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PSI

Anders Kaestner :: Paul Scherrer Institut

Applications of visualization in Neutron Imaging

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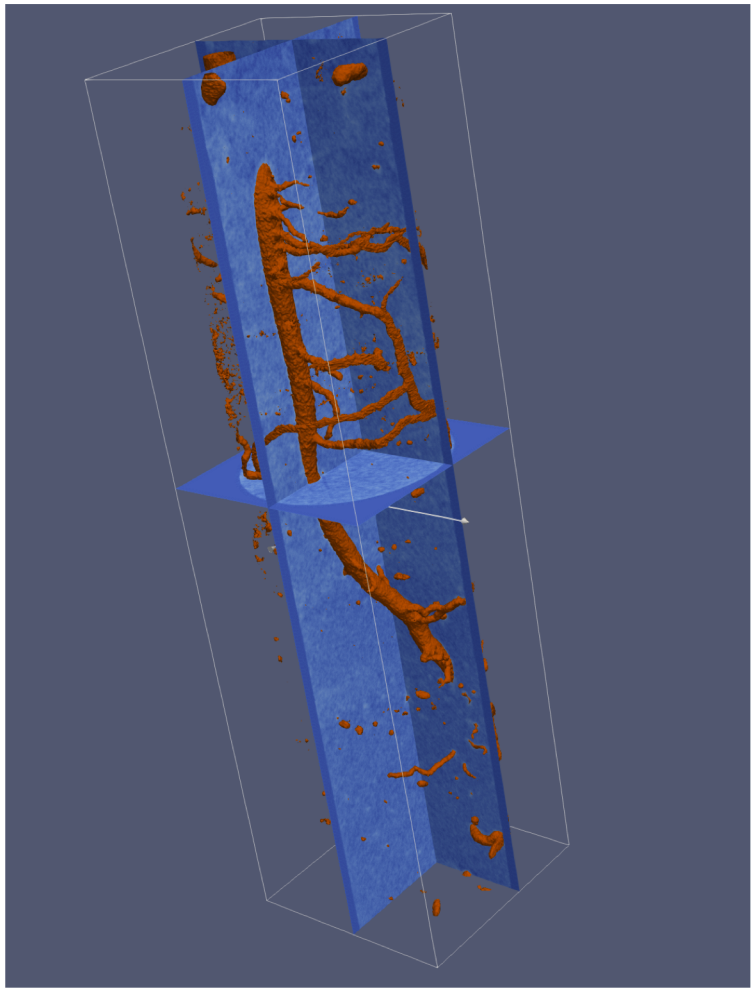
Cut planes and isosurfaces



tomviz

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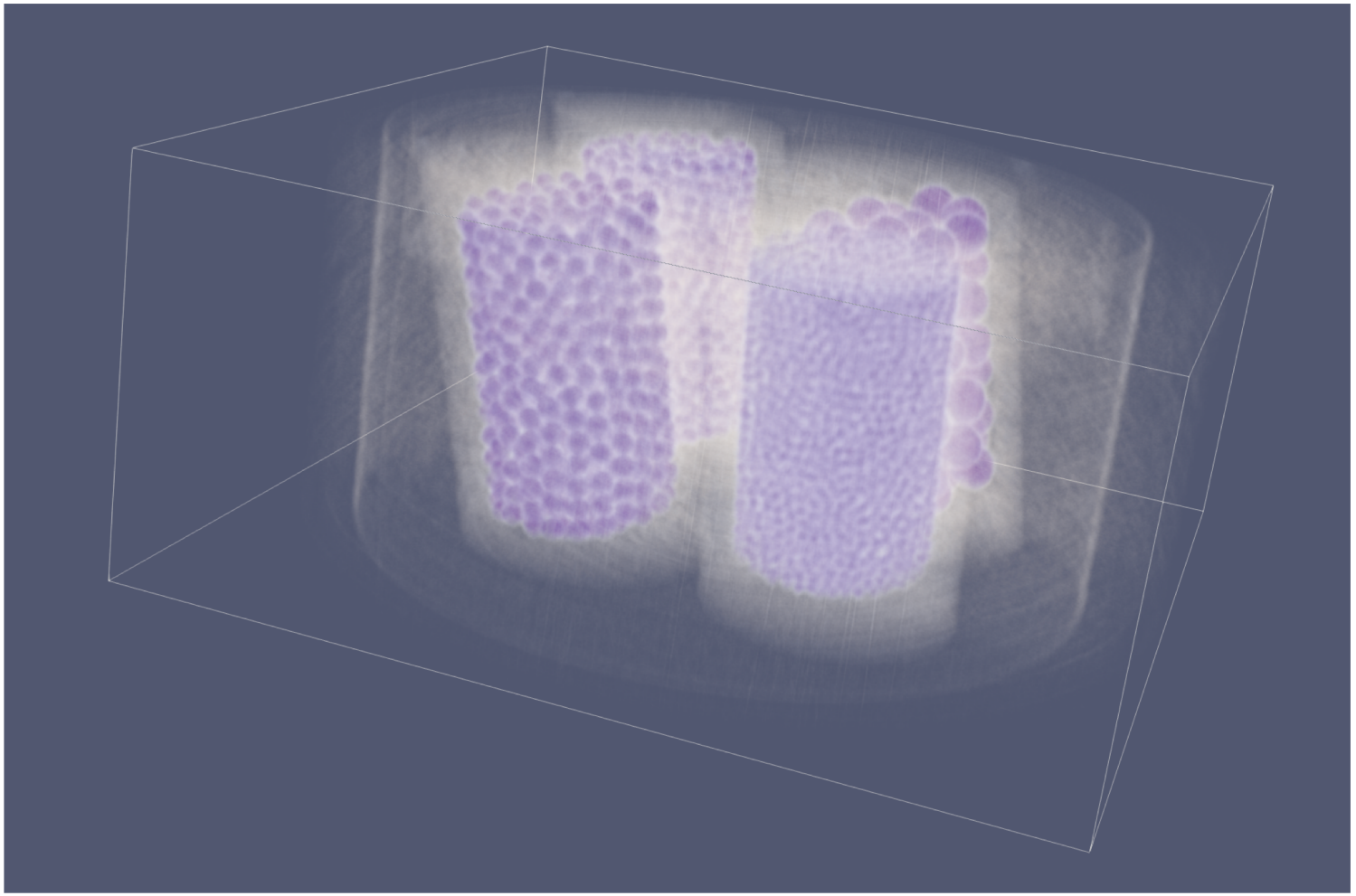
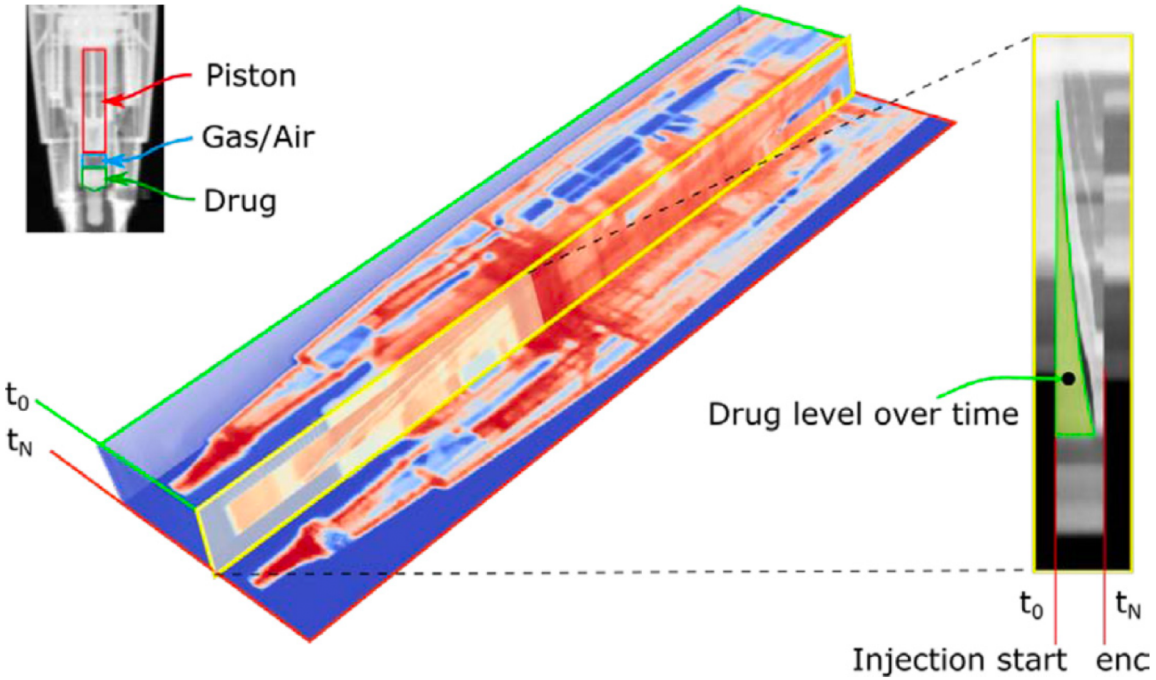
Volume rendering

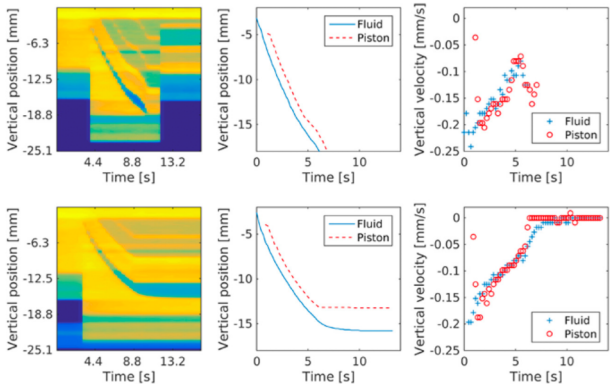


tomviz

Time series visualization



Kaestner et al., PDA Journal, 2016



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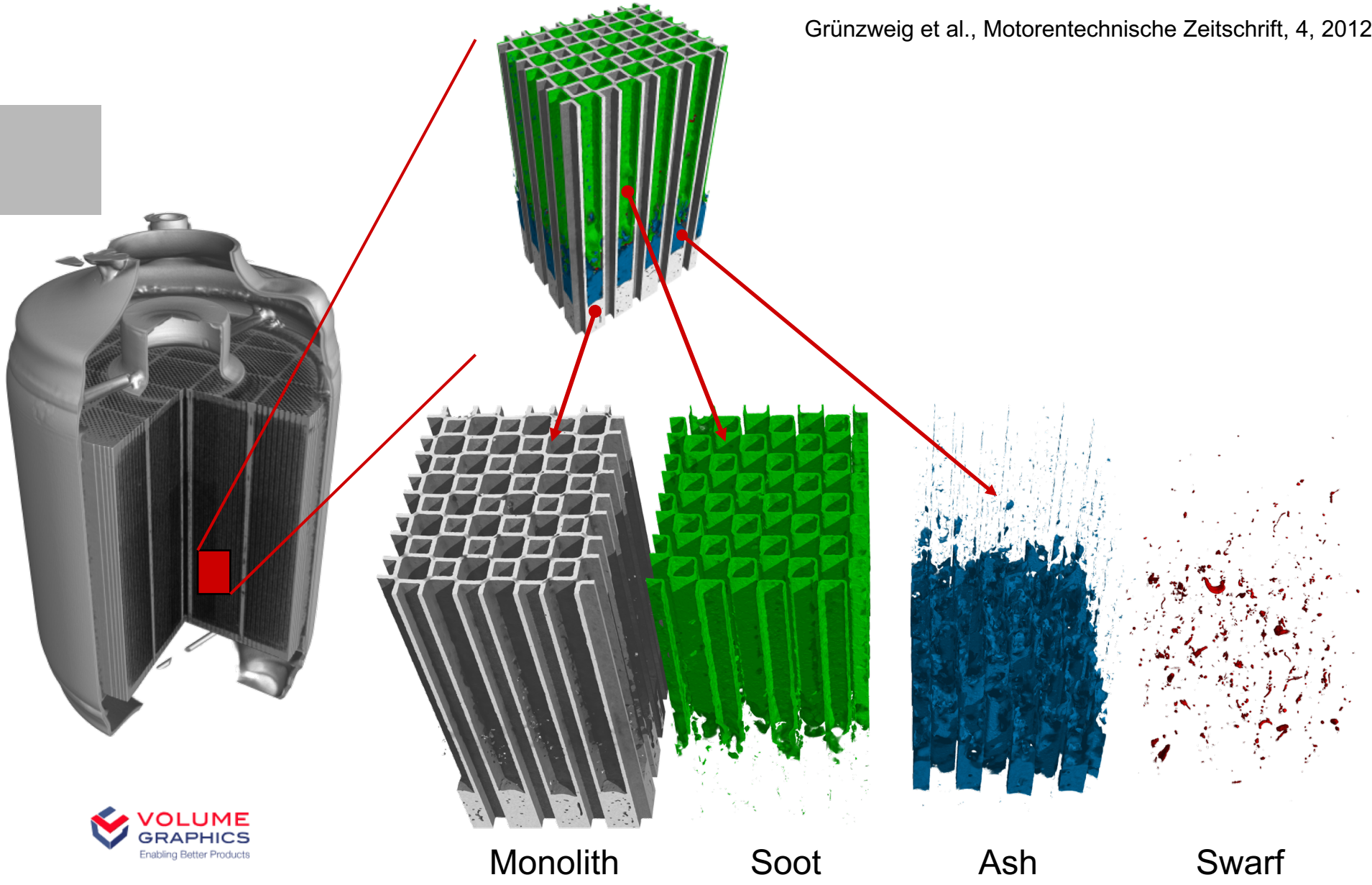
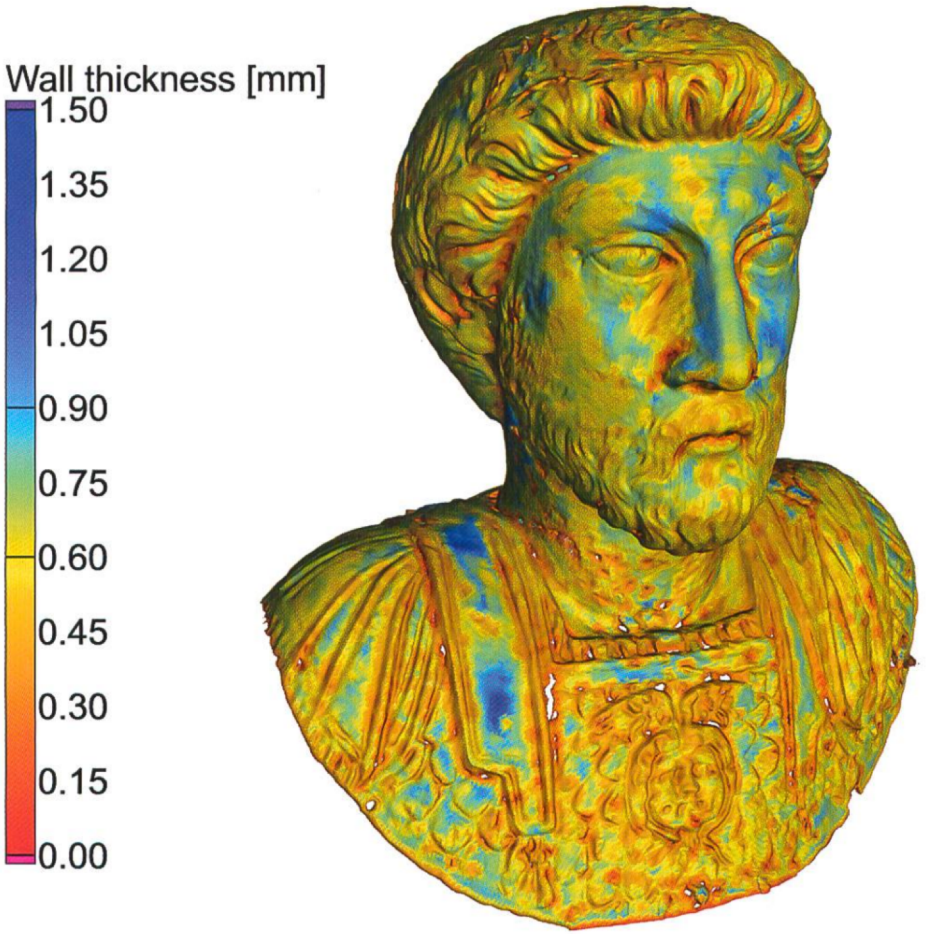
Segmentation and rendering

Grünzweig et al., Motorentechnische Zeitschrift, 4, 2012



VOLUME GRAPHICS
Enabling Better Products

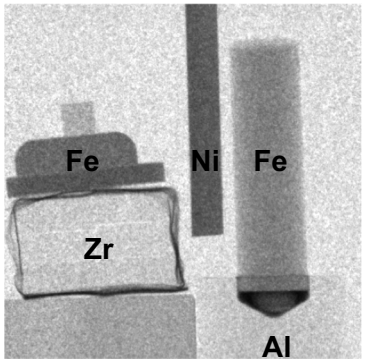
Coloring surface by values (Wall thickness analysis)

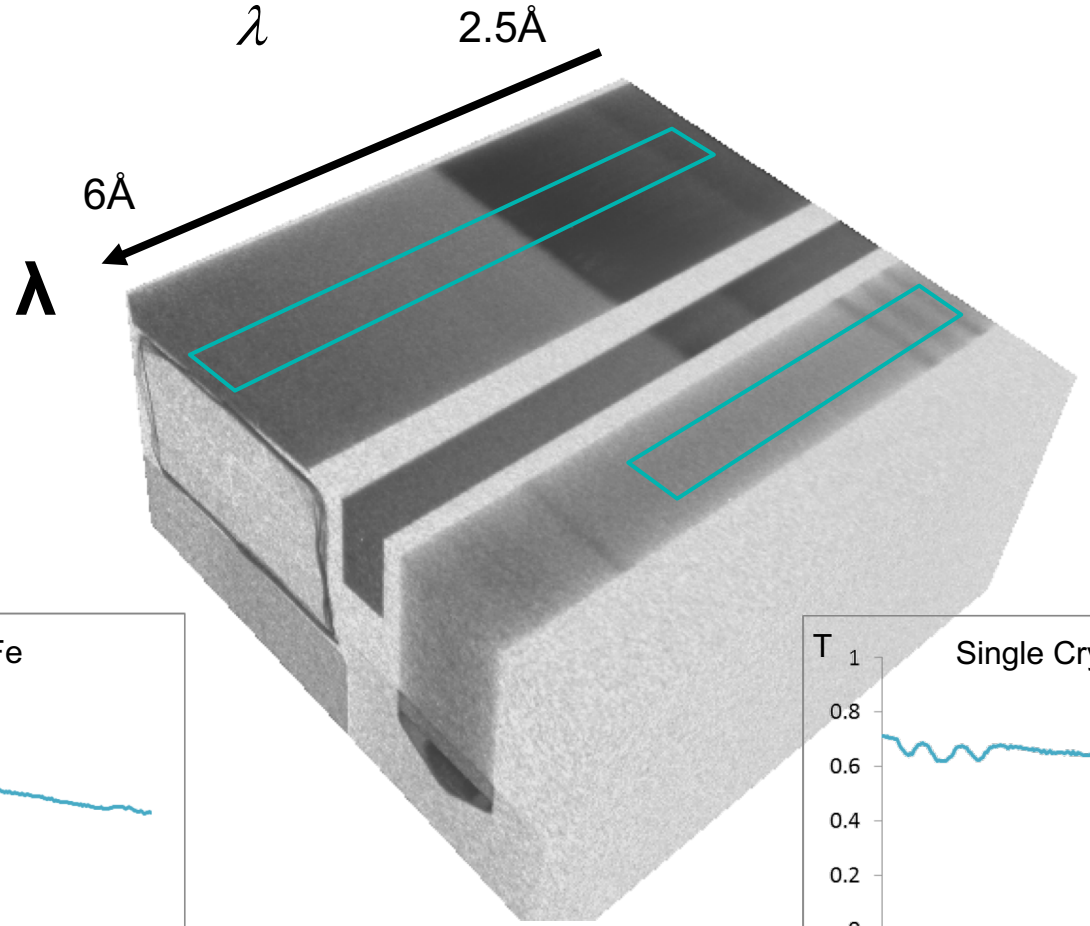


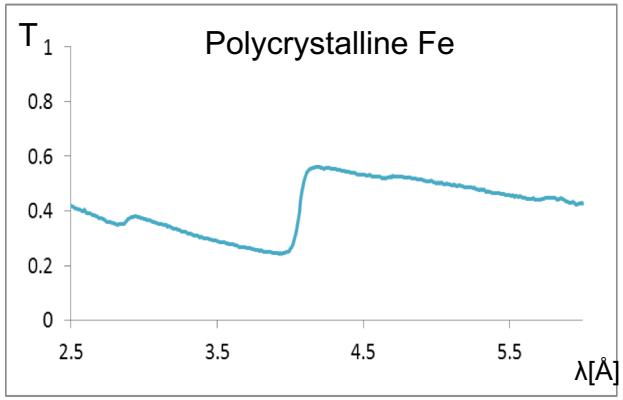
Mannes and Lehmann, Bulletin de l'Association Pro Aventico Band: 57 (2016)

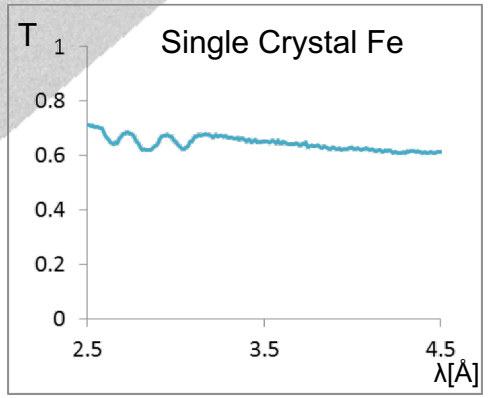
Wavelength dependence

$$\int_{\lambda} I(\lambda)d\lambda = \int_{\lambda} I_0(\lambda)e^{-\Sigma(\lambda)x}d\lambda$$

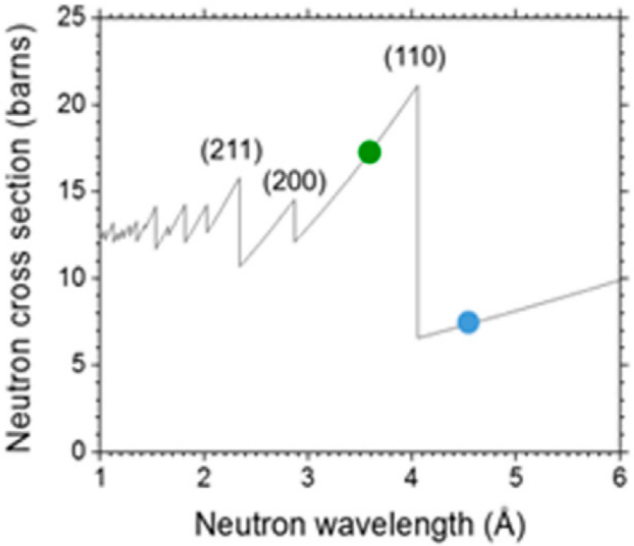


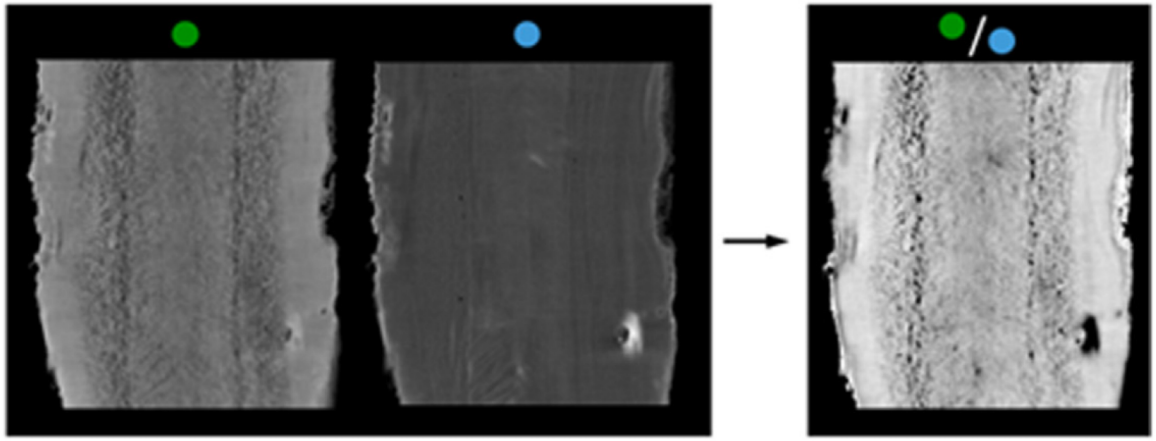






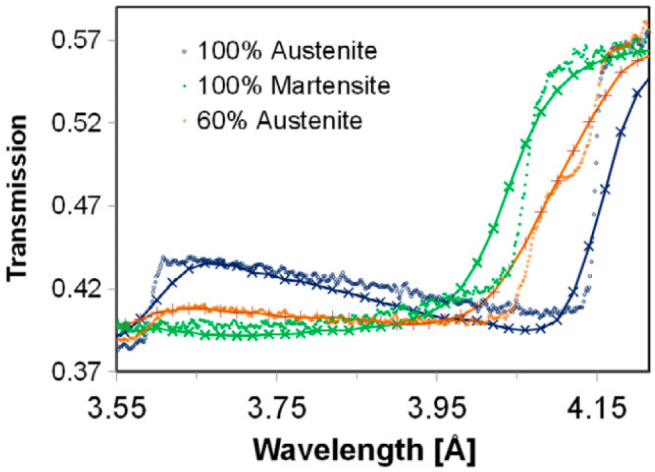
ToF visualization (Ratio of two wavelenghts)

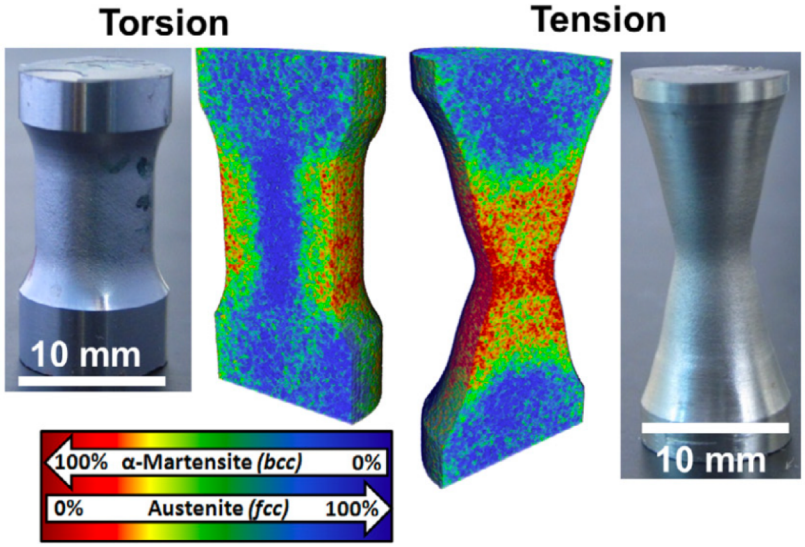




Woracek et al, NIMA, 2018

ToF visualization (After Bragg edge fitting)





Woracek et al, NIMA, 2018

Beyond 3D – To be solved…

Our data often has more than three dimensions…

- CT time series
- Spectrum
- Experiment parameters

Vector valued voxels

- Model parameters
- Stress and strain
- Magnetic fields

Typical visualization tools

Interactive tools

Commercial

- Volume Graphics
- Aviso

Open source

- TomViz (Paraview spinoff)
- ImageJ/Fiji

Scripting

- Python (matplotlib, mayavi)
- Matlab
- IDL