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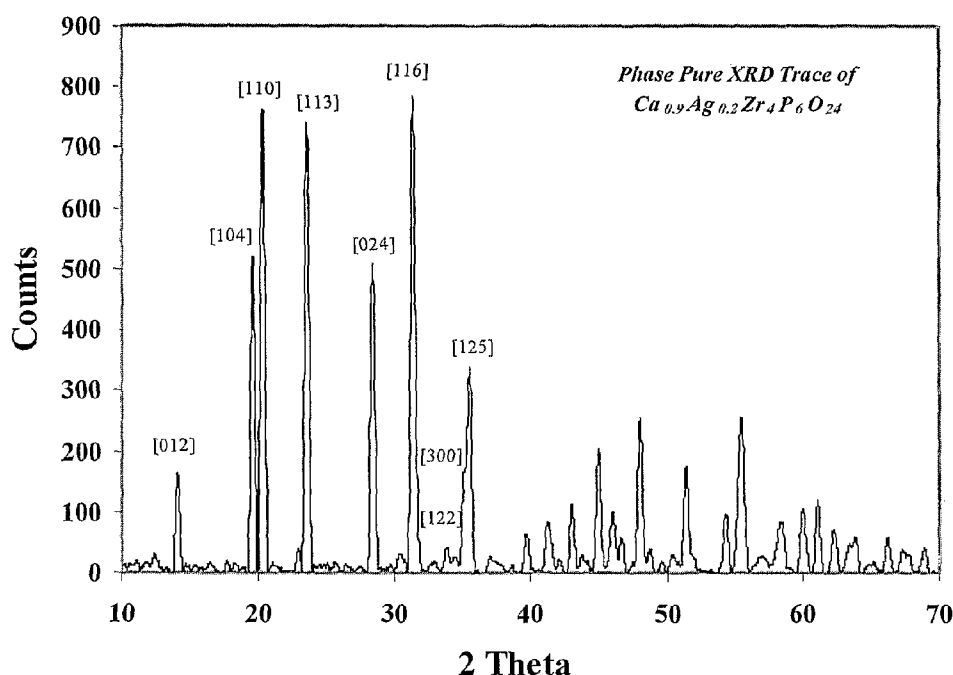
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(54) Title: BIOCIDAL CERAMIC COMPOSITIONS, METHODS AND ARTICLES OF MANUFACTURE



(57) Abstract: The present invention provides biocidal ceramic compositions incorporating a bioactive ionic species that is chemically bound in a substantially single-phase, crystalline, [NZP]-type structure, methods for producing the crystalline structures, and articles of manufacture incorporating the crystalline structures, and uses of the articles of manufacture. Bioactive ionic species can be, but are not limited to, Ag, Cu, Ni, Zn, Mn, Sn, Co, H, and combinations thereof.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 06/22478

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8): C04B 35/48 (2007.01)

USPC: 501/102, 501/104

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)

IPC(8): C04B 35/48 (2007.01)

USPC: 501/102, 501/104

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 501/2, 5, 21, 25, 26, 32, 102, 104 see search terms

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

USPTO - WEST - PGPB,USPT,EPAB,JPAB

search terms: aluminum, bacterial, bioactive, biocidal, calcium, ceramic, crystal, germanium, microbial, nzp, phosphorus, strontium, sulfur, zirconium

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — Y	US 2004/0265350 A1 (Sambrook et al.) 30 December 2004 (30.12.2004) - para [0033], [0061], [0178]	29 ----- 30-41
Y	US 5,441,717 A (Ohsumi et al.) 15 August 1995 (15.08.1995) - col 1 ln 56 to col 2 ln 14, col 2 ln 34-46, col 2 ln 65-66, col 3 ln 39-43, col 8 ln 24, col 9 ln 7-52	1-28, 30-38, and 41
Y	US 2002/0099449 A1 (Speitling) 25 July 2002 (25.07.2002) - para [0008]	6-7 and 20-21
Y	US 5,488,018 A (Limaye) 30 January 1996 (30.01.1996) - abstract, FIG 1, col 1 ln 45-47, col 3 ln 30-39	8, 22, and 39-40
Y	US 5,876,738 A (Ohno et al.) 2 March 1999 (02.03.1999) - col 1 ln 24-26, col 2 ln 21-23, col 4 ln 65-col 5 ln 7	9-10 and 23-24
Y	US 6,200,680 B1 (Takeda et al.) 13 March 2001 (13.03.2001) - col 1 ln 48-50, col 21 ln 31	11-12, 14 and 25-27
Y	US 5,618,762 A (Shirakawa et al.) 8 April 1997 (08.04.1997) - col 2 ln 55-60, col 3 ln 1-8	1-28 and 30-38

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