

Accepted Manuscript

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PII: S0144-8617(17)30700-2
DOI: <http://dx.doi.org/doi:10.1016/j.carbpol.2017.06.062>
Reference: CARP 12450

To appear in:

Received date: 25-4-2017
Revised date: 31-5-2017
Accepted date: 16-6-2017

Please cite this article as: Voicu, Georgeta., Jinga, Sorin-Ion., Drosu, Bogdan-Gabriel., & Busuioc, Cristina., Improvement of silicate cement properties with bacterial cellulose powder addition for applications in dentistry. *Carbohydrate Polymers* <http://dx.doi.org/10.1016/j.carbpol.2017.06.062>

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**Improvement of silicate cement properties with bacterial cellulose powder addition
for applications in dentistry**

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Highlights

- Hybrid composites based on mineral binder and biocellulose powders were prepared.
- Biocellulose membranes were converted into polygranular powders by autoclaving.
- The biocellulose containing cements showed shortened setting time.
- The mesenchymal stem cells adhered and proliferated on the surface of all samples.

ABSTRACT

The goal of this paper was to synthesize a new family of composites starting from mineral binder powders and biocellulose membranes, with applications in endodontics. An important achievement consisted in the crushing of biocellulose 3D structure in a polygranular powder via an hydrothermal treatment. Afterwards, the polymer powder was mixed with silicate cement powders synthesized through the sol-gel technique. The resulting hybrid materials were investigated by thermal analysis, X-ray diffraction, scanning electron microscopy and mechanical measurements. The hydrocompounds developed after 28 days of hardening exhibited an increased structuring degree and favourably adhered to the surface of the embedded biocellulose particles, which led to a faster setting

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