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[Continued on next page]

(54) Title: LOOPED IONIZATION SOURCE

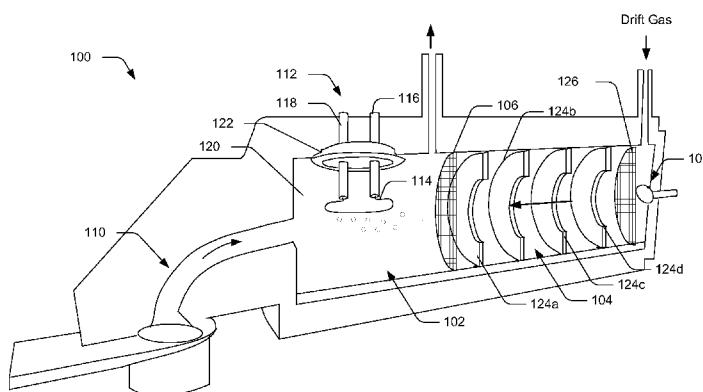


Fig. 1

(57) Abstract: Looped ionization sources for ion mobility spectrometers are described. The ionization sources can be used to ionize molecules from a sample of interest in order to identify the molecules based on the ions. In an implementation, an electrical ionization source includes a wire that is looped between electrical contacts. The wire is used to form a corona responsive to application of voltage between the wire and the walls of an ionization chamber. The corona can form when a sufficient voltage is applied between the wire and the walls. A difference in electrical potential between the wire and a wall forming an ionization chamber, in which wire is contained, can be used to draw the ions away from the wire. In embodiments, the wire can be heated to reduce the voltage used to strike the corona. The ions, subsequently, may ionize the molecules from the sample of interest. The looped corona source can also be used in mass spectrometers (MS).



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER IPC: G01N 27/68 (2006.01) , H01J 27/14 (2006.01) , H01J 49/12 (2006.01) , H01J 49/40 (2006.01) 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) IPC: G01N (2006.01) , H01J (2006.01) (using keywords) Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used) Canadian Patent Database, Epoque, Esp@cenet, TotalPatent, United States Patent Database (USPTO), WEST. Keywords: conductivity, corona, current, IMS, ionization, loop, potential, spectrometer, voltage, wall, wire														
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>US 20080272285 (Giannantonio et al.) 6 November 2008 (06-11-2008) - page 2 [0011]-[0018], [0025]-[0026] - page 3 [0029], [0032] - claims 1-3 - figures 1-3 - abstract</td> <td>1, 2, 10, 14, 17</td> </tr> <tr> <td>X</td> <td>US 5420424 (Carnahan et al.) 30 May 1995 (30-05-1995) - col. 1, lines 5-29 - col. 2, line 35 - col. 3, line 27 - col. 4, line 13 - col. 7, line 26 - col. 8, line 63 - col. 9, line 4 - claims 1, 5, 6, 10, 14-17 - figures 1-2 - abstract</td> <td>1-3, 6, 8, 10, 14, 16, 17, 22</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 20080272285 (Giannantonio et al.) 6 November 2008 (06-11-2008) - page 2 [0011]-[0018], [0025]-[0026] - page 3 [0029], [0032] - claims 1-3 - figures 1-3 - abstract	1, 2, 10, 14, 17	X	US 5420424 (Carnahan et al.) 30 May 1995 (30-05-1995) - col. 1, lines 5-29 - col. 2, line 35 - col. 3, line 27 - col. 4, line 13 - col. 7, line 26 - col. 8, line 63 - col. 9, line 4 - claims 1, 5, 6, 10, 14-17 - figures 1-2 - abstract	1-3, 6, 8, 10, 14, 16, 17, 22			
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☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex. <table border="1"> <tbody> <tr> <td>* Special categories of cited documents :</td> <td>"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</td> </tr> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"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</td> </tr> <tr> <td>"E" earlier application or patent but published on or after the international filing date</td> <td>"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</td> </tr> <tr> <td>"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)</td> <td>"&" document member of the same patent family</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td></td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </tbody> </table>			* Special categories of cited documents :	"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	"A" document defining the general state of the art which is not considered to be of particular relevance	"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	"E" earlier application or patent but published on or after the international filing date	"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	"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)	"&" document member of the same patent family	"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	
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Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001-819-953-2476		Authorized officer Tung Nguyen (819) 956-3859												

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2012/001669

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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A	CA 2500171 (Xu et al.) 23 September 2004 (23-09-2004) - see entire document	1-23
A	US 5684300 (Taylor et al.) 4 November 1997 (04-11-1997) - see entire document	1-23
A	GB 2465166 (Mitko) 12 May 2010 (12-05-2010) - see entire document	1-23

INTERNATIONAL SEARCH REPORT
Information on patent family members

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