

Binary bioactive glass composite scaffolds for bone tissue engineering : structure and mechanical properties in micro and nano scale : a preliminary study.

Autorzy

Michał J. Woźniak
Adrian Chlanda
Przemysław Oberbek
Marcin Heljak
Katarzyna Czarnecka
Mateusz Janeta

Łukasz John

Rok wydania

2019

Czasopismo

Micron

Numer woluminu

119

Strony

64-71

DOI

10.1016/j.micron.2018.12.006

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Composite scaffolds of bioactive glass (SiO₂-CaO) and bioresorbable polyesters: poly-L-lactic acid (PLLA) and polycaprolactone (PCL) were produced by polymer coating of porous foams. Their structure and mechanical properties were investigated in micro and nanoscale, by the means of scanning electron microscopy, PeakForce Quantitative Nanomechanical Property Mapping (PF-QNM) atomic force microscopy, micro-computed tomography and contact angle measurements.

This is one of the first studies in which the nanomechanical properties (elastic modulus, adhesion) were measured and mapped simultaneously with topography imaging (PF-QNM AFM) for bioactive glass and bioactive glass – polymer coated scaffolds. Our findings show that polymer coated scaffolds had higher average roughness and lower stiffness in comparison to pure bioactive glass scaffolds. Such coating-dependent scaffold properties may promote different cells-scaffold interaction.

Słowa kluczowe

Bone tissue engineering, Composite scaffold, Bioactive glass, Mechanical properties

Adres publiczny

<http://dx.doi.org/10.1016/j.micron.2018.12.006>

Strona internetowa wydawcy

<http://www.elsevier.com>

