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(54) Title: METHODS OF AND SYSTEMS FOR ELECTROCHEMICAL REDUCTION OF SUBSTRATES

(57) Abstract: Provided are methods and systems for electrochemical reduction of carbon sources including, for example, carbon dioxide and carbonates. The methods and systems use a catalyst. The catalyst may contain metals such as Fe (iron), and Ti (titanium), Ni (nickel), and Zn (zinc), and/or oxides thereof. The metals may be disposed in an aluminosilicate. The catalyst may be a porous volcanic tuff based material. The methods and systems can be used to produce various carbon- source, reduction products.

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**INTERNATIONAL SEARCH REPORT**

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A. CLASSIFICATION OF SUBJECT MATTER  
INV. C25B3/04 C25B11/04 C25B11/03 C25B9/06  
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)  
C25B

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 2 935 654 A1 (LIQUID LIGHT INC [US]) 28 October 2015 (2015-10-28) paragraphs [0052], [0131]; claim 1 -----	1-19
A	Delia Gligor ET AL: "Iron-enriched natural zeolite modified carbon paste electrode for H2O2 detection - ScienceDirect",  30 April 2010 (2010-04-30), pages 4050-4056, XP055652661, Retrieved from the Internet: URL:https://www.sciencedirect.com/science/article/pii/S0013468610003191?via=ihub [retrieved on 2019-12-13] abstract; table 1 ----- -/--	1-19

Further documents are listed in the continuation of Box C.

See patent family annex.

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"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

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Date of the actual completion of the international search  13 December 2019	Date of mailing of the international search report  08/01/2020
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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  Hammerstein, G
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## 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.
A	FLORICA MANEA ET AL: "Voltammetric Detection of Urea on an Ag-Modified Zeolite-Expanded Graphite-Epoxy Composite Electrode", SENSORS, vol. 8, no. 9, 22 September 2008 (2008-09-22), pages 5806-5819, XP055652649, DOI: 10.3390/s8095806 abstract  -----	1-19

# INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2935654	A1	28-10-2015	
		CA 2895253 A1	26-06-2014
		EP 2935654 A1	28-10-2015
		WO 2014100828 A1	26-06-2014
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