

Avizo® Fire

The 3D Visualization Software for Materials Science

- From image to understanding of materials structure
- Explore, analyze and understand materials science data
- Get advanced qualitative and quantitative information from 3D images
- Scalable visualization application framework
- Advanced image processing, segmentation and 3D model reconstruction



Avizo® Fire Edition software provides advanced 3D visualization and state-of-the-art quantification capabilities to researchers and engineers, who require great insight into complex materials structures.

Advanced Solution for Demanding Projects

Avizo® Fire supports materials science projects in:

- Electronics, semiconductors
- Composite materials, metallic foams
- Nanotechnology, powder and films
- Food and seeds
- Building materials
- Geology, petrography
- Space & aerospace
- Forensic engineering...

Avizo® Fire enables scientists to obtain meaningful qualitative and quantitative data for:

- Materials characterization
- Performance and process evaluation
- Metallurgical applications
- Industrial tomography
- Nanometric measurements
- Surface analysis
- Corrosion, fatigue testing
- Failure analysis, quality control...

Easy and Immediate 3D Visualization

Avizo® Fire allows the import and fusion of 2D and 3D data from multiple sources, enabling easy integration of Avizo™ into data analysis workflows.

High-end interactive visualization techniques, including state-of-the-art volume rendering, gives insight into the details of structure properties on full 3D microstructures, from desktop computers to collaborative and immersive visualization environments.

Image Data Processing

Avizo® Fire includes 2D and 3D image filtering modules, advanced slice alignment capability, automated or assisted segmentation with 3D surface reconstruction, allowing for phase separation, visualization, and measurement.

Quantitative Analysis

Get extensive quantitative information from image data for characterizing and analyzing features, such as phases, grains, particles, pores, fractures, cracks, and de-lamination, at any scale. Measure properties of individual feature elements extracted from the image and synthesized statistics, including counts, distributions, areas, volumes, and orientations.

Benefit from advanced query, plotting and export capabilities through the built-in spreadsheet tool or external applications such as MS Excel® or Matlab®.



Courtesy:

Left: Prof. D. Bernard (ICMCB Bordeaux)

Middle: Courtesy: Dr. B.J. Connolly (University of Birmingham)

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The 3D Visualization Software for Materials Science



Image: Unilever

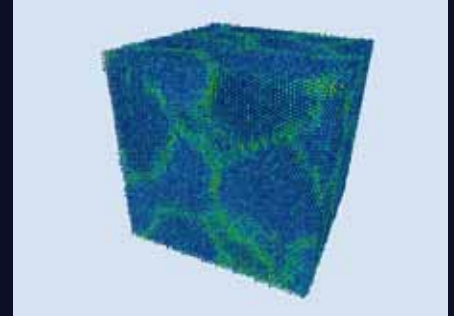
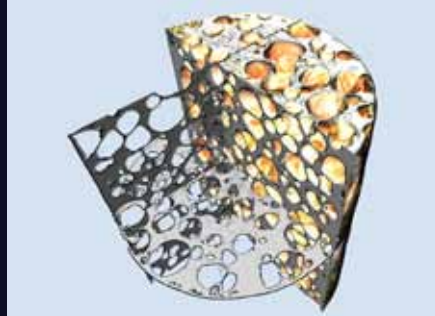


Image Acquisition and Processing

- Data import from CT-scans, micro-tomography, PET, MRI, FIB, SEM, and microscopy
- Support for multi-data/multi-view, multi-channel, time series, large data
- Scaling, calibration, conversion, re-sampling
- Image enhancement, comprehensive filtering and convolution, Fourier frequency transforms
- Image alignment, registration, arithmetic, correlation, fusion

Image Segmentation and Feature Extraction

- Thresholding and auto-segmentation, object separation, automatic labeling
- Region growing, snakes, interpolation, wrapping, smoothing
- Morphological processing including watershed, basins
- 3D surface reconstruction and tetrahedral grid generation
- Skeletonization

3D Data Exploration

- Intuitive and high-performance 3D interaction
- Direct volume rendering with real-time color/opacity mapping
- Orthogonal, oblique, cylindrical, and curved slicing
- Contouring and iso-surface extraction
- Support for crystallography and molecular data

Measurement and Analysis

- Built-in measurements, including number counts, volumes, areas, perimeters, aspect ratios, and orientations
- User-defined measures
- Results viewer with spreadsheet tool and charting
- Automatic individual feature measurements, 3D localization, and spreadsheet selection
- Automated statistics, distributions graphs
- Feature filtering using any measurement criterion
- Geometry registration, measurements and comparison
- Matlab® bridge
- Pre- and post-processing for structural and flow simulations
- Flexible workflow, automation, TCL scripting

Presentation, Sharing and Reporting

- Mix images, geometric models, measurements, and simulations
- Annotations, measures legends, histograms, and curves plots
- Advanced key frame and object animation
- Export spreadsheets, 3D models, images, and movies

Avizo Configurable Solutions

Further enhance Avizo Fire Edition with powerful additional eXtensions:

- XPand enables the creation of custom extensions using the C++ Avizo open framework.
- XLVolume manages and visualizes up to several terabytes of data, increasing the available system memory.
- XSkeleton delivers advanced automatic tools for network reconstruction.
- XScreen and XTeam enable collaborative, high-resolution and immersive environments.
- XReaders provides import capabilities for the most popular CAD formats.

Supported Platforms

- Windows® XP /Vista 32-/64-bit

