UNIVERSITÀ DI TRENTO | Dipartimento di Ingegneria Industriale

24 GIUGNO 2025, ORE 10:30
SEMINAR ROOM, POLO FERRARI 2 - VIA SOMMARIVE 9, TRENTO

The biomedical grade 3 mol.% yttria partially stabilized zirconia polycrystalline (3Y-TZP) ceramics has established as a material of choice for all-ceramic dental restorations. This is due to 3Y-TZP`s superior mechanical properties, chemical stability and aesthetics, as compared to glass-based dental ceramics and metals. In addition, since demonstrating long-term mechanical stability and reliable osseointegration into the jawbone, 3Y-TZTP implants are nowadays increasingly gaining attention and hold significant potential for clinical and industrial success. 3Y-TZP's high strength and fracture toughness are governed by the stress-induced transformation (t-m) toughening mechanism, where under applied stress the metastable tetragonal phase transforms to monoclinic. However, 3Y-TZP's tetragonal phase metastability also has a well-documented, deleterious aspect known as low-temperature degradation (LTD) or ageing. The seminar will discuss the clinical relevancy of in vivo ageing of 3Y-TZP in the oral environment, as compared to artificially accelerated in vitro hydrothermal aging extrapolations at 37 °C.

Speaker: Prof. Andraž Kocjan
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Low Temperature Degradation of Dental Zirconia Ceramics In Vivo

DII SEMINAR

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