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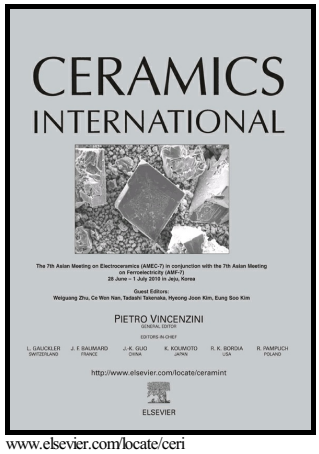

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Optimized route for the production of zirconia structures with controlled surface porosity for biomedical applications

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Abstract

Zirconia structures with controlled surface porosity may be used in several biomedical and engineering applications. This work aimed at developing a processing route for the production of zirconia structures with porous surfaces, using the dip coating method and without pore forming additives. Zirconia powders (~40μm diameter) were used in the dip coating suspensions in three different forms: agglomerates (as received), pre-sintered (1150°C, 1h) and sintered (1500°C, 2h). The addition of fine particles (<10μm diameter) to the suspensions, in different contents, were tested to act as binder for the larger particles. Zirconia disk-shape compacts were dipped in the different suspensions and sintered. Pre-sintered powders were found to be the most adequate for producing the porous surface. The optimized binder content was determined as a function of the porous layer strength. A feasible route

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