

Master's thesis

A analytical and numerical analysis: Influence of porosity on coefficient of thermal expansion

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Background: In literature such as [1] it is shown that the porosity of a material influences the thermal expansion coefficient, although the exact relationship has not yet been researched in detail.

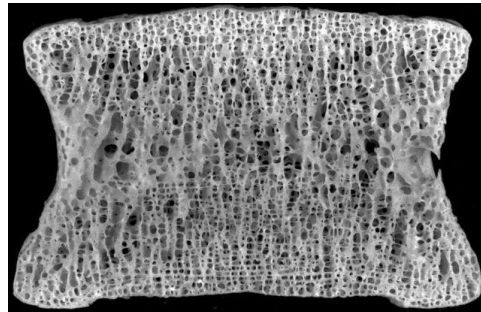


Figure 1: Bone as a porous material

Task: In this work, a sensitivity study in a finite element software (e.g. Abaqus, Ansys etc.) shall be performed to investigate the influence of porosity on the thermal expansion coefficient.

1. Familiarisation with numerical and analytical homogenisation.
2. Carrying out numerical analyses.
3. Evaluation of the results

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[1] Zent et al. Effect of porosity on thermal expansion coefficient of cement pastes and mortars 2012