

## DENTAL CERAMIC PROSTHESES: WHAT IS THE NEXT?

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Form porcelain fused on metal to dual layered ceramic to monolithic ceramic restorations ceramics as a family of materials that combine favourable properties of bio-compatibility, mechanical durability and aesthetic outstanding have increasingly been used in restorative dentistry to meet the challenging demands that often require conflicted functions to be integrated in one single material. Dual layered ceramic restorations are aesthetically much more advanced than the porcelain fused on metal restorations, but their high chipping rate observed in clinical follow-up studies has been proven a fatal drawback. Monolithic structure would solve this problem of chipping, but often at the expense of aesthetics. Glass-ceramics, particularly those in the lithium silicate family, demonstrated very good optical translucency that is crucial for meeting the aesthetic demand, but their mechanical strength is less than half of that of the tetragonal zirconia polycrystalline ceramics, known shortly as zirconia in the dental field, that used to be regarded as strong but aesthetically not attractive enough for monolithic restoration particularly in the anterior part. To meet this challenge new ceramic materials are needed that in addition have to be able to be produced in a process that would match with a full digital workflow in which digitalized net-shape manufacturing is a vital component. In this presentation we will demonstrate the possibilities how the not-so-newly developed nano- and functionally gradient structure concepts in ceramic community can be implemented as new tools to enrich the arsenal in solving these problems through a cross-disciplinary approach.

### *References*

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