FE-Based Homogenization

- Meshing is carried out internally using the Simpleware FE meshing algorithms, with full access to advanced options for fine tuning volume meshes and inspecting element qualities.
- Simulation carries out a full finite element analysis
- Rapidly calculate analytical upper and lower bounds on the effective properties
- (Simpleware SOLID and LAPLACE)
- Material properties of each model part can be homogeneous or greyscale-based
- Monitor the progress of the iterative solver via convergence graphs
- Reduce simulation complexity and computer resources by treating appropriate 3D models as 2D or 1D
- Preference option to use more memory (RAM) to reduce solving time

Results

- Mesh clipping allows easy visualization of the fields within the sample

- Calculation of effective property tensors:
  - Automatic determination of the directions of models principal axes
  - Automatic calculation of best-fit isotropic, orthotropic (Simpleware SOLID) and uniaxial (Simpleware LAPLACE and FLOW) approximations to calculated effective tensors
  - Compare results calculated for the different boundary condition types
  - Quickly alter the number of decimal places displayed