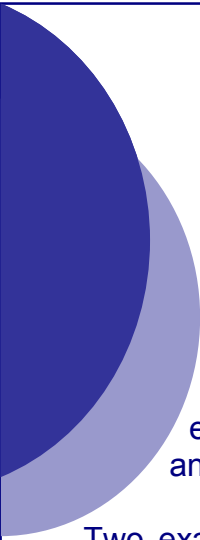


Micro-CT applications in dental biomaterials

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Micro-CT has been used in dentistry successfully for a number of years. An overview of some of the main uses of Micro-CT in Dentistry is presented. It can be used to produce qualitative and quantitative data, in various dental disciplines like endodontics, prosthetics and restorative dentistry. Its potential as an educational tool is enormous since it gives the students a unique insight of the anatomy of the tooth and how it varies after certain dental treatments.

Two examples, from our own research, illustrate some of the capabilities of Micro-CT in dentistry. The first one is from Restorative dentistry, where the porosity of an inorganic cement under various conditions was measured. This data was then correlated with data obtained from mechanical testing under the same conditions. The specimen that had the highest number of pores was the one more likely to fracture (lowest K1c).

The second example shows the possibility of interfacing Micro-CT data with Finite Element Analysis (FEA). Dental implants that are used in Prosthetic Dentistry were imaged and the data was 'fed' into an FEA software to produce a 3-D FE model.

Finally, the Micro-CT limitations of Micro-CT, particularly in obtaining accurate quantitative data, are discussed.