

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
4 January 2007 (04.01.2007)

PCT

(10) International Publication Number
WO 2007/001693 A2

(51) International Patent Classification:
H01J 35/08 (2006.01)

(21) International Application Number:
PCT/US2006/020070

(22) International Filing Date: 23 May 2006 (23.05.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/165,972 24 June 2005 (24.06.2005) US

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(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI,
NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,
SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US,
UZ, VC, VN, YU, ZA, ZM, ZW.

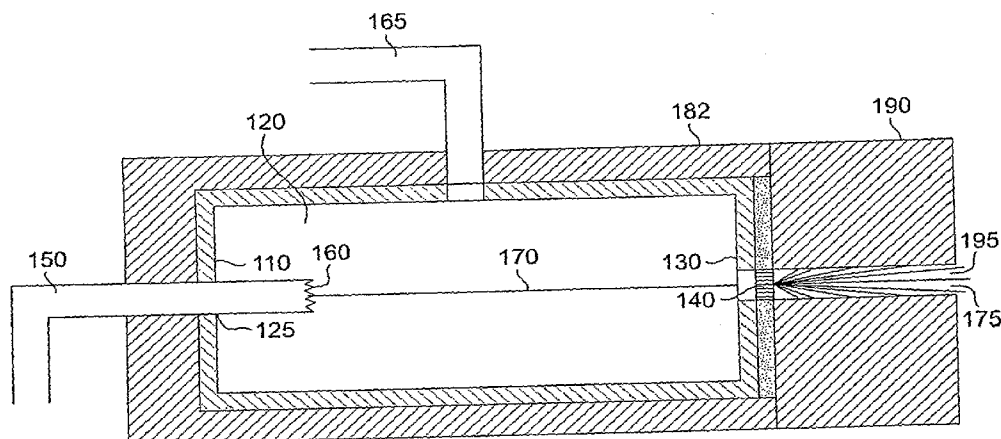
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,
RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished
upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: X-RAY RADIATION SOURCES WITH LOW NEUTRON EMISSIONS FOR RADIATION SCANNING



(57) Abstract: In one example, a radiation source comprises a housing and an acceleration chamber within the housing, with a peak acceleration energy greater than the lowest neutron production threshold of tantalum. A source of charged particles is supported by the housing to emit charged particles into the acceleration chamber. A target is supported by the housing downstream of the acceleration chamber. The target consists essentially of at least one isotope having a neutron production threshold greater than the peak acceleration energy. No neutrons are therefore generated. The source may also comprise a collimator, target shielding, and/or housing shielding comprising at least one isotope having a neutron production threshold greater than the peak acceleration energy, reducing or eliminating neutron generation as compared to the prior art, as well. Systems comprising the source, methods of operation of the source, and methods of manufacture of the source are also disclosed.

WO 2007/001693 A2