23751, 2.5 page 23753, 3rd paragraph table 2 4. Conclusions figure 5 ----- -/-	1-18
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 29 November 2016		Date of mailing of the international search report 06/12/2016
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Gomes Pinto F., R

INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	ZHENG W ET AL: "Novel nanosized adsorbing sulfur composite cathode materials for the advanced secondary lithium batteries", ELECTROCHIMICA ACTA, ELSEVIER SCIENCE PUBLISHERS, BARKING, GB, vol. 51, no. 7, 5 January 2006 (2006-01-05), pages 1330-1335, XP028027836, ISSN: 0013-4686, DOI: 10.1016/J.ELECTACTA.2005.06.021 [retrieved on 2006-01-05] abstract page 1331, 2.1 and 2.2 page 1332, 2nd and 3rd paragraphs -----	1-18
X	US 2012/251889 A1 (JANSSEN NICOLE [DE] ET AL) 4 October 2012 (2012-10-04) abstract paragraphs [0038] - [0041], [0163], [0175], [0212] - [0215] table 2 -----	1,5,7, 10-13,18
Y	NOELIA MORENO ET AL: "Ordered mesoporous carbons obtained by a simple soft template method as sulfur immobilizers for lithium-sulfur cells", PHYSICAL CHEMISTRY CHEMICAL PHYSICS., vol. 16, no. 32, 14 July 2014 (2014-07-14), page 17332, XP055261483, GB ISSN: 1463-9076, DOI: 10.1039/C4CP02829E abstract page 17333, 2.1 and 2.2 page 17334, 2.4 page 17336, 4th paragraph table 2 figures 3, 10 17339, 3rd paragraph -----	1-4,7,8, 10-13, 15-18
Y	LIWEN JI ET AL: "Porous carbon nanofiber-sulfur composite electrodes for lithium/sulfur cells", ENERGY & ENVIRONMENTAL SCIENCE, vol. 4, no. 12, 18 October 2011 (2011-10-18), page 5053, XP055261908, UK ISSN: 1754-5692, DOI: 10.1039/c1ee02256c abstract page 5055, Synthesis of porous CNF-S composites page 5058, 4th paragraph Electronic Supplementary Material, Table 1 ----- -/--	9

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 99/33132 A1 (MOLTECH CORP [US]; GERONOV YORDAN M [US]; XU ZHE SHENG [US]) 1 July 1999 (1999-07-01) abstract page 9, line 10 - line 34 page 24, line 15 - page 25, line 10 claims 1-27 figures 4-6 -----	16
A	US 2011/052998 A1 (LIANG CHENGDU [US] ET AL) 3 March 2011 (2011-03-03) abstract paragraphs [0025] - [0040], [0059] - [0061] -----	1-18

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Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2012251889	A1	04-10-2012	NONE

WO 9933132	A1	01-07-1999	AU 1811999 A 12-07-1999
			US 6194099 B1 27-02-2001
			WO 9933132 A1 01-07-1999

US 2011052998	A1	03-03-2011	US 2011052998 A1 03-03-2011
			US 2015221949 A1 06-08-2015
			WO 2011028804 A2 10-03-2011
