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**WO 02/060524 A3**

(54) Title: ENHANCED ULTRASOUND DETECTION WITH TEMPERATURE DEPENDENT CONTRAST AGENTS

(57) Abstract: Methods and devices for enhanced ultrasound detection based upon changing temperature and ultrasound reflectivity of a temperature-dependent contrast agent bound to an ultrasound target are disclosed. The methods and devices can be used for enhanced imaging alone or in conjunction with drug delivery, with therapeutic approaches such as hyperthermia or cryotherapy or with other imaging modalities.

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US02/02681

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) :A61B 8/00, 5/05, 5/055, 5/06; A61K 9/127, 9/133, 9/14, 9/107  
US CL :424/9.5, 9.51, 9.52; 600/407, 436-442, 458; 606/3; 73/587

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. : 530/300, 350, 351; 514/2, 8, 12, 885; 424/85.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONE

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

EAST, CAPlus  
search terms: ultrasound, biotin, avidin, acoustic, photoactive, optoacoustic

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,612,057 A (LANZA et al.) 18 March 1997, col. 9-11.	1-53
Y	US 5,989,520 A (LANZA et al.) 23 November 1999, abstract, col. 14, lines 14-67; col. 15, lines 1-44; col. 25, lines 1-67; col. 27-28.	1-67
Y	US 6,159,445 A (KLAVENESS et al.) 12 December 2000, abstract, col. 28, lines 36-67; col. 29-30.	1-53
Y	US 6,123,923 A (UNGER et al.) 26 September 2000, abstract, col. 100-104; col. 121, lines 18-39.	1-53
Y	US 5,840,023 A (ORAEVSKY et al.) 24 November 1998, abstract, cols. 5, 7-8.	54-67

Further documents are listed in the continuation of Box C.  See patent family annex.

"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 document 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 10 SEPTEMBER 2001	Date of mailing of the international search report <b>18 DEC 2002</b>
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## INTERNATIONAL SEARCH REPORT

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,977,538 A (UNGER et al.) 02 November 1999, abstract, col. 5, 6-8.	54-67