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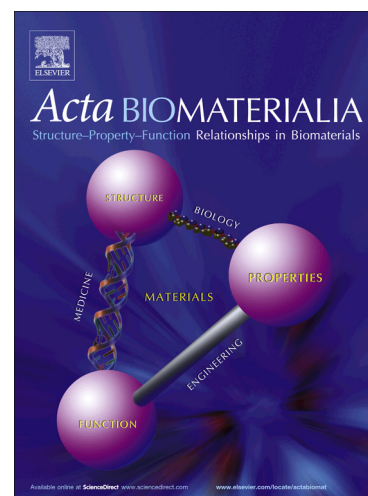
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**Towards long lasting zirconia-based composites for dental implants:
transformation induced plasticity and its consequence on ceramic reliability**

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Abstract

Zirconia-based composites were developed through an innovative processing route able to tune compositional and microstructural features very precisely. Fully-dense ceria-stabilized zirconia ceramics (84vol% Ce-TZP) containing equiaxed alumina (8vol%Al₂O₃) and elongated strontium hexaaluminate (8vol% SrAl₁₂O₁₉) second phases were obtained by conventional sintering. This work deals with the effect of the zirconia stabilization degree (CeO₂ in the range 10.0-11.5 mol%) on the transformability and mechanical properties of Ce-TZP-Al₂O₃-SrAl₁₂O₁₉ materials.

Vickers hardness, biaxial flexural strength and Single-edge V-notched beam tests revealed a strong influence of ceria content on the mechanical properties. Composites with 11.0 mol% CeO₂ or above exhibited the classical behaviour of brittle ceramics, with no apparent plasticity and very low strain to

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