



- (51) International Patent Classification:
G01T 1/164 (2006.01) *G01T 1/29* (2006.01)
- (21) International Application Number:
PCT/IB2013/053305
- (22) International Filing Date:
26 April 2013 (26.04.2013)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/644,082 8 May 2012 (08.05.2012) US
- (71) Applicant: **KONINKLIJKE PHILIPS N.V.** [NL/NL];
High Tech Campus 5, NL-5656AE Eindhoven (NL).
- (72) Inventor: **VALENTINO, Frank Charles**; c/o High Tech
Campus Building 5, NL-5656 AE Eindhoven (NL).
- (74) Agents: **STEFFEN, Thomas** et al.; High Tech Campus,
Building 5, NL-5656 AE Eindhoven (NL).
- (81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,
KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI,
NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU,

RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA,
ZM, ZW.

- (84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the
earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))*

- (88) Date of publication of the international search report:
8 May 2014

(54) Title: SPECT/PET IMAGING SYSTEM

(57) Abstract: An imaging system (100) includes a set of detector modules (108) that detect gamma rays, which have energy in a range of 40 to 140 keV and 511 keV, emitted by a radioisotope in an examination region, wherein 511 keV gamma rays are detected in singles mode in which individual 511 keV gamma rays, and not coincidence pairs of 511 keV gamma rays, are detected, an energy discriminator (132) that bins detected gamma rays into a first energy bin corresponding to 511 keV energy gamma rays and a second energy bin corresponding to 40 to 140 keV energy gamma rays, and a reconstructor (126) that reconstructs the 511 keV energy gamma rays thereby generating a first image of a distribution of a first radionuclide and that reconstructs the gamma rays in the one or more ranges between 40 and 140 keV thereby generating a second image of a distribution of a second radionuclide.



INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2013/053305

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01T1/164 G01T1/29
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)
G01T G21K

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, BIOSIS, 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	US 6 271 524 B1 (WAINER NAOR [IL] ET AL) 7 August 2001 (2001-08-07)	1-5, 10-14, 16-19
Y	column 12, line 1 - line 13 column 13, line 1 - line 22 figure 15 ----- -/--	6-9, 15



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

12 March 2014

Date of mailing of the international search report

21/03/2014

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

Ordavo, Ivan

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2013/053305

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DOMINIQUE DELBEKE ET AL: "Rest Myocardial Perfusion/Metabolism Imaging Using Simultaneous Dual-Isotope Acquisition SPECT with Technetium-99m-MIBI/ Fluorine-18-FDG", JOURNAL OF NUCLEAR MEDICINE, SOCIETY OF NUCLEAR MEDICINE, RESTON, VA, US, vol. 36, no. 11, 1 November 1995 (1995-11-01), pages 2110-2119, XP007910043, ISSN: 0161-5505	1,2,4,5, 10-12, 16-20
Y	abstract page 2111, column 1 - column 2 page 2112 - page 2113 figures 4, 7	6-9,15
Y	----- US 2010/268074 A1 (VAN LOEF EDGAR V [US] ET AL) 21 October 2010 (2010-10-21) paragraph [0005] - paragraph [0006] -----	6-8
Y	US 2011/237941 A1 (SHAHAR ARIE [IL] ET AL) 29 September 2011 (2011-09-29) paragraph [0072] paragraph [0102] -----	9,15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2013/053305

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6271524	B1	07-08-2001	NONE	

US 2010268074	A1	21-10-2010	NONE	

US 2011237941	A1	29-09-2011	NONE	
