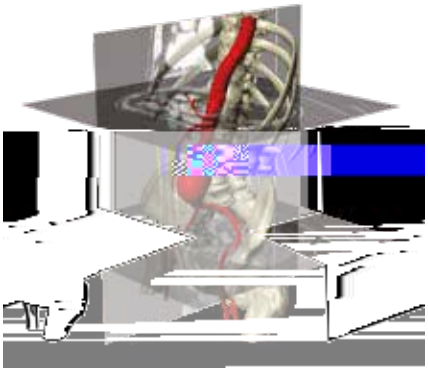
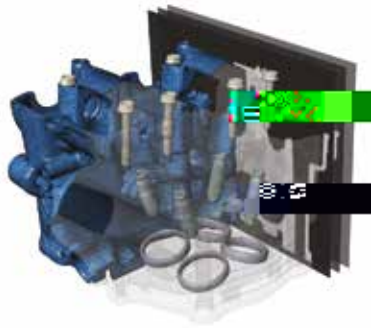
Simpleware software provides solutions for generating high-quality models from 3D image data (MRI, CT, micro-CT, FIB-SEM…) for direct export to Abaqus software for very realistic simulations. This solution is smooth and robust for workflows using complex image data, and opens up a wide range of applications for Abaqus users needing a straightforward route from scan to CAD, FEA and CFD.



- Work with wide range of 3D image data and CAD files
- Fast and time saving workflow
- Easy-to-use and intuitive interface
- Customizable, including scripting
- Industry-leading mesh quality
- Dedicated Abaqus exports
- Extensive technical support and consulting services

- Automated multi-part meshing for structural FEA and CFD
- Fix models (dirty CAD, orphan/ deformed meshes, Booleans…)
- Rapid image data visualization and animation in 2D and 3D
- Comprehensive image processing & analysis tools
- CAD integration & NURBS export
- FE-based homogenization modules



e.g. medical devices, orthopedics, physiological flows…

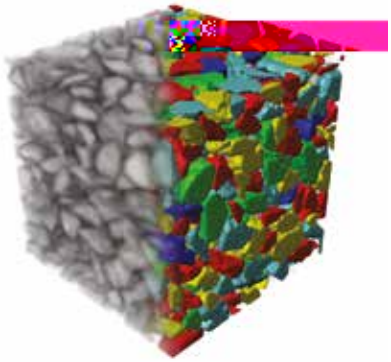
e.g. product design, industrial filters, fuel cells, batteries, welds…

e.g. alloys, composites, soils, concrete, porous media, plastics, rubbers…

e.g. digital rock physics, special core analysis, geophysics field data…

e.g. automotive, aerospace, consumer and legacy products…

e.g. textiles, ceramics, insulation materials, fibres…



R. Clague[1] • P.R. Shearing[1] • P.D. Lee[1] • Z. Zhang[1] • D.J.L. Brett[2] • A.J. Marquis

Simpleware software was used to reconstruct a complex SOFC microstructure (Nickel and yttria-stabilized zirconia) from FIB tomography and export volume meshes to Abaqus for 3D FEA stress analysis across the phases and interfaces of the fuel cells. The analysis found that the yield strength of the nickel in the fuel cell is exceeded at the interface of the two phases, suggesting its importance for stress relief in the electrodes as they are heated or cooled.

A. Guiotto • Z. Sawacha • G. Guarneri • A. Avogaro • C. Cobelli
University of Padova, Padova, Italy

Diabetic foot represents a complication of diabetes that can lead to foot ulcers and other serious conditions. 3D FE modeling was used in Abaqus to dynamically characterize different loads within the foot. Simpleware software was