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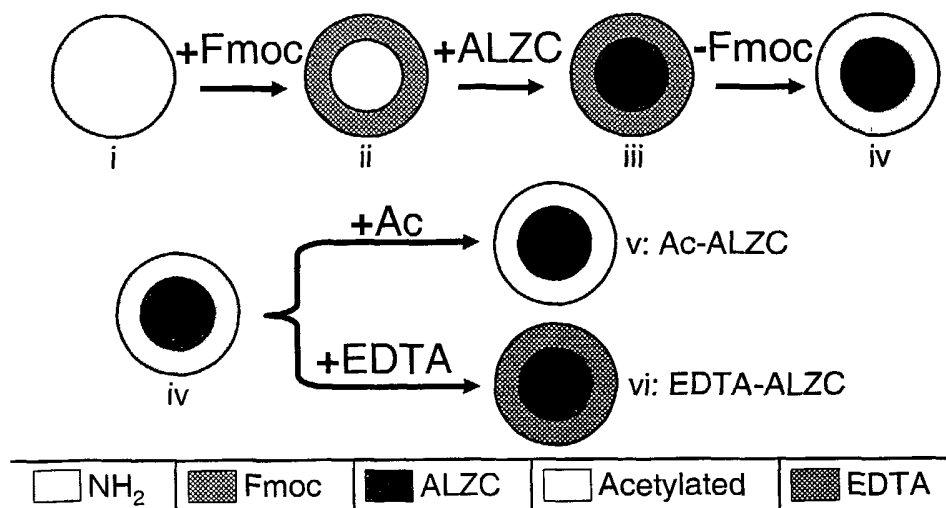
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[Continued on next page]

(54) Title: MULTI-SHELL MICROSPHERES WITH INTEGRATED CHROMATOGRAPHIC AND DETECTION LAYERS FOR USE IN ARRAY SENSORS



(57) Abstract: The development of miniaturized chromatographic systems localized within individual polymer microspheres and their incorporation into a bead-based cross-reactive sensor array platform is described herein. The integrated chromatographic and detection concept is based on the creation of distinct functional layers within the microspheres. In this first example of the new methodology, complexing ligands have been selectively immobilized to create "separation" layers harboring an affinity for various analytes. Information concerning the identities and concentrations of analytes may be drawn from the temporal properties of the beads' optical responses. Varying the nature of the ligand in the separation shell yields a collection of cross-reactive sensing elements well suited for use in array-based micro-total-analysis systems.



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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/03751

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01N 30/00

US CL : 422/69, 82.05, 82.07, 82.08 436/164, 165, 172

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. : 422/69, 82.05, 82.07, 82.08 436/164, 165, 172

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)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,770,416 A (LIHME et al) 23 June 1998 (23.06.1998), see entire document.	1-54
A, P	US 6,638,621 B2 (ANDERSON) 28 October 2003 (28.10.2003), see entire document.	1-54
A, P	US 2004/0018559 A1 (LAU et al) 29 January 2004 (29.01.2004), see entire document.	1-54
A, P	US 2004/0020857 A1 (BELEW et al) 05 February 2004 (05.02.2004), see entire document.	1-54



Further documents are listed in the continuation of Box C.



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# INTERNATIONAL SEARCH REPORT

PCT/US04/03751

## Continuation of B. FIELDS SEARCHED Item 3:

EAST search terms: particle\$1 or bead\$1 or resin\$1 or packing\$1; interior\$2 or core\$1 or inside\$1 or inner; reagetn\$1 or bind\$3 or moiet\$3 or ligand\$1 or functionalit\$3