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

(54) Title: A SINGLE-STEP PLATFORM FOR ON-CHIP INTEGRATION OF BIO-MOLECULES

(57) Abstract: Novel compounds having a functionalized group capable of binding to a solid substrate; a photoactivatable group capable of generating a reactive group upon exposure to light and being for binding a screenable moiety; and a polymer capable of forming a monolayer on a solid substrate, and having the functionalized group and to the photoactivatable group attached thereto and processes for the preparation thereof are disclosed. Further disclosed are arrays of screenable moieties (e.g., nucleic acids, proteins, carbohydrates, substrates, chelating agents and many more) prepared using these novel compounds.

WO 2006/064505 A3

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL05/01352

## A. CLASSIFICATION OF SUBJECT MATTER

IPC: G01N 33/53( 2006.01)

USPC: 435/7.1

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)

U.S. : 435/7.1

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 practicable, search terms used)  
WEST, STN

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — Y	SHIN, D.-S. et al. Protein Patterning by Maskless Photolithography on Hydrophilic Polymer-Grafted Surface, Biosensors and Bioelectronics, 2003, Vol. 19, pages 485-494, see entire publication, especially pages 487, Figures 2-7.	1-14, 16-28, 67-87, 89-100, 177 ----- 15, 29-66, 88, 101-176
Y	US 6,815,078 B2 (QIAO et al) 09 November 2004 (09.11.2004), see entire patent, especially col. 2, lines 29-63 and col. 6, lines 16-39.	1-177



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL05/01352

## Box No. 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 No. 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:  
Please See Continuation 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 additional fees, this Authority did not invite payment of any additional fees.
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.:

- Remark on Protest**
- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
  - ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
  - ☐ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL05/01352

### BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-28, 177, drawn to a compound comprising a functionalized group capable of binding to a substrate, a photoactivatable group for binding a screenable moiety; and a polymer capable of forming a monolayer, said polymer having the functionalized group and the photoactivatable group.

Group II, claim(s) 29-66, drawn to a process of preparing the compound of claim 1, comprising providing a polymer containing a first reactive group capable of reacting with a first compound and a second reactive group capable of reacting with a second compound to form a photoactivatable group; reacting said polymer with said first compound and reacting said polymer with said second compound.

Group III, claim(s) 67-100, drawn to a process of attaching a screenable moiety to at least one pre-selected area of a solid substrate, comprising binding the screenable to an activated compound.

Group IV, claim(s) 101-137, drawn to a process of preparing an array of screenable moieties comprising binding N screenable moieties to N pre-selected areas on a substrate.

Group V, claim(s) 138-176, drawn to an array of screenable moieties.

The inventions listed as Groups I-V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The technical feature linking the claims appears to be, as set forth in claim 1. The prior art reference of Shin et al., Biosensors and Bioelectronics (2003), Vol. 19, pp. 485-494, describes . Therefore, this technical feature does not represent a contribution over the prior art, and therefore, cannot constitute a special technical feature linking the claims. Therefore, the Groups of invention lack unity of invention.

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/IL05/01352