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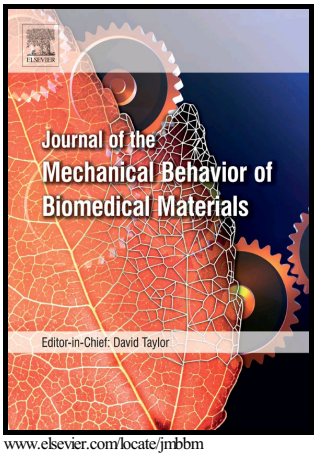

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Abstract:

In the present study, for the first time, the space holder method was used to prepare akermanite scaffolds with high porous structures, high interconnectivity, and high compressive strength, while the role of different spacer sizes on the akermanite scaffold properties was also evaluated. The results showed that the increase in the NaCl particle size which was used as spacer leads to an increase of the pore size and interconnectivity and a decrease of compressive strength. When the size of the spacer was 420-600µm and more than 600µm, a total porosity of 82 and 83% and a compressive strength of 0.86 and 0.82 MPa were obtained, respectively. These values are higher than those reported in previously studies and provide a great potential for akermanite to be used as bone substitute in tissue engineering. The *in vitro* bioactivity of the obtained akermanite scaffolds was also investigated.

Keywords: Bioceramics; Nanoparticles; Akermanite; Scaffold