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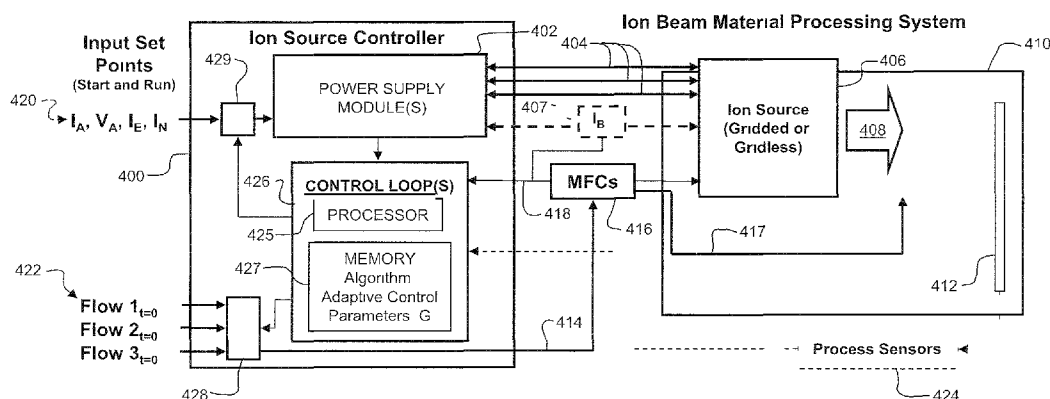
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(54) Title: ADAPTIVE CONTROLLER FOR ION SOURCE



(57) Abstract: An ion source (406), often used for materials processing applications in a vacuum processing chamber (410), is provided with an adaptive control system (426). The adaptive control system (426) has a microprocessor (425) and memory (427) that regulate the inputs of power (402) and gas flow (416) into the ion source (406). The adaptive control system (426) monitors and stores the dynamic input impedance properties and status of input devices (402, 407, 416) to the ion source (406). The adaptive control system (426) may additionally control magnetic fields (407) within the ion source (406). The adaptive control system (426) provides a multivariable control for driving any combination of input power (402), gas flow (416), magnetic field (407), or electrostatic ion beam extraction or acceleration field into the ion source (406).

**A. CLASSIFICATION OF SUBJECT MATTER****H01J 37/08(2006.01)i, H01J 27/02(2006.01)i**

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)

IPC8 H01J, H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal) "Keywords ion source, controller, ion beam, monitoring, gas flow, operation, control parameter, circuitry"

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
A	US 5973447 A (Monsanto Co ) 26 October 1999 see abstract, claims 1,34,62, column 11 line 55-column 18 line 32, figures 3A,4B	1-38
A	US 6919690 B2 (Veeco Instruments Inc ) 19 July 2005 see abstract, claims 1,14, column 3 line 51-column 7 line 13, figures 3,8	1-38
A	US 6002208 A (Advanced Ion Technology Inc ) 14 December 1999 see abstract, claims 1,15-18, column 5 line 21-column 9 line 10, figures 4,6	1-38



Further documents are listed in the continuation of Box C



See patent family annex

\* Special categories of cited documents

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"E" earlier application or patent but published on or after the international filing date

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"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

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"&amp;" document member of the same patent family

Date of the actual completion of the international search

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**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
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