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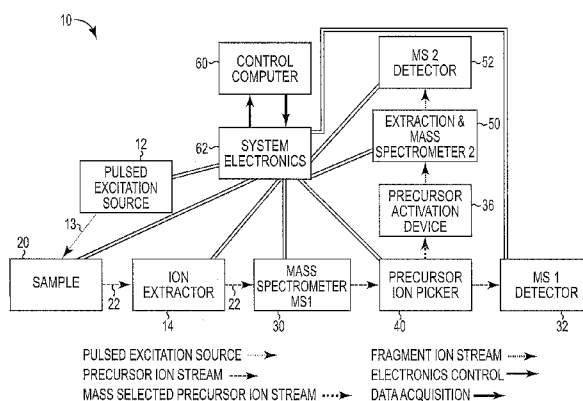


Fig. 1

(57) Abstract: A system and method for acquisition of mass spectrometry data is configured to provide a stream of charged particles (e.g., from an analytical volume). A primary mass spectrometer (e.g., time-of-flight mass spectrometer) may be used to separate charged particles of the stream of charged particles based on their mass-to-charge ratio and detect the charged particles in a mass-to-charge spectrum. A stream of precursor ions having a selected mass range may be diverted from the stream of charged particles for fragmentation to provide fragment ions (e.g., fragment ions from the analytical volume). The fragment ions may be provided to a second mass spectrometer for analysis of the fragment ions (e.g., during the same time as the time-of-flight mass spectrometer is separating and detecting charged particles of the stream of charged particles based on their mass-to-charge ratio).



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009/206248 A1 (MAKAROV ALEXANDER [GB] ET AL) 20 August 2009 (2009-08-20) paragraph [0049] - paragraph [0051] paragraph [0056] paragraph [0062] - paragraph [0065] figures 1,2	1-18
X	US 2007/029473 A1 (VERENTCHIKOV ANATOLI N [RU] VERENTCHIKOV ANATOLI [RU] ET AL) 8 February 2007 (2007-02-08) paragraph [0151] - paragraph [0156] figure 16 claim 6	1-18

Further documents are listed in the continuation of Box C. See patent family annex.

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008/073498 A1 (KOVTOUN VIATCHESLAV V [US]) 27 March 2008 (2008-03-27) paragraph [0042] - paragraph [0045] paragraph [0064] - paragraph [0065] paragraph [0029] figures 5,6,9	1-18
X	US 2011/226941 A1 (GORENSTEIN MARC V [US] ET AL) 22 September 2011 (2011-09-22) paragraph [0057] - paragraph [0059] -----	1,3,4

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009206248	A1	20-08-2009	
		CA 2639903 A1	01-11-2007
		DE 112007000931 T5	04-06-2009
		GB 2447195 A	03-09-2008
		JP 4758503 B2	31-08-2011
		JP 2009533672 A	17-09-2009
		US 2009206248 A1	20-08-2009
		WO 2007122383 A2	01-11-2007

US 2007029473	A1	08-02-2007	NONE

US 2008073498	A1	27-03-2008	
		CA 2654857 A1	17-01-2008
		CN 101489651 A	22-07-2009
		EP 2038048 A2	25-03-2009
		JP 5179488 B2	10-04-2013
		JP 2009544118 A	10-12-2009
		US 2008073498 A1	27-03-2008
		WO 2008008633 A2	17-01-2008

US 2011226941	A1	22-09-2011	
		EP 2279260 A1	02-02-2011
		JP 2011522257 A	28-07-2011
		US 2011226941 A1	22-09-2011
		WO 2009146345 A1	03-12-2009
