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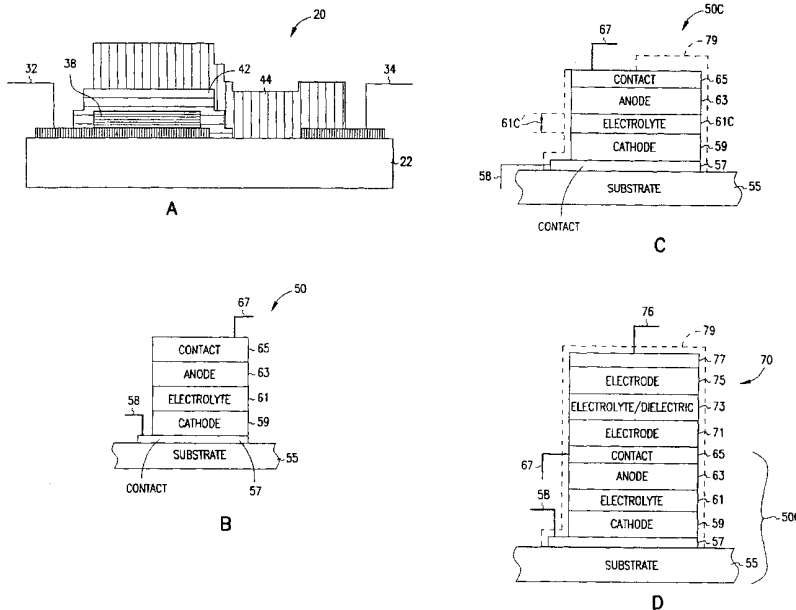
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— with international search report

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[Continued on next page]

(54) Title: THIN-FILM BATTERY HAVING ULTRA-THIN ELECTROLYTE AND ASSOCIATED METHOD



(57) Abstract: A method and system for fabricating solid-state energy-storage devices including fabrication films for devices without an anneal step. A film of an energy-storage device is fabricated by depositing a first material layer to a location on a substrate. Energy is supplied directly to the material forming the film. The energy can be in the form of energized ions of a second material. Supplying energy directly to the material and/or the film being deposited assists in controlling the growth and stoichiometry of the film. The method allows for the fabrication of ultrathin films such as electrolyte films and dielectric films.



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*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 01/09436

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 H01M6/18 H01M10/36 C23C14/48

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)  
 IPC 7 H01M C23C

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 practical, search terms used)  
 EPO-Internal, COMPENDEX, PAJ, CHEM ABS Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MARTIN P J ET AL: "MODIFICATION OF THE OPTICAL AND STRUCTURAL OF DIELECTRIC ZRO2 FILMS BY ION-ASSISTED DEPOSITION" JOURNAL OF APPLIED PHYSICS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 55, no. 1, 1 January 1984 (1984-01-01), pages 235-241, XP001053666 ISSN: 0021-8979 page 235, column 1, paragraph 3 -page 236, column 1, paragraph 2	1, 3, 24
X	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 03, 31 March 1997 (1997-03-31) & JP 08 293310 A (TOKYO GAS CO LTD), 5 November 1996 (1996-11-05) abstract	1

Further documents are listed in the continuation of box C.

Patent family members are listed in 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 document 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

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- \*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.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
8 April 2002	12/04/2002

Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  De Vos, L
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/09436

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>R.B.GOLDNER: "Ambient temperature synthesis of polycrystalline thin films of lithium cobalt oxide with controlled crystallites orientations"                      ELECTROCHEMICAL SOCIETY PROCEEDINGS,                      vol. 98-15, pages 268-273, XP008001908                      page 268, paragraph 1 -page 269, paragraph 1                      1</p> <p style="text-align: center;">-----</p>	1-7

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box I.2

Present claims 26-36 relate to an extremely large number of solid state energy storage devices (only characterized by the fact that they comprise "ions having energy greater than about 5eV"), that a lack of clarity and conciseness, within the meaning of Article 6 PCT, arises to such an extent as to render a complete meaningful search of these claims impossible.

Consequently, the search has been carried out for those parts of the application which do appear to be clear, namely to a method of fabricating an energy storage device comprising the supply of "energized particles", especially ions with energy greater than 5eV, during deposition of an electrolyte film on an electrode film, as described in claims 1-25 and to energy storage devices obtained by this method. Consequently an incomplete search has been performed for the claims 26-36.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/09436

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
JP 08293310	A	05-11-1996	NONE	
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