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*H01J 37/147* (2006.01)    *H01L 21/66* (2006.01)
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[Continued on next page]

(54) **Title:** HIGH THROUGHPUT SEM TOOL

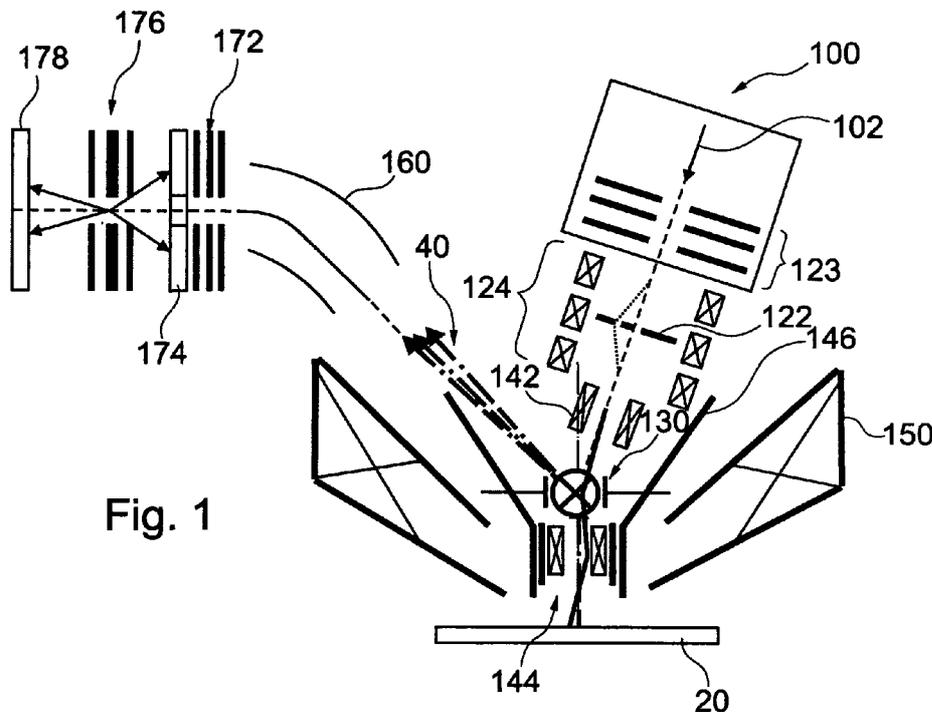


Fig. 1

(57) **Abstract:** A scanning charged particle beam device (100) is described. The scanning charged particle beam device includes a beam emitter (102) for emitting a primary electron beam, a first scan stage for scanning the beam over a specimen, an achromatic beam separator (130) adapted for separating a signal electron beam from the primary electron beam, and a detection unit (172,174,178) for detecting signal electrons.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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# INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2008/001414

**A. CLASSIFICATION OF SUBJECT MATTER**

INV. H01J37/05 H01J37/147 H01J37/28 H01L21/66

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

**B. REIDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

GOIN HOIJ HOIL

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 , 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	EP 1 100 111 A (ADVANTEST CORP [JP]) 16 May 2001 (2001-05-16)	1,13-15
Y	paragraphs [0002], [0017]; figures 1,2	2,3,10, 12,16-18
X	US 2004/075053 A1 (PREIKSZAS DIRK [DE] ET AL) 22 April 2004 (2004-04-22) paragraphs [0032], [0038], [0042], [0053] - [0055], [0059] - [0067]; figures 1,2 paragraphs [0047] - [0049], [0083] - [0085]; figures 6-8	1,4,6,7, 9,14,15
Y	US 2006/060790 A1 (NAKASUJI MAMORU [JP] ET AL) 23 March 2006 (2006-03-23) paragraphs [0059] - [0065], [0084] - [0086]; figures 1,2,5,6	2,3,10, 12,16-18

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 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

'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

24 June 2008

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Name and mailing address of the ISA/

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Krauss , Jan

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2008/001414

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

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).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

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

see additional sheet

- 1.  As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
  
- 2.  As all searchable claims could be searched without effort justifying an 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.:

1-4, 6, 7, 9, 10, 12-18

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.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-4, 6, 7, 9, 10, 12-18

dedicated to a charged particle beam device according to claim 2 comprising a second scan stage for scanning the-beam over the specimen.

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2. claims: 5, 19-21

dedicated to a charged particle beam device according to claim 5 and a respective method according to claim 19, comprising (means for) superimposing a quadrupole field over the fields of the achromatic beam separator.

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3. claim: 8

dedicated to a charged particle beam device according to claim 8, adapted for detecting auger electrons.

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4. claim: 11

dedicated to a charged particle beam device according to claim 11, wherein the emitter is adapted for providing a reduced brightness of at least  $10^8$  Am<sup>-2</sup>/srV

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2008/001414

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1100111	A	16-05-2001	DE 69903439 D1	14-11-2002
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