

## Author's Accepted Manuscript

Facile production of porous bioactive glass scaffolds by the foam replica technique combined with sol-gel/electrophoretic deposition

S. Cabanas-Polo, A. Philippart, E. Boccardi, J. Hazur, A.R. Boccaccini



[www.elsevier.com/locate/ceri](http://www.elsevier.com/locate/ceri)

PII: S0272-8842(15)02413-X  
DOI: <http://dx.doi.org/10.1016/j.ceramint.2015.12.115>  
Reference: CERII1910

To appear in: *Ceramics International*

Received date: 13 September 2015  
Revised date: 9 December 2015  
Accepted date: 19 December 2015

Cite this article as: S. Cabanas-Polo, A. Philippart, E. Boccardi, J. Hazur and A.R. Boccaccini, Facile production of porous bioactive glass scaffolds by the foam replica technique combined with sol-gel/electrophoretic deposition *Ceramics International*, <http://dx.doi.org/10.1016/j.ceramint.2015.12.115>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and a review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Facile production of porous bioactive glass scaffolds by the foam replica technique combined with sol-gel/electrophoretic deposition

S. Cabanas-Polo, A. Philippart, E. Boccardi, J. Hazur and A. R. Boccaccini (\*)

Institute of Biomaterials, University of Erlangen-Nuremberg, Cauerstrasse 6, 91058 Erlangen, Germany.

(\*) Corresponding author: Aldo R. Boccaccini. E-mail: aldo.boccaccini@ww.uni-erlangen.de

Address: Institute of Biomaterials, University of Erlangen-Nuremberg, Cauerstrasse 6, 91058 Erlangen, Germany. Phone: +49 (0) 9131 85-28601

#### Abstract

3D porous bioactive glass (BG) scaffolds were fabricated by the foam replication technique combining sol-gel and electrophoretic deposition (EPD) processes. A special EPD set-up was built to optimize the scaffolds fabrication, which results in the rapid production of BG-based scaffolds in comparison to the traditional time-consuming foam replication technique normally used for the same kind of BG scaffolds. The influence of parameters related to the BG sol (aging time) as well as to the electrically driven process (deposition voltage) were studied and discussed in terms of the final scaffolds microstructure. Bioactivity of the samples, in terms of hydroxycarbonate apatite (HCA) formation in simulated body fluid (SBF), was confirmed after 1 day of immersion in SBF, confirming the suitability of the new scaffolds for bone regeneration applications.

Keywords: electrophoretic deposition, bioactive glass, scaffolds, sol-gel, foam replication technique

Download English Version:

<https://daneshyari.com/en/article/10623945>

Download Persian Version:

<https://daneshyari.com/article/10623945>

[Daneshyari.com](https://daneshyari.com)