

## Advanced OIM™

For many people, Electron Backscatter Diffraction (EBSD) analysis has become synonymous with nice looking (color) images, such as Image Quality, IPF, grain size, and many other types of maps, which contain a wealth of information. However, these maps do not do justice to all the data that can be extracted from an EBSD dataset. There is much more that can be done with EBSD data in the EDAX OIM™ Analysis Software. For example, all representations of a single measurement point are linked together and may be highlighted in all displayed maps, plots, and charts interactively for advanced correlative analysis. It is possible to select sub-sections of your data based on properties like orientation, grain properties, or scalar values to separate specific components of your dataset. When a part of the microstructure is selected, that data may be exported for further analysis.

The “common” options are directly accessible through the new quick and right-click options. One level deeper there are many more specialized functions available.

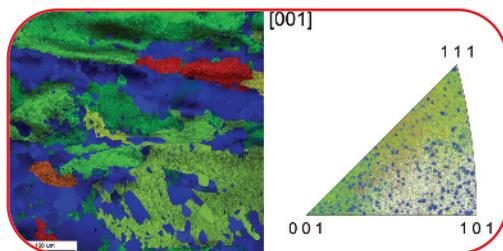


Figure 1. Grain orientation spread map of partially recrystallized steel with corresponding colour-highlighted IPF plot.

The partition properties that allow users to create subsets of an entire dataset for detailed analysis are very powerful. For example, a Confidence Index filter (CI>0.1) may be applied to remove suspect indexed points. In addition to single parameter filters, the mathematical and Boolean operators on the formula tab allow the combination of multiple point and grain parameters to precisely define a fraction of a dataset for separate analysis.

When filter-based partitioning is not possible, the highlighting functionality can be used to create subsets. After creating a highlight, right-click in the map and select “send points to” to generate the subset. Another highlighting function is “apply colors as highlight”. With this function users can color-code discrete plots (e.g. IPF, PF, Euler plots) with the coloring used for the “source” map. In Figure 1, the grain orientation spread value is highlighted in an IPF plot. The

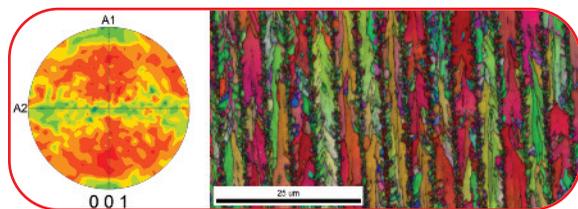


Figure 2. EBSD map of laser crystallized SiGe thin film with Grain Aspect Ratio scalar texture plot (Sample courtesy of Balaji Rangarajan).

blue points indicate the individual recrystallized grains and the green background represents the orientation variation due to lattice bending of the deformed grains.

The scalar texture function can be used to quantify the occurrence of a scalar value as a function of orientation. Figure 2 shows the grain aspect ratio as a function of orientation. The green zones at the top and bottom of the pole figure show that maximum grain elongation occurs along the [001] axis within ~30 degrees to the lines in the map.

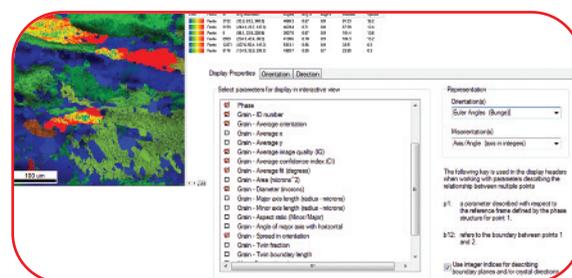


Figure 3. EBSD map with interactive grain highlighting results pane and contextual options window.

Quantitative information can also be obtained using the highlighting function, which not only displays the selected data in any open map, chart and plot, but also allows users to record orientation and grain information for the point or grain that is selected. Right-clicking in the interactive tab offers a selection of properties that may be recorded and exported (Figure 3).

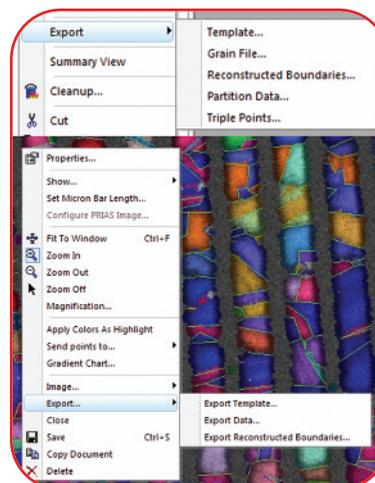


Figure 4. Export data options from map and partition contextual menus.

When highlighting all grains to obtain specific grain properties is impractical, a number of grain property export options are available from the partition contextual menu. However, when the visualization and quantification options in OIM™ Analysis are insufficient for a user’s needs, the software offers direct access to virtually all data for your own processing.

This information may be accessed by the various export functions that can be found in the dataset, partition or map contextual menus (Figure 4). In general, when you need something special in OIM™ Analysis, try a right-click.