



- (51) **International Patent Classification:**  
A61L 27/12 (2006.01) A61L 27/54 (2006.01)
- (21) **International Application Number:**  
PCT/US2009/035729
- (22) **International Filing Date:**  
2 March 2009 (02.03.2009)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
61/032,357 28 February 2008 (28.02.2008) US
- (71) **Applicant (for all designated States except US):** OS-TEOTHERAPEUTICS, L.L.C. [US/US]; c/o Brooke Campbell, Esq., 1201 Silver Hill Drive, Austin, Texas 78746 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** PEDROZO, Hugo [US/US]; Austin, Texas (US). LI, Shuliang [US/US]; Austin, Texas (US).
- (74) **Agent:** MEYERTONS, Eric, B.; Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C., P.O. Box 398, Austin, TX 78767-0398 (US).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

- Published:**  
— with international search report (Art. 21(3))  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
- (88) **Date of publication of the international search report:**  
3 December 2009

(54) **Title:** INJECTABLE CALCIUM PHOSPHATE CEMENTS FORMULATED WITH BIOACTIVE AGENTS AND METHODS FOR MAKING SAME

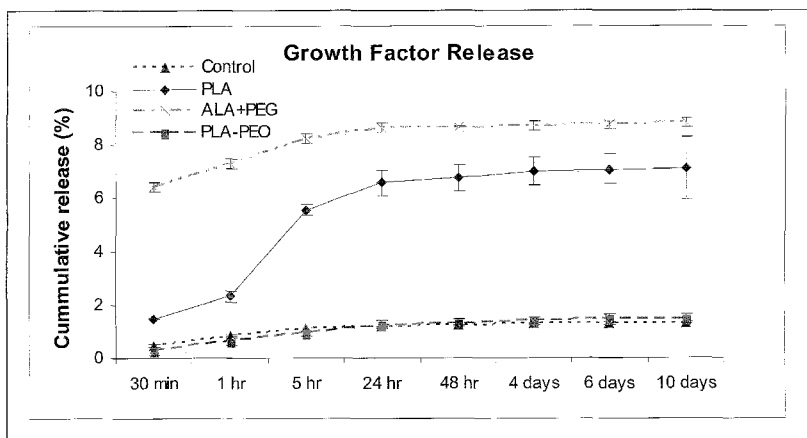


FIG. 3

(57) **Abstract:** Injectable self-hardening calcium phosphate cements that are suitable for use as pharmaceutical carrier media for the delivery of bioactive compositions to calcified tissues in a subject are provided for herein.

WO 2009/108934 A3

**A. CLASSIFICATION OF SUBJECT MATTER***A61L 27/12(2006.01)i, A61L 27/54(2006.01)i*

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 A61L, A61F, A61K

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)

eKOMPASS(KIPO internal), PAJ &amp; Keyword: calcium phosphate cement, osteoinductive, phosphate solution, bone graft and porogen

**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 2004-0137032 A1 (FRANCIS W. WANG) 15 JULY 2004 See abstract and Claims 1-2, 6, 8-10.	23-25, 28-30 1-4
Y	US 2005-0260115 A1 (AHMET CUENEYT TAS) 24 NOVEMBER 2005 See abstract and Claim 1.	1-4
X	US 2005-0186449 A1 (JIN-HUEY CHERN LIN et al.) 25 AUGUST 2005 See abstract and Claims 38, 43, 50-53.	28-30
A	US 2005-0199156 A1 (IBRAHIM KHAIROUN et al.) 15 SEPTEMBER 2005 See the whole document.	1-4, 23-25, 28-30
A	US 2003-0143258 A1 (DAVID KNAACK et al.) 31 JULY 2003 See the whole document.	1-4, 23-25, 28-30

 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 but 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 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

"&amp;" document member of the same patent family


Date of the actual completion of the international search

12 OCTOBER 2009 (12.10.2009)

Date of mailing of the international search report

**12 OCTOBER 2009 (12.10.2009)**

Name and mailing address of the ISA/KR


 Korean Intellectual Property Office  
 Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Lee, Jae Yeong

Telephone No. 82-42-481-8169



**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/US2009/035729**

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006-0233849 A1 (BRUCE J. SIMON et al.) 19 OCTOBER 2006 See the whole document.	1-4, 23-25, 28-30
A	US 2002-0155167 A1 (DOSUK D. LEE et al.) 24 OCTOBER 2002 See the whole document.	1-4, 23-25, 28-30

**INTERNATIONAL SEARCH REPORT**International application No.  
**PCT/US2009/035729****Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.: 5-22, 26-27  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2009/035729**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005-199156 A1	15.09.2005	AU 2005-211732 A1	25.08.2005
		PI 0507569 A	03.07.2007
		CA 2555379 A1	25.08.2005
		CN 1972882 A	30.05.2007
		EP 1761472 A2	14.03.2007
		KR 20070027513 A	09.03.2007
		US 07351280 B2	01.04.2008
		WO 2005-077049 A2	25.08.2005
US 2003-0143258 A1	31.07.2003	US 2008-0145392 A1	19.06.2008
		US 07163691 B2	16.01.2007
US 2006-0233849 A1	19.10.2006	EP 1712244 A1	18.10.2006
		US 2006-0233851 A1	19.10.2006
US 2002-0155167 A1	24.10.2002	AU 711326 B2	14.10.1999
		AU 742748 B2	10.01.2002
		AU 2002-41805 A1	19.10.2001
		AU 1999-61456 B2	14.09.1999
		AU 1999-61456 A1	14.09.1999
		AU 1997-49025 B2	16.10.1997
		AU 734691 B2	21.06.2001
		AU 763487 B2	24.07.2003
		AU 1996-58659 B2	20.05.1996
		AU 1997-46746 B2	16.10.1997
		CA 2220306 C	29.07.2008
		CA 2342207 A1	23.03.2000
		CA 2270185 C	06.01.2009
		CA 2268156 C	29.05.2007
		CN 1184454 A	10.06.1998
		CN 1184454 A0	10.06.1998
		EP 0936929 A2	25.08.1999
		EP 1787954 A2	23.05.2007
		EP 1117381 A1	25.07.2001
		EP 0941079 B1	19.12.2007
		EP 0936929 B1	23.06.2004
		EP 1117381 A4	09.02.2005
		EP 0941079 A1	15.09.1999
		JP 11-511722 A	12.10.1999
		JP 04-260880 B2	20.02.2009
		JP 04-260891 B2	20.02.2009
		JP 2002-524491 A	06.08.2002
		JP 2001-524937 A	04.12.2001
		JP 2001-502215 A	20.02.2001
		KR 10-2006-0113798 A	02.11.2006
		KR 10-0756677 B1	10.09.2007
		KR 10-0444343 B1	09.11.2004

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2009/035729**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 05650176 A	22.07.1997
		US 05676976 A	14.10.1997
		US 05683461 A	04.11.1997
		US 06027742 A	22.02.2000
		US 06117456 A	12.09.2000
		US 06132463 A	17.10.2000
		US 06139578 A	31.10.2000
		US 06214368 B1	10.04.2001
		US 06277151 B1	21.08.2001
		US 06287341 B1	11.09.2001
		US 06331312 B1	18.12.2001
		US 06541037 B1	01.04.2003
		US 06544290 B1	08.04.2003
		US 06953594 B2	11.10.2005
		US 06972130 B1	06.12.2005
		US 07150879 B1	19.12.2006
		US 07517539 B1	14.04.2009
		US 2002-0136696 A1	26.09.2002
		US 2002-0155137 A1	24.10.2002
		US 2003-0049329 A1	13.03.2003
		US 2003-0082232 A1	01.05.2003
		US 2006-0240121 A1	26.10.2006
		WO 1996-036562 A1	21.11.1996
		WO 2000-015194 A1	23.03.2000

---