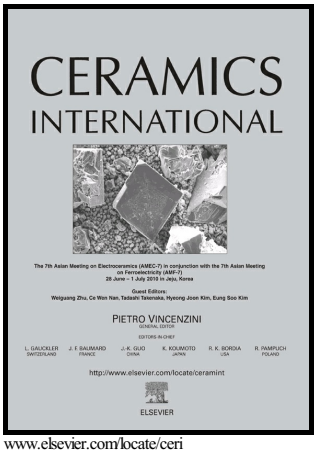

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PII: S0272-8842(17)30959-8
DOI: http://dx.doi.org/10.1016/j.ceramint.2017.05.147
Reference: CERI15307

To appear in: *Ceramics International*

Received date: 5 January 2017
Revised date: 14 April 2017
Accepted date: 20 May 2017

Cite this article as: Mei Zhang, Jiehui Zeng, Liru Hu, Guangchen Liu, Yali Ma Yajun Tang and Dahui Sun, Three-dimensional coating of porous zein/PLLA coaxial nanofiber membranes on surfaces of calcium phosphate cement *Ceramics International,* http://dx.doi.org/10.1016/j.ceramint.2017.05.147

Three-dimensional coating of porous zein/PLLA coaxial nanofiber membranes on surfaces of calcium phosphate cement

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Abstract

Calcium phosphate cement (CPC) is an ideal artificial bone material used widely in hard tissue regeneration due to its excellent physical and chemical performance. However, CPCs are not able to match the high rate of new bone tissue growth during initial implantation given its poor degradability and low biological compatibility, leading to their limited clinical application. To overcome these limitations, we developed a self-made electrospinning auxiliary receiver to obtain a three dimensional membrane coating of porous zein/PLLA coaxial nanofibers on CPC surfaces. To show the feasibility of the composite material for hard tissue regeneration, it was characterized by SEM, porosity, hydrophilicity, mechanical properties, FTIR spectroscopy, and in vitro cell culture where the composite material showed improved induction of tissue regeneration.

Keywords: Three-dimensional coating, Porosity, Electrospinning, Zein, Calcium phosphate cement