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Comparison between microwave and conventional sintering on the properties and microstructural evolution of tetragonal zirconia (Article)

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Abstract

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In this research, the comparison between microwave sintering and conventional sintering on the mechanical properties and microstructural evolution of 3 mol% yttria-stabilised zirconia were studied. Green bodies were compacted and sintered at various temperatures ranging from 1200 °C to 1500 °C. The results showed that microwave assisted sintering was beneficial in enhancing the densification and mechanical properties of zirconia, particularly when sintered at 1200 °C. It was revealed that as the sintering temperature was increased to 1400 °C and beyond, the grain size and mechanical properties for both microwave - and conventional -sintered ceramics were comparable thus suggesting that the sintering temperature where densification mechanism was activated, grain size was strongly influenced by the sintering temperature and not the sintering mode. © 2018 Elsevier Ltd and Techna Group S.r.l.

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