

Keramische Werkstoffe und Bauteile  
Prof. Dr.-Ing. Kurosch Rezwan  
Fachbereich 4 - Produktionstechnik

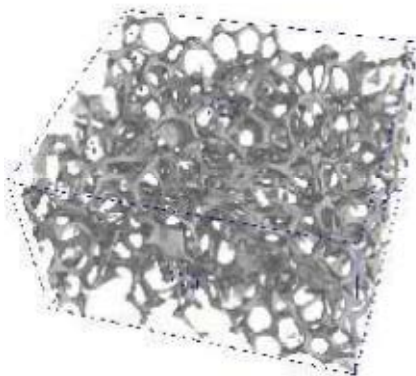
Graduiertenkolleg MIMENIMA  
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### Cellular solids studied by X-ray tomography and finite element modelling – a review.

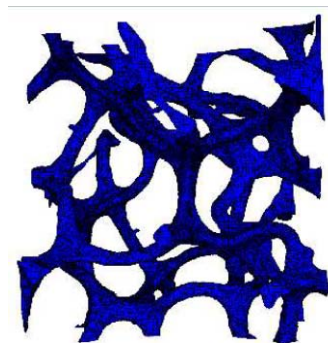
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This lecture reviews the use of X-ray Computed Tomography (XRCT) to investigate the cellular solids' structure and properties. In the first part, the possibilities offered by XRCT are exposed. Some examples of tomographic images are shown for the three classes of materials (polymer, ceramic and metal based). Different characterisation of the cellular solids performed thanks to XRCT images are explained: calculation of morphological parameters, *in-situ* and *ex-situ* mechanical tests. It is shown that the tomographic images are often used in the literature to perform finite element modeling. The second part presents the existing methods to create the meshes from the tomographic images. Some interesting results from the finite element simulations are highlighted.



CT scan of an ERG foam



FE mesh of the foam using tetrahedral elements