OIM Analysis

Product Bulletin – EBSD

OIM Analysis™ is the premier microstructural visualization and analysis tool for interrogating and understanding EBSD mapping data. Analysis options include comprehensive greyscale and color mapping tools to display orientations, grain boundaries, phases, EDS information, and local deformation.

Most analysis results can be displayed in colorful, meaningful maps and quantified in charts and texture calculations. As all points in the data displays are linked to their measurement location in the map, interactive highlighting allows specific microstructural features to be investigated by displaying selected points in all other representations.

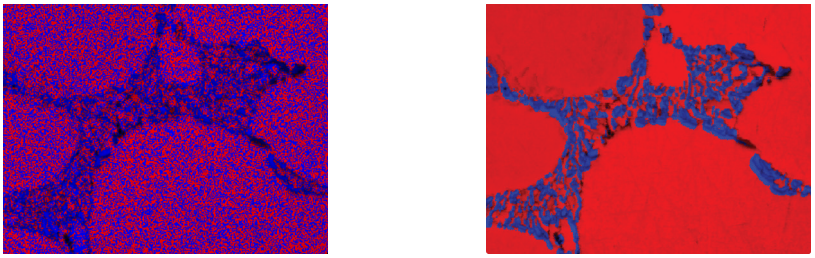

Figure 1. OIM Analysis used to improve initial data (left) with ChI-Scan reindexing (right) for accurate phase mapping on an Al-Si casting alloy (primary phase – red, eutectic phase – blue).

Significant new functionality has been introduced into the software, including:

- Multithreading optimization to allow users to take advantage of modern computer technology
- EBSD pattern reindexing to improve indexing performance away from the SEM with EDAX's triplet indexing, ChI-Scan™, and NPAR™ technology
- OIM Matrix™ dynamic pattern simulation for dictionary indexing and structure file optimization
- Anti-grain analysis for characterization of non-indexed datapoints
- Correlation plots for understanding the relationship between different EBSD measurements metrics

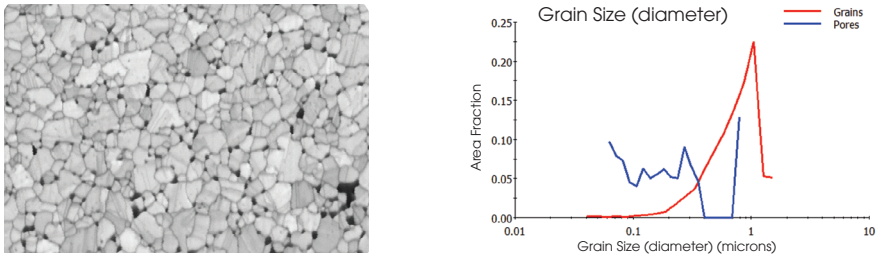

Figure 2. EBSD image quality map (left) of a CdTe thin-film solar cell with grain size and pore size analysis (right). The pore size was calculated with the anti-grain functionality.

- Comprehensive toolbox for the analysis of EBSD mapping data
- Optimized for multi-core PCs for faster visualization and analysis
- EBSD pattern indexing for off-line rescanning of EBSD data
- Includes ChI-Scan functionality
- Optional NPAR functionality
- Optional OIM Matrix simulation mode
- Anti-grain determination for pore analysis

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Product Highlights

- A comprehensive selection of mapping options for microstructural visualization
- Charting for quantitative distributions from measured microstructure
- Texture plotting for analysis of preferred orientation distributions
- Designed for 64-bit Windows® OS for large dataset analysis
- Multithreaded operations compatible with multi-core PCs
- Partitioning functionality for easy analysis of data subsets
- Data highlighting allows visual comparison of measurements
- Quick-gen toolbar for fast access to common functions
- Data templates for repeatable, customized analysis
- Batch processor for analysis of multiple datasets

Features and Benefits

Multithreaded operations

- Optimized code to take advantage of modern multi-core CPUs for faster map rendering, highlighting, and characterization calculations

EBSD pattern indexing

- Ability to reindex points within an OIM mapping dataset
- Reindexing by a point, a partition, or a complete dataset
- Chl-Scan and NPAR indexing capability available
- Batch reindexing for analysis of multiple datasets (3D and *in-situ* experiments)

Anti-grains analysis

- Formation of 'anti-grains' from measurement points that are not included in traditional grain determination algorithm
- Anti-grain size and shape can then be analyzed
- Anti-grains can be correlated with porosity or amorphous phases

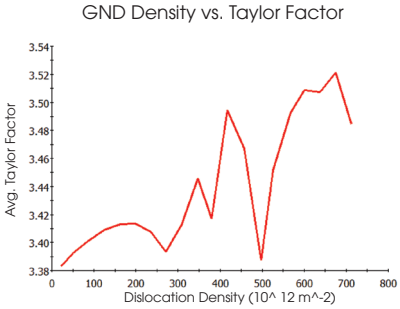

Figure 3. Correlation plot of dislocation density vs. Taylor Factor in deformed aluminum.

OIM Matrix

- Dynamic diffraction-based EBSD pattern simulation
- Dictionary indexing capability
- Structure file and multi-phase background optimization

HDF5 support

- Data and patterns stored in HDF5 format for improved data portability and management

Correlative microscopy

- Import of spatially-specific measurements for visualization and correlative analysis

Conclusion

With the addition of new functionality and features, OIM Analysis has reset the standard for EBSD data analysis capability and enables users to achieve new insight into microstructural characterization.

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