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(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
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(54) **X-RAY SOURCES USING LINEAR ACCUMULATION**

(57) This application discloses a compact source for high brightness x-ray generation. Higher brightness is achieved through electron beam bombardment of multiple regions aligned with each other to achieve a linear accumulation of x-rays. This is achieved by aligning discrete x-ray emitters, or through use of novel x-ray targets comprising a number of microstructures of x-ray generating materials fabricated in close thermal contact with a substrate with high thermal conductivity. This allows heat to be more efficiently drawn out of the x-ray generating material, and allows bombardment of this material with higher electron density and/or higher energy electrons, leading to greater x-ray brightness. The orientation of the microstructures allows the use of an on-axis collection angle, allowing accumulation of x-rays from several microstructures to be aligned, appearing to have a single origin, also known as "zero-angle" x-ray emission.

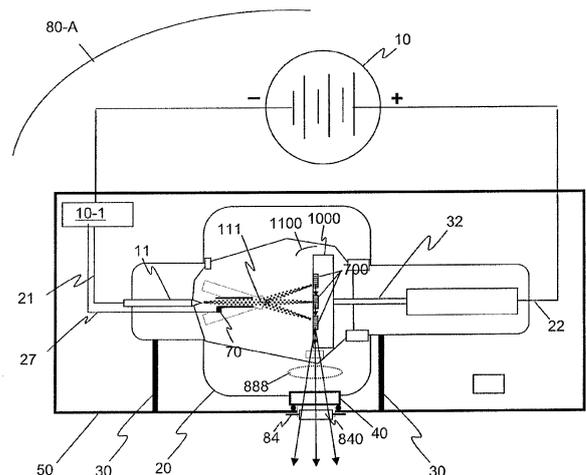


FIG. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 16 20 0793

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2011/026680 A1 (SATO GENTA [JP]) 3 February 2011 (2011-02-03)	1-7,10	INV. H01J35/08
A	* paragraphs [0009], [0030], [0031], [0051]; figure 1a *	8,9	
A	US 2011/235781 A1 (AOKI SHOZO [JP] ET AL) 29 September 2011 (2011-09-29)	1	
-----			TECHNICAL FIELDS SEARCHED (IPC)
			H01J

-The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		7 April 2017	Oestreich, Sebastian
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		T : theory or principle underlying the invention	
Y : particularly relevant if combined with another document of the same category		E : earlier patent document, but published on, or after the filing date	
A : technological background		D : document cited in the application	
O : non-written disclosure		L : document cited for other reasons	
P : intermediate document		& : member of the same patent family, corresponding document	

EPO FORM 1503 03 82 (P04C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

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Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

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No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

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LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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see sheet B

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All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

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As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

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Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

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None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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1. claims: 1-10

x-ray source comprising a plurality of targets working as x-ray sub-sources aligned along an axis that passes through the x-ray window, in which the target comprises a plurality of discrete structures embedded in a substrate.

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2. claims: 11-16

x-ray source comprising a plurality of targets working as x-ray sub-sources aligned along an axis that passes through the x-ray window, comprising an x-ray optical element which is positioned such that x-rays generated by a sub-source are focused by the optical element onto an adjacent sub-source.

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

07-04-2017

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US 2011026680 A1	03-02-2011	JP 2011029072 A US 2011026680 A1	10-02-2011 03-02-2011

US 2011235781 A1	29-09-2011	DE 112010002512 T5 JP 5548188 B2 JP WO2010109909 A1 US 2011235781 A1 WO 2010109909 A1	24-05-2012 16-07-2014 27-09-2012 29-09-2011 30-09-2010

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82