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(71) Applicant and

(72) Inventor: **GATLIK, Iwo** [PL/CH]; Landskronstr. 55,
CH-4056 Basel (CH).

(74) Agent: **NEUMANN, Gerd**; Albert-Schweitzer-Str. 1,
79589 Binzen (DE).

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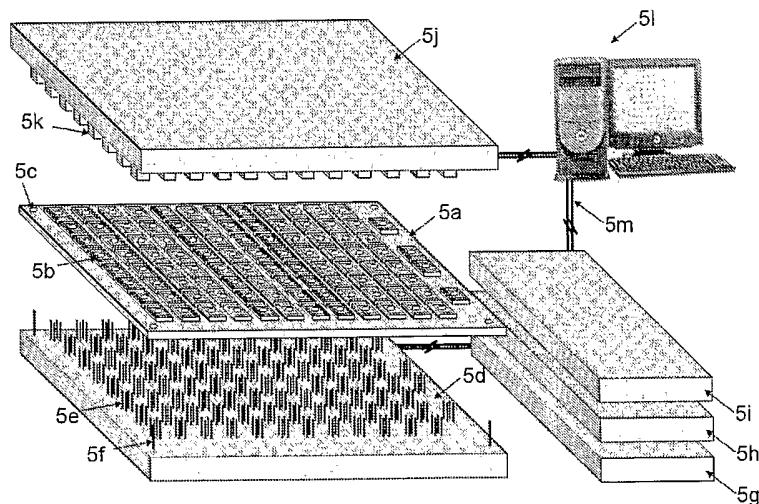
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ning of each regular issue of the PCT Gazette.

(54) Title: HIGH THROUGHPUT STORAGE-RETRIEVAL AND SCREENING PLATFORM FOR RESEARCH APPLICA-
TIONS BASED ON ELECTRO OR ACOUSTIC SENSORS



(57) Abstract: The present invention is a sensor monitored and controlled storage-retrieval platform that is to be used together with another detection system. This invention includes apparatus and methods designed to measure, monitor, control and compare biological, physical and chemical i) processes in stored samples e.g. polymerization, evaporation, respiration, ii) properties of stored samples, which may be in contact with sensors, in a high throughput screening mode. The invented high throughput storage-retrieval and screening system with a sensor plate is prepared for use with broad range of electrochemical devices, including high and low resistance electrometers, micro gravimeters, acoustic resonators, frequency and

time domain impedance analyzers.

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High throughput storage-retrieval and screening platform for research applications based on electro or acoustic sensors.

The present invention relates to a sample storage control and monitoring platform that is used in combination with other storage or sample analysing system during high throughput screening and discovery applications. More particularly, the invention relates to multiple separated storage regions formed by electrical or piezoelectric micro array sensors combined with a high throughput system. This system is principally useful for storage of biological or chemical materials and for evaluation or characterisation of stored materials localised in a series of micro arrays composed in 96, 384 or 1536 patterns as required for robotic handling. The transformation of current sample storage technologies to a high throughput storage system and fusion of this new storage and existing screening technologies enables efficient structure - activity relationship study of samples.

The correlation between structure and activity of molecules in various environments is a fundamental subject in the study of chemically, biologically and physically based systems. Structure-activity relationships are important to understand many physical, chemical and biological interactions such as: the magnetic, conducting properties of materials, the function of initiators, quenchers, catalysts, enzymes, inhibitors, receptors, cellular communication and control. Surface protection, plant protection and pharmaceutical research are types of investigation that rely on structure-activity study. The time to bring to the market new drugs, pesticides, initiators and catalysts could be greatly reduced by the application of methods and apparatus which allow rapid structure-activity analysis of large numbers of compounds.

In recent years, research laboratories often have used high throughput assays to screen a large number of compounds that could have desired structure-activity properties. An interesting collection of the assays and methods useful for high throughput screening which includes many references is shown in U.S. Patent No. 6,238,869 by Kris and Felder. Such assays and methods allow research laboratories to test in parallel a large library of compounds and find those that show the desired properties or features. Such assays are particularly useful in the early phase of the drug discovery process because parallel analysis of many series of compounds can

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be accomplished in a cost-effective manner and in a short time. Compounds that demonstrate desired properties are automatically analyzed further. An analysis of large libraries of chemical or biological compounds without high throughput methods would be practically impossible.

Typical high throughput screening assays are generally used in drug discovery but not in initiator or catalyst discovery processes. This is a consequence of the roots of high throughput technology, created on optical spectroscopy base, operating in aqueous media for use in pharmaceutical industry. Optical spectroscopy based technology (e.g. US 5,487,872 by Hafeman and Humphries) is not suitable for initiator or catalyst discovery processes, because the information of structure-activity relationship of compound and a target is hidden by a non-transparent medium.

Currently high throughput drug screening technologies are being extended as it is described by Jay in World Patent WO03027656A2 and are based on redox measurements and on active control of the redox environment of a target. However, these measurements cannot be used to monitor cure processes (polymerization), to investigate catalytic reactions or to characterize stored materials, if the redox environment does not exist. Such processes, reactions and characterization measurements can be performed by use of electrical based measurement.

Interest in the use of electrical based measurements to characterize reactions, materials and media has existed for many decades. A large number of excellent books and scientific publications reviewing this field have been written, i.e. P. Hedvig, Dielectric Spectroscopy of Polymers, John Wiley (1977); A. J. Bard and L. R. Faulkner, Electrochemical Methods: Fundamentals and Applications, John Wiley and Sons (2001); D. T. Sawyer, A. Sobkowiak and J. L. Roberts, Jr., Electrochemistry for Chemists, Interscience (1995); C. M. A. Brett and A. M. O. Brett, Electrochemistry: Principles, Methods and Applications, Oxford Science (1993). An example of such a system used for monitoring and/or controlling chemical reactions, particularly polymerization reactions and characteristic of a medium is given by Golba and Hansen U.S. Pat. No. 4,448,943; by Kranbuehl in U.S. Patents No. 4,710,550 and No. 4,723,908. However, the described systems and methods do not provide data other than impedance measurements, such as micro gravimetric or acoustic wave measurements based on piezoelectric resonators. Additionally, the systems are not

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adapted to small sample quantity. The systems are also not adapted for use in a high throughput mode.

Current archiving and retrieval technology - system and methods are described by Sadler and Hogan in U.S. Patents No. 23129755A1. However, this technology does not provide for active control of the sample or sample environment. Additionally, this technology does not provide any measurement of chemical, biological or physical processes, reactions or parameters. The technology is not applicable to a wide variety of systems and sample types and it is not adapted for use in a high throughput assays.

Accordingly, there is a need for a high throughput storage system of chemical or biological materials that can provide control and measurement of stored and recovered quantity, a system equipped with a piezoelectric element to facilitate dissolution or to analyse stored sample. Moreover the system can simultaneously provide some additional information about stored samples i.e. solubility, stability, integrity, conductivity, surface tension, dissolution rate, solvent evaporation, etc. In addition, the system can operate in a high throughput mode and requires small amounts of samples.

Such a high throughput storage system integrated, automated, robotized, and computerised, working with high throughput analysis systems will be breakthrough in samples storage technology. The system will be also a mile stone on the way of integration of a large compounds library with lab on a chip technology.

SUMMARY OF THE INVENTION

There is a need for a flexible system that can provide storage facilities, measurement and control of the stored material that is independent of other measurements that can be performed on the sample, particularly in a high throughput screening.

This need is met by the present invention wherein the system and methods for the storage-retrieval, control-analysis of the stored samples are disclosed. This system can readily be combined with other existing detection systems to provide information about structure-activity relationships of species in various environments. The

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invention is especially useful for high throughput storage, analysis and effective discovery of drugs, initiators, catalysts, polymers, herbicides and pesticides.

In accordance with embodiment of the present invention the system for storage and analysis of a sample is provided, which contains five major components: i) a micro array sensor plate, ii) a connecting and switching module, iii) an analyzer-controller or analysers-controllers with data acquisition, iv) a multifunctional robotic station, v) a main computer with software managing data and controlling all components.

The micro array sensor plate can be composed of arrays of 96, 384 or 1536 patterns with defined specifications on a single "chip" packaged as a standard micro titer plate conforming to the Society of Biomolecular Screening (SBS) specification for robotic handling. The micro array sensor plate can be composed of at least one nonconductive area comprising at least one kind of electrical insulator; multiple separate sensors comprising at least two electrically conductive multilayer electrodes situated on said insulator(s); multiple separate areas comprising at least two separate conductive multilayer surfaces situated on said insulator(s) separated on the surface of the insulator(s) from said electrodes; at least one electrical connection between said electrode(s) and said conducting surface(s) passing through the bulk of the said insulator(s). The micro array sensor plate can additionally contain at least one of the following components: electronic chip with memory or serial number, photo sensor, temperature or humidity sensors, or a combination of those elements. The connecting and switching component may be switched sequentially, in a parallel mode, selectively or in another selected scheme.

The robotic station may include a fully automated array sensor plate storage system, heated incubators with integrated shakers, robotic manipulation arm, pipeting-mixing unit and irradiation unit. The system can be configured to prepare, incubate, irradiate, analyse, store, re-prepare, re-incubate, re-irradiate, reanalyse micro arrays in the micro titer plate format of the invention as well as in the modified micro arrays plate format.

The system can be computerized and fully integrated by the use of software managing data and controlling all components. The main computer can be used as a data storing, analysing, processing, and reporting device and also to control, communicate and integrate all processes and components.

In accordance with one embodiment of the present invention a method for storage

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and analysis of a sample is provided in multiple store-test regions. The method comprises providing an electrical or piezoelectric control of the stored chemical or biological sample in store-test regions and providing on the stored sample an assay or storage facilitating scheme consisting of at least one of the following: acoustic, electrochemical, spectroscopic, or magnetic measurement. The store-test region may be any structure that can hold a sample and allow the assay to be performed, such as a beaker, a tube, or well. The store-test regions can be grouped as wells of a micro titer plate. For example, a modified ninety-six well microplate can be used. The electrical or piezoelectric control can be operated to measure and control the storage of the sample, the assay can be operated to detect and analyse the sample and the storage facilitating system can be operated to assist storage and retrieval of the sample. The electrical control preferably has at least two electrodes and piezoelectric control and at least one piezoelectric element. The electrical or piezoelectric controls can be operated separately to provide different control of samples in each of the store-test regions. A different sample can be placed in each of the store-test regions of the microplate, and the electrical or piezoelectric control, assay or storage facilitating system can be independently applied in each of the samples in the store-test regions. The electrical or piezoelectric controls can be provided in the microplate by integration of the controls on the bottom of at least one store-test region of a microplate. This embodiment is particularly suited for high throughput screening and storage.

Current combinatorial chemistry technology can be used to produce a large number of compounds targeted to a variety of applications, such as drugs, initiators, catalysts, polymers, herbicides and pesticides discovery or analytical biochemistry. A high throughput storage system which can then be used to facilitate storage and retrieval of the enormous number of samples can also provide additional information about the structure reactivity or about the interaction of the candidates with the target of the sample under various conditions. The high throughput screening can be then used to probe the large number of candidates in order to identify those that have the desired property. The assay procedure that is used in the high throughput screening protocol is designed exclusively for the application for which the candidate samples are intended. The invented storage and analysis method allows the compounds that show the desired activity to be more easily identified.

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Consequently, it is an object of the present invention to provide an electric or piezoelectric control for the sample storage that is coupled with an independent analysis method. Another object of the invention is to provide a method and system for separate control of the multiple sample storage for increased throughput storage and analysis. Further objects of the invention will be visible in light of the description of the invention embodied herein.

Figure 1: is a micro array sensor plate top view.

Figure 2: is a micro array sensor plate bottom view.

Figure 3: is a cross-section side view of a portion of the store-test regions showing identical sensor embodiments.

Figure 4: is a cross-section side view of a portion of the store-test regions showing mixed sensor embodiments.

Figure 5: is a block diagram of the preferred embodiment.

Referring initially to Figures 1 and 2, a particular embodiment of the micro array sensor plate for the storage-retrieval, control-analysis of the stored samples of the present invention is described in detail. The top view of the micro array sensor plate (Figure 1) according to the present invention includes at least one nonconductive area comprising of at least one kind of an electrical insulator, multiple separated sensors 1a, 1b, 1c, microchip 1d and runner or fastener 1e.

The nonconductive area of the plate can be made out of plastics e.g. epoxy, polyethylene, Nomex, Kapton, or ceramics, or crystals, or combinations thereof.

The sensors can detect radiation 1c, temperature and humidity 1b, can also like 1a sensors comprise of at least two electrically conductive multilayer electrodes situated on a said insulators where one of this insulators can be a piezoelectric material.

The bottom view of the micro array sensor plate (Figure 2) according to the present invention includes at least one nonconductive area comprising of at least one kind of an electrical insulator, multiple separated areas comprising of at least two separated conductive multilayer surfaces 2a situated on a said insulator(s), multiple separated

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sensors detecting temperature and humidity 2b, radiation 2c, microchip 2d and runner or fastener 2e.

The nonconductive area of the plate can be made out of plastics e.g. epoxy, polyethylene, Nomex, Kapton, or ceramics, or crystals, or combinations thereof.

The micro array sensor plate Figures 1 and 2 is composed of an array of 96 patterns with defined specifications on the single "chip" packaged as a standard micro titer plate conforming to the Society of Biomolecular Screening (SBS) specification for robotic handling.

This configuration of the sensors 1a enables separate storage, retrieval, control and analysis of each of the stored samples.

Referring initially to Figures 3 and 4, a cross-section side view of the micro array sensor plate for the storage-retrieval, control-analysis of the stored samples of the present invention is presented in detail. The cross-section side view of the micro array sensor plate according to the present invention includes electrical insulator(s), piezoelectric or other element(s), conductive material(s), electrodes or connectors. At least one connection 3a between electrode(s) 3b and conducting surface(s) 3c passes through the bulk of the said insulator(s).

Referring initially to Figure 5, a block diagram of the preferred embodiment of a system for the storage-retrieval, control-analysis of the stored samples of the present invention is presented in detail. In the system can be distinguish five major components: i) a micro array sensor plate 5a with sensors 5b and runner or fastener 5c; ii) a connecting and switching module 5d with conductive pins 5e and runner or fastener 5f; iii) analysers-controllers with data acquisition 5g-i; iv) a multifunctional robotic station 5j with a multifunctional unit 5k e.g. storing, retrieval, incubating, irradiating etc; v) a main computer with a data managing and controlling all components software 5l and the components connections 5m.

The micro array sensor plate Figures 1 and 2 can be composed of arrays of 96, 384 or 1536 patterns with defined specifications on the single "chip" packaged as a standard micro titer plate conforming to the Society of Biomolecular Screening (SBS)

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specification for robotic handling. The micro array sensor plate can be composed of at least one nonconductive area comprising at least one kind of an electrical insulator; multiple separated sensors 1a, 1b, 1c, comprising at least two electrically conductive multilayer electrodes 3b situated on a said insulator(s); multiple separated areas 2a comprising at least two separated conductive multilayer surfaces 3c situated on a said insulator(s) separated on the surface of the insulator(s) from said electrodes; at least one electrical connection 3a between said electrode(s) and said conducting surface(s) passing through the bulk of the said insulator(s). The micro array sensor plate can additionally contain at least one of following components: electronic chip 1d and 2d with memory or serial number, radiation sensor 1c and 2c, temperature or humidity sensors 1b and 2b or combination of those elements. The connecting and switching component 5d may be switched sequentially, in a parallel mode, selectively or in another selected scheme.

The analysers-controllers with data acquisition 5g-i may perform electrochemical, micro gravimetric, acoustic wave measurements e.g. amperometry, voltammetry, capacitance, impedance or conductivity. The analysers-controllers can be combined with at least one of the following methods: mass spectrometry, optical spectroscopy, magnetic spectroscopy.

The multifunctional robotic station 5j may include a fully automated array sensor plate storage system, heated incubators with integrated shakers, robotic manipulation arm, pipeting-mixing unit and irradiation unit. The system can be configured to prepare, incubate, irradiate, analyse, store, re-prepare, re-incubate, re-irradiate, reanalyse micro arrays in the micro titer plate format of the invention as well as in modified micro array plate format.

The system can be computerized and fully integrated by the use of software for data managing and controlling all components. The main computer 5l with the managing and controlling software can be use as a data storing, analysing, processing, and reporting device and also as, unit for controlling, communicating and integrating all processes and components.

The present invention has been described and illustrated in detail with reference to the preferred embodiments by way of example only, and not by way of limitation. Those skilled in the art would recognize that various modifications may be made

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without departing from the scope of the invention. Therefore, the present invention is not intended to be limited to what is described in the specification. Consequently, it is deliberate that the invention be limited only to the scope of the enclosed claims.

CLAIMS

1. A multisensor apparatus comprising:
 - a) at least one nonconductive area comprising at least one kind of an electrical insulator;
 - b) multiple separated sensors comprising at least two electrically conductive multilayer electrodes situated on a said insulator(s);
 - c) multiple separated areas comprising at least two separated conductive multilayer surfaces situated on a said insulator(s) separated on the surface of the insulator(s) from said electrodes;
 - d) at least one electrical connection between said electrode(s) and said conducting surface(s) passing through the bulk of the said insulator(s);
2. The apparatus of claim 1 where at least one of the electrical insulator is selected from material with resistivity above 100 MOhm*cm.
3. The apparatus of claim 1 where at least one of the electrical insulator is selected from PCV, polyimide, epoxy, polyethylene, polyester, polystyrene, teflon, ceramics, nylon, Nomex, Kapton, silicon or piezoelectric material or combinations thereof.
4. The apparatus of claim 1 where at least one of said sensors is located in a well or in a cavity.
5. The apparatus of claim 1 where some or all of said sensors contain a reference electrode or any other additional electrode.
6. The apparatus of claim 5 where at least one of said additional electrodes is in a form of a circle or a ring concentric with other electrodes.
7. The apparatus of claim 1 where some or all of said sensors form an array.
8. The apparatus of claim 7 where said array has 96, 384 or 1536 elements.
9. The apparatus of claim 7 where said array conforms to SBS size and shape specifications for robotic handling of micro titer plates.
10. The apparatus of claim 1 where at least one pair of said electrodes is shaped as pair of concentric interdigitated surfaces.

11. The apparatus of claim 1 where at least one of said electrodes or said areas is made of copper, gold, silver, platinum, iridium, palladium, carbon, semiconductor or oxides or salts of said elements or combinations thereof.
12. The apparatus of claim 1 where at least one of said areas is connected to an external electronic device via at least one conductive pin.
13. The apparatus of claim 1 where the apparatus contains at least one microchip, diode, capacitor, resistor, runner, hole, fastener, optical fibre or combinations thereof.
14. The apparatus of claim 1 where the apparatus contains at least one part detecting radiation, temperature or humidity or providing radiation, heat or light.
15. Computerised high throughput assay method comprising:
 - a) providing at least one area comprising more than eight separate regions, where at least one region contains at least two multilayer conductive contact surfaces separated from all other contact surfaces;
 - b) providing at least one area comprising more than eight separate store-test regions, where at least one store-test region contains at least two multilayer electrodes separated from all other electrodes;
 - c) storing a sample in some, but not in all store-test regions;
 - d) performing electrochemical or electro physical measurement or ions environment control supervised directly or indirectly by a computer;
16. The method as claimed in claim 15 wherein electrochemical measurement comprises amperometry, voltammetry, capacitance, impedance or conductivity.
17. The method as claimed in claim 15 combined with at least one of the following methods: mass spectrometry, optical spectroscopy, magnetic spectroscopy, micro gravimetric, acoustic wave measurements or radioassay.
18. The method as claimed in claim 17 wherein the spectroscopic detection method comprises luminescence, absorbance, infra red, Raman, electron spin resonance, magnetic spin resonance or refractive index.

19. The method as claimed in claim 15 in application to characterisation of polymeric materials, to monitoring of polymerization reaction, or to monitoring of catalytic reaction.
20. The method as claimed in claim 19 in application to evaluation of initiators of polymerisation or to evaluation of catalysts.
21. The method as claimed in claim 15 used to determine at least one of the following properties of said sample or its components: solubility, pKa, stability, integrity, electrical charge, lipophilicity, permeability, surface tension, critical micelle concentration, dissolution rate, partition coefficient, evaporation.
22. The method as claimed in claim 15 used to determine or change pH of said sample.
23. The method as claimed in claim 15 wherein molecules are subsequently added to the sample or the sample is irradiated or heated.
24. The method as claimed in claim 15 using the apparatus of claim 1.
25. The method where multisensor claimed in claims 7, 8, or 9 is used with at least one of the methods described in claims 15, 16, 19, 20 or 21.
26. The apparatus of claim 1 for use to high throughput assay or as lab on a chip or as integrated, automated, computerised, robotised system.
27. A high throughput storage method using at least one piezoelectric part to facilitate dissolving of stored in multiple areas chemical or biological material or their mixtures.
28. A high throughput storage apparatus comprising a plurality of store-test areas and at least one piezoelectric part to facilitate dissolving of stored chemical or biological material or their mixtures.
29. The method as claimed in claim 27 using the apparatus of claim 28.
30. The method as claimed in claim 27 using the apparatus of claim 3.

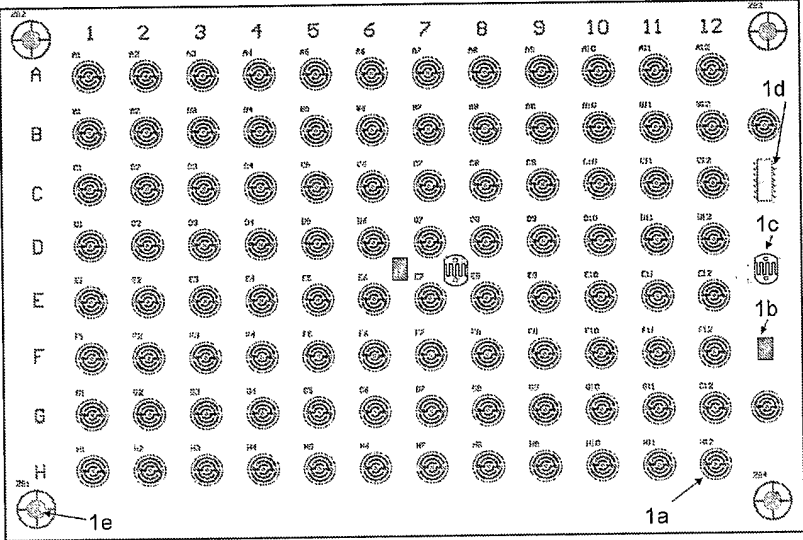


Fig. 1

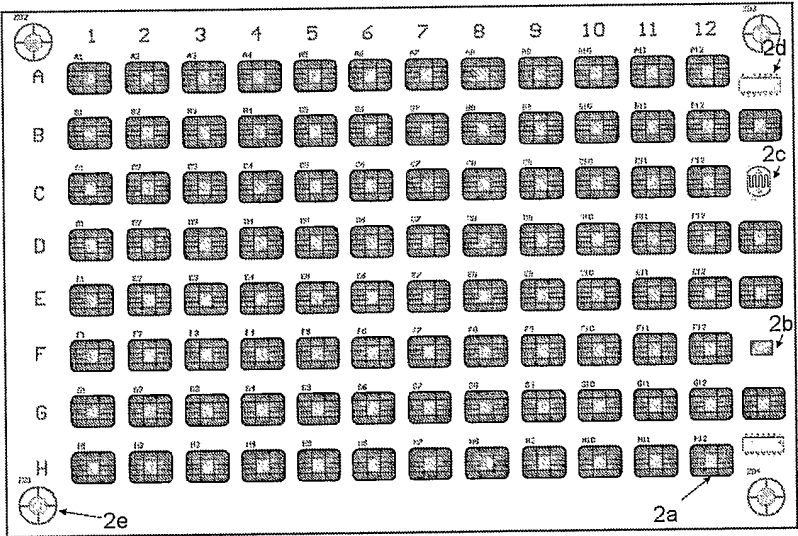


Fig. 2

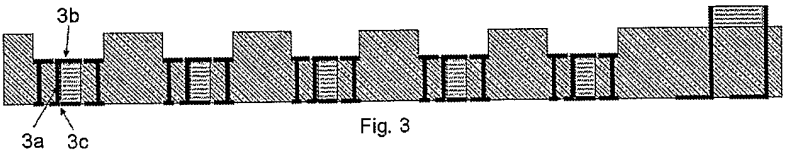


Fig. 3

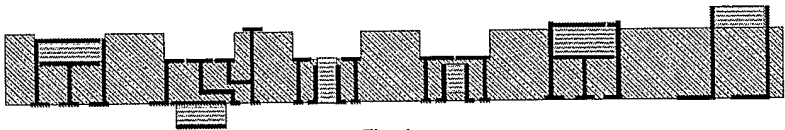


Fig. 4

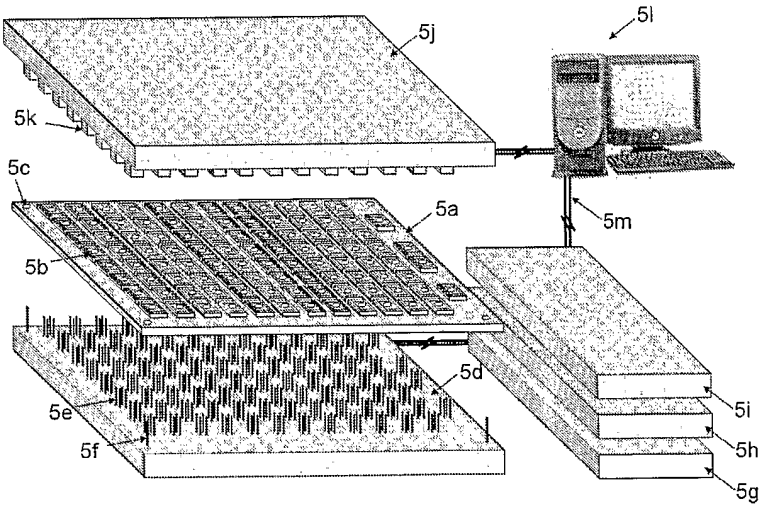
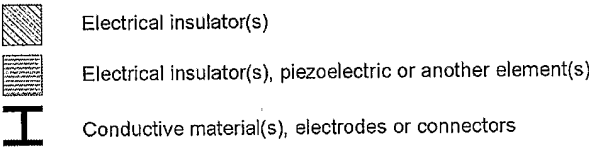


Fig. 5

INTERNATIONAL SEARCH REPORT

International Application No.

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B01J19/00 B01L3/00

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 7 B01J B01L G01N

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 practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 386 949 A (SENSOR TECH LTD) 1 October 2003 (2003-10-01) abstract page 3, line 20 - page 5, line 1 page 5, line 33 - page 11, line 17 page 13, line 4 - page 14, line 18; claims; figures	1-26,30
X	EP 1 136 819 A (DAIKIN IND LTD) 26 September 2001 (2001-09-26) abstract column 4, line 36 - column 5, line 22 column 13, line 39 - column 14, line 34; figures 18,19 ----- -/--	1-26,30

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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 document but published on or after the international filing date

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"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.

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Date of the actual completion of the international search

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Date of mailing of the international search report

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European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

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Nazario, L

INTERNATIONAL SEARCH REPORT

Internat Application No

PCT/EP2004/050671

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 6 376 233 B1 (SIEBEN ULRICH ET AL) 23 April 2002 (2002-04-23) abstract column 2, line 14 - column 4, line 11 column 5, line 6 - column 6, line 56; figures -----	1-26,30
X	EP 0 299 778 A (STANFORD RES INST INT) 18 January 1989 (1989-01-18) abstract page 3, line 3 - line 40 page 4, line 3 - page 5, line 9 claims; figures -----	1-26,30
A	WO 00/09255 A (BEEK JOHANNES A M VAN ; MANSKY PAUL (US); TURNER HOWARD (US); DALES G) 24 February 2000 (2000-02-24) abstract page 1, line 12 - line 14 page 3, line 2 - line 19 page 5, line 18 - page 8, line 10 page 12, line 4 - page 16, line 18 page 19, line 4 - page 20, line 6 page 38, line 1 - page 40, line 17 claims; figures 1-3,30 -----	1-26,30
A	EP 1 284 158 A (EIDGENOESS TECH HOCHSCHULE) 19 February 2003 (2003-02-19) abstract column 3, line 1 - line 47 column 4, line 12 - column 5, line 21; figures -----	1-26,30

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2004/050671

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-26, 30

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-26, 30

Independent claims 1 and 15 (and dependent claims 2-14 and 16-26, 30) relate to a multisensor apparatus and to computerised high-throughput electrochemical or electrophysical assay methods. The apparatus comprises at least one non-conductive area; multiple sensors having at least two conductive multilayer electrodes; multiple areas having at least two conductive multilayer surfaces and at least one connection between the electrodes and the conducting surfaces.

2. claims: 27-29

Independent claim 27 (and dependent claims 28 and 29) relates to a high-throughput storage apparatus and method comprising at least one piezoelectric part to facilitate dissolving chemical or biological material.

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