

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
25 July 2002 (25.07.2002)

PCT

(10) International Publication Number  
**WO 02/056938 A3**

(51) International Patent Classification<sup>7</sup>: **A61F 7/00**

(21) International Application Number: PCT/US02/01316

(22) International Filing Date: 16 January 2002 (16.01.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
09/761,069 16 January 2001 (16.01.2001) US

(71) Applicant (for all designated States except US): **ALSIUS CORPORATION** [US/US]; 15770 Laguna Canyon Road, Suite 150, Irvine, CA 92618 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **WHITEBOOK, Mark** [US/US]; 34661 Calle Rosita, Capistrano Beach, CA 92624 (US). **WALKER, Blair** [US/US]; 24742 San Doval Lane, Mission Viejo, CA 92691 (US). **EVANS, Scott** [US/US]; 1252 Country Hills Drive, Santa Ana, CA 92705 (US). **SHIMADA, Lynn** [US/US]; 7906 East Deerfield Lane, Orange, CA 92869 (US).

(74) Agent: **ALONZO, Arlyn**; Alsius Corporation, 15770 Laguna Canyon Road, Suite 150, Irvine, CA 92618 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

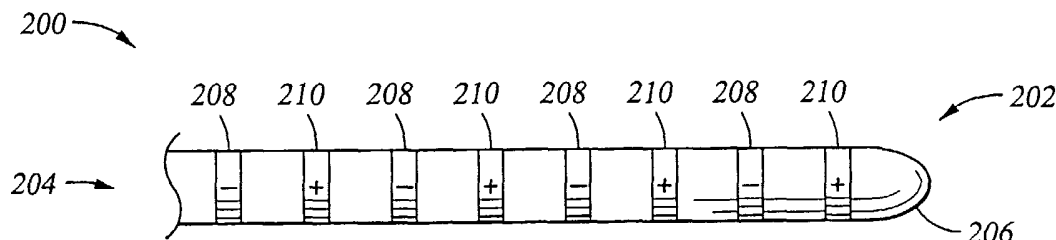
Published:

— with international search report

(88) Date of publication of the international search report:  
17 October 2002

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: SYSTEM AND METHOD EMPLOYING INDWELLING RF CATHETER FOR SYSTEMIC PATIENT WARMING BY APPLICATION OF DIELECTRIC HEATING



(57) Abstract: An indwelling RF catheter (14) achieves warming of patients by dielectric heating of blood or other bodily fluids. In one example, the catheter is deployed in a suitable blood vessel, such as the inferior vena cava. The catheter design includes an emitter structure (208, 210) electrically coupled to an RF generator (106), which provides a source of RF power. The emitter structure, distally located upon the catheter, administers electromagnetic radiation to the blood within the patient, thereby creating heat due to the dielectric qualities of blood. As blood heated by the indwelling RF catheter courses through the patient's body, it is systemically warmed, raising the body core temperature.

WO 02/056938 A3

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/01316

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61F 7/00

US CL : 607/96-102, 104-106, 113; 606/27-29, 31

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. : 607/96-102, 104-106, 113; 606/27-29, 31

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)  
NONE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,033,383 A (GINSBURG) 07 March 2000, see entire document	1, 3
X	US 4,785,823 A (EGGERS et al) 22 November 1988, see entire document	10
X	US 6,110,168 A (GINSBURG) 29 August 2000, see entire document	18, 19, 21
X	US 6,011,995 A (GUGLIELMI et al) 04 January 2000, see entire document	28, 34
Y	US 5,925,038 A (PANESCU et al) 20 July 1999, see entire document	20

☐ 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

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

"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)

"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

"&" document member of the same patent family

Date of the actual completion of the international search

26 April 2002 (26.04.2002)

Date of mailing of the international search report

12 JUL 2002

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks

Box PCT

Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

Roy Gibson

Telephone No. 703-308-3520