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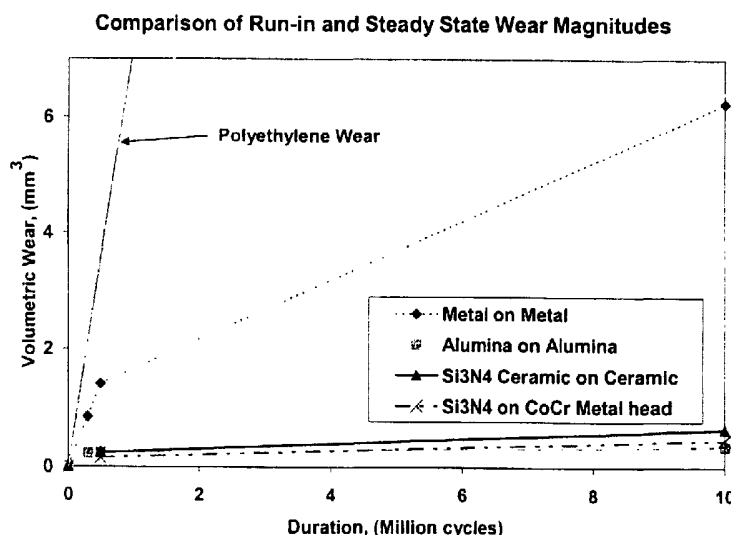
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[Continued on next page]

(54) Title: METAL-CERAMIC COMPOSITE ARTICULATION



(57) Abstract: A ceramic-metal composite articulation is provided with substantial elimination of wear debris, wherein a ceramic material is provided with superior mechanical properties tailored for articulating with ceramic articulations having high flexural strength (greater than about 700 MPa,) high fracture toughness (greater than about 7MPam^{1/2}) and a high Weibull modulus (greater than about 20), in comparison with presently available bio-ceramics such as alumina or zirconia. The mechanical property enhancement enables ceramic materials with greater reliability and significantly reduced in-vivo fracture risk to be obtained. Preliminary in-vitro wear performance, to several million cycles using established test protocols, of head/cup components in a prosthetic hip joint made from these ceramics also demonstrates the ultra low wear characteristics. These material properties substantially eliminate PE wear debris mediated implant failures by offering an optimal combination of bio-mechanical safety and reliability with ultra low wear performance.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/18572

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61F 2/28
 US CL : 623/23.56

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. : Please See Continuation Sheet

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,871,547 A (ABOUAF et al) 16 February 1999 (16.02.1999), column 4, lines 39,45; column 5, line 38; column 3, line 6 and line 12.	1-12, 14, 15, 17, 18, 20, 21-29
Y	US 5,879,407 A (WAGGENER) 09 March 1999 (09.03.1999), column 6, line 7-10 and line 46-48.	2, 14, 22
Y	US 6,187,701 B1 (SEKINO et al) 13 February 2001 (13.02.2001), column 4, lines 32, 46-48 and 66-67.	3, 23
Y	US 4,072,532 A (FLETCHER) 07 February 1978 (07.02.1978), column 2, lines 42-47, 40, 62-66.	4, 24
Y	US 5,462,563 A (SHEARER et al) 31 October 1995 (31.10.1995), column 3, line 31-34.	6, 12, 18
Y	US 5,904,720 A (FARRAR et al) 18 May 1999 (18.05.1999), column 1, lines 60-65; column 2, line 6; column 3, line 6.	15, 17, 21, 26
Y	US 6,156,069 A (AMSTUTZ) 05 December 2000 (12.05.2000), column 5, lines 2-5.	10, 11, 28, 29

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	"T"
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"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	

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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 5,549,704 A (SUTTER) 27 August 1996 (27.08.1996), column 4, line 55-60.	16

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Continuation of B. FIELDS SEARCHED Item 1:

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