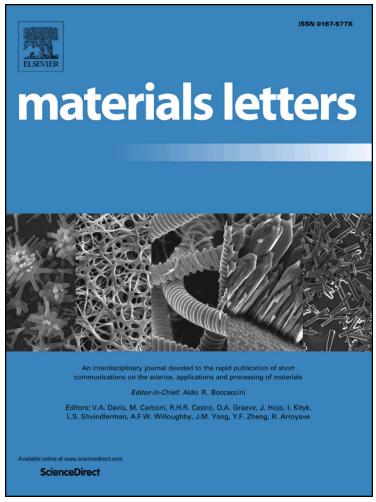


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# Gehlenite nanobioceramic: sol-gel synthesis, characterization, and *in vitro* assessment of its bioactivity

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## Abstract

The aim of this study is to develop new synthesis method for preparation of pure phase gehlenite (Geh, $Ca_2Al_2SiO_7$) nanobioceramic via sol-gel method and explore it's *in vitro* bioactivity to be applied in bone tissue regeneration. The XRD and TEM results show that single-phase Geh with diameters approximately less than 100 nm is obtained successfully by this method. *In vitro* bioactivity tests that are conducted by immersing the samples in simulated body fluid (SBF) under physiological conditions at different time intervals, confirmed that Geh nanobioceramic has high bioactivity and apatite is grown rapidly on the surface of Geh disc after immersion in SBF. The present study proposes Geh as a promising biomaterial for bone tissue regeneration.

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