

**BUEHLER®**

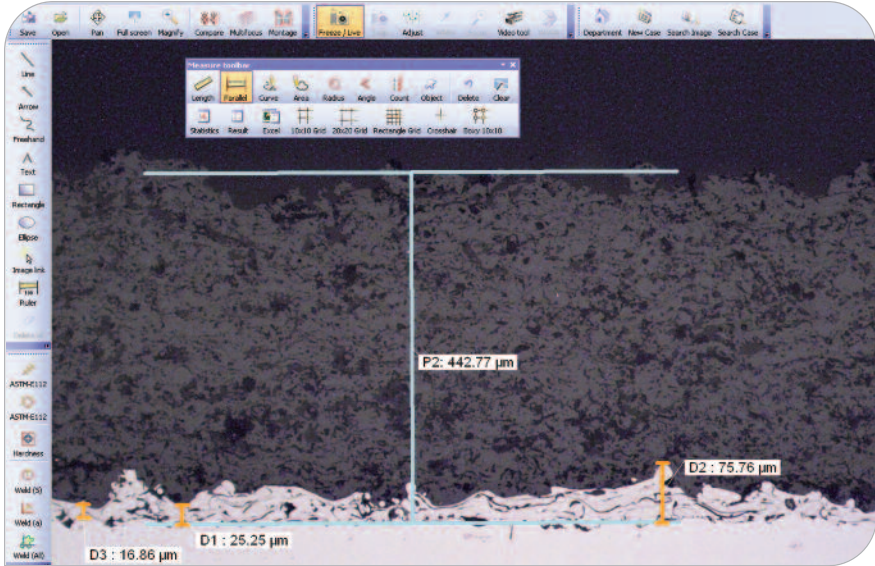
**OmniMet®**

## **MODULAR SOLUTIONS FOR IMAGE ACQUISITION & ANALYSIS**

- **Simple-to-Use Image Acquisition and Quantitative Analysis Software**
- **Seamless Integration of Microscopes, Cameras, and OmniMet® via an Intuitive Microsoft Windows® Interface**
- **Powerful Microscopy Tools for Image Acquisition, Processing, Measuring, Annotating, Archiving, and Reporting**
- **Flexible Microsoft® Access and SQL Databases to Effortlessly Store and Recall Multimedia Data, Written Material and Results**
- **Customizable Modular Software Packages are Ideal for Everyone from Imaging Newcomers to Advanced Microscopists**
- **Wide Range of Specialized Modules Available for Industrial Microstructural Analysis**
- **Choose Solutions from Software Only to Complete Turnkey Image Analysis Systems**



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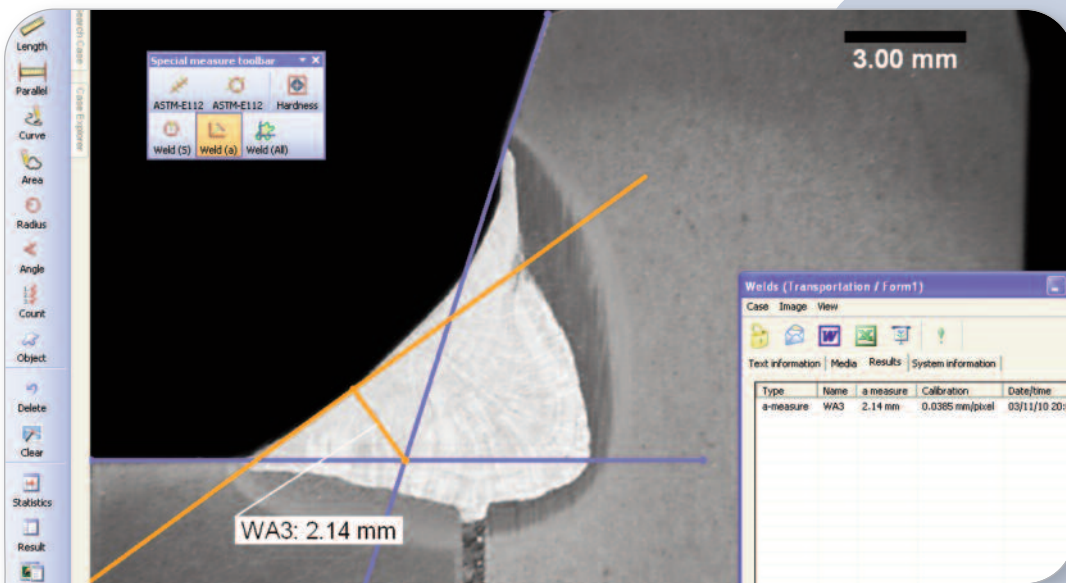


**Manual Interactive Measurements**

Measure image features interactively using point-and-click tools. Images can be captured, measurements made, stored in the database, or printed in reports.

**Microstructural Grain Size Investigations**

Following ASTM E112 grain sizes may be estimated using linear and circular intercept techniques or grain areas using the various OmniMet® grain sizing modules.



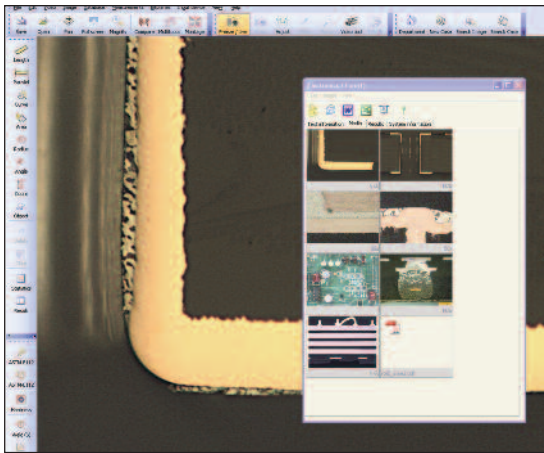
**Characterizing a Welded Joint**

Welded joints can be assessed using different methods within the OmniMet® Welding module. In this figure an 'A-measure' of the weld joint is depicted.

# OmniMet® Complete Solutions for Digital Image Aquisition & Quantitative Analysis

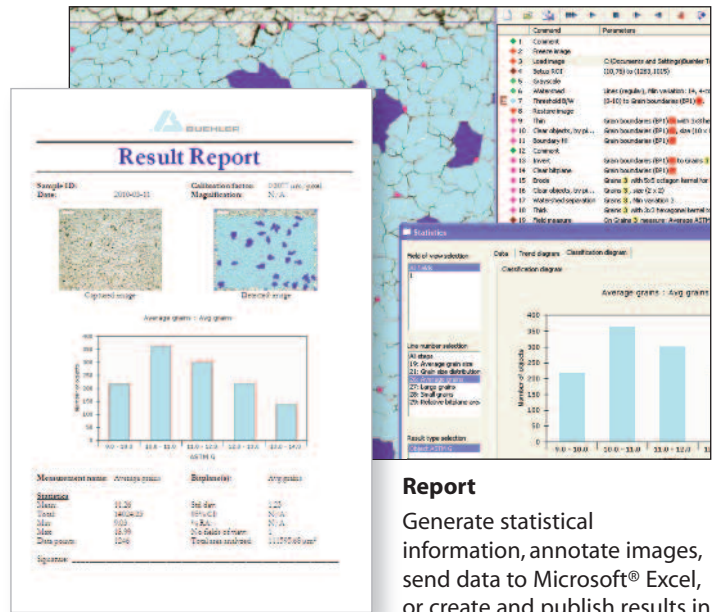
Buehler, the first name in material preparation and analysis, continues to deliver the highest quality products to the materials market. In keeping with our time-tested tradition of innovation and reliability, Buehler is proud to present the new OmniMet® Modular Digital Imaging System. OmniMet® delivers powerful image analysis possibilities combined with flexible database functionality. Customize OmniMet® with intuitive user friendly point-and-click measurement possibilities, pre-programmed analysis routines, or with capabilities for running user programmable analysis scripts. The database utilizes a multi-tiered approach to logically organize numerous users and image data with unprecedented ease. OmniMet® is a versatile and customizable package that may be tailored to meet the metrology needs of every laboratory requiring image data archiving and quantitative image analysis.

## Capture – Measure – Report - Organize



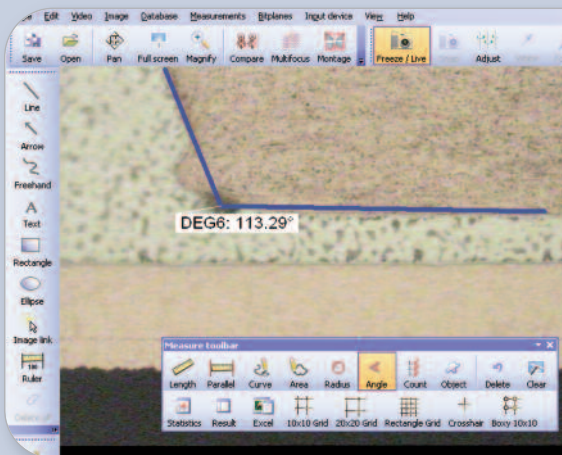
### Capture

OmniMet® seamlessly interfaces with cameras and microscopes to capture, analyze, and store images and measurement results.



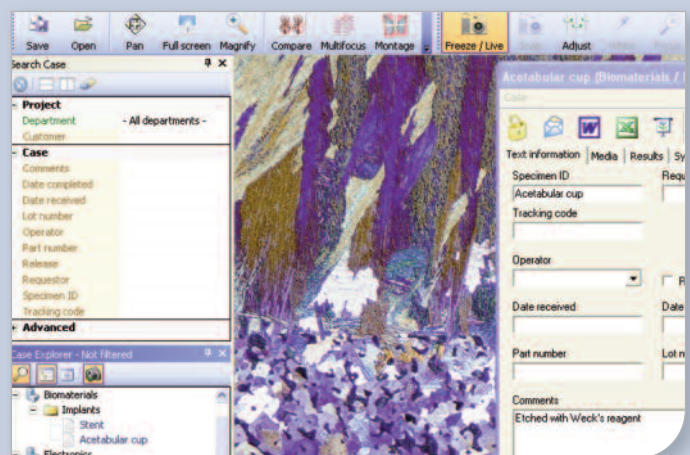
### Report

Generate statistical information, annotate images, send data to Microsoft® Excel, or create and publish results in a customizable Microsoft® Word report.



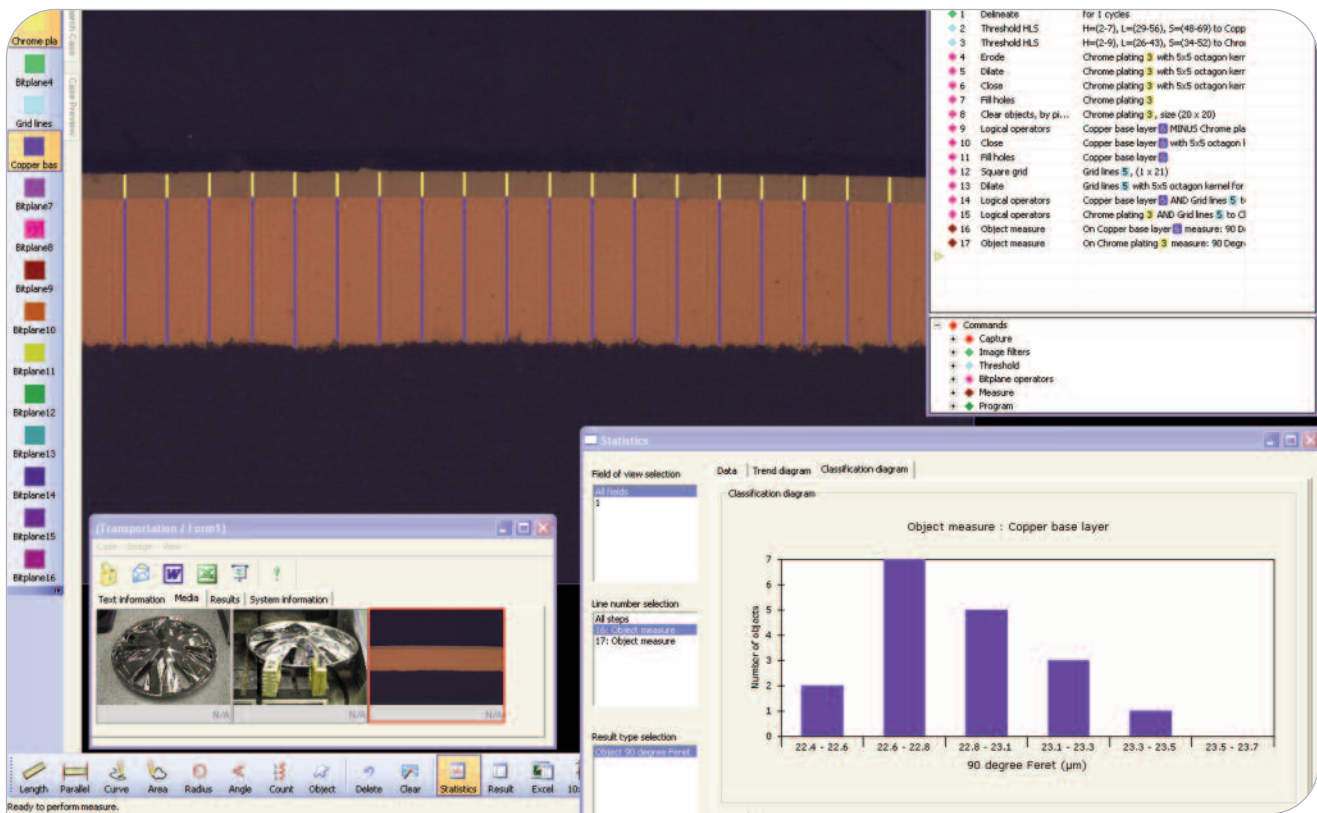
### Measure

Analyze images with interactive point-and-click measurement functions, automate analysis using one of our preprogrammed modules, or create your own analysis algorithms using the OmniMet® ScriptBuilder.



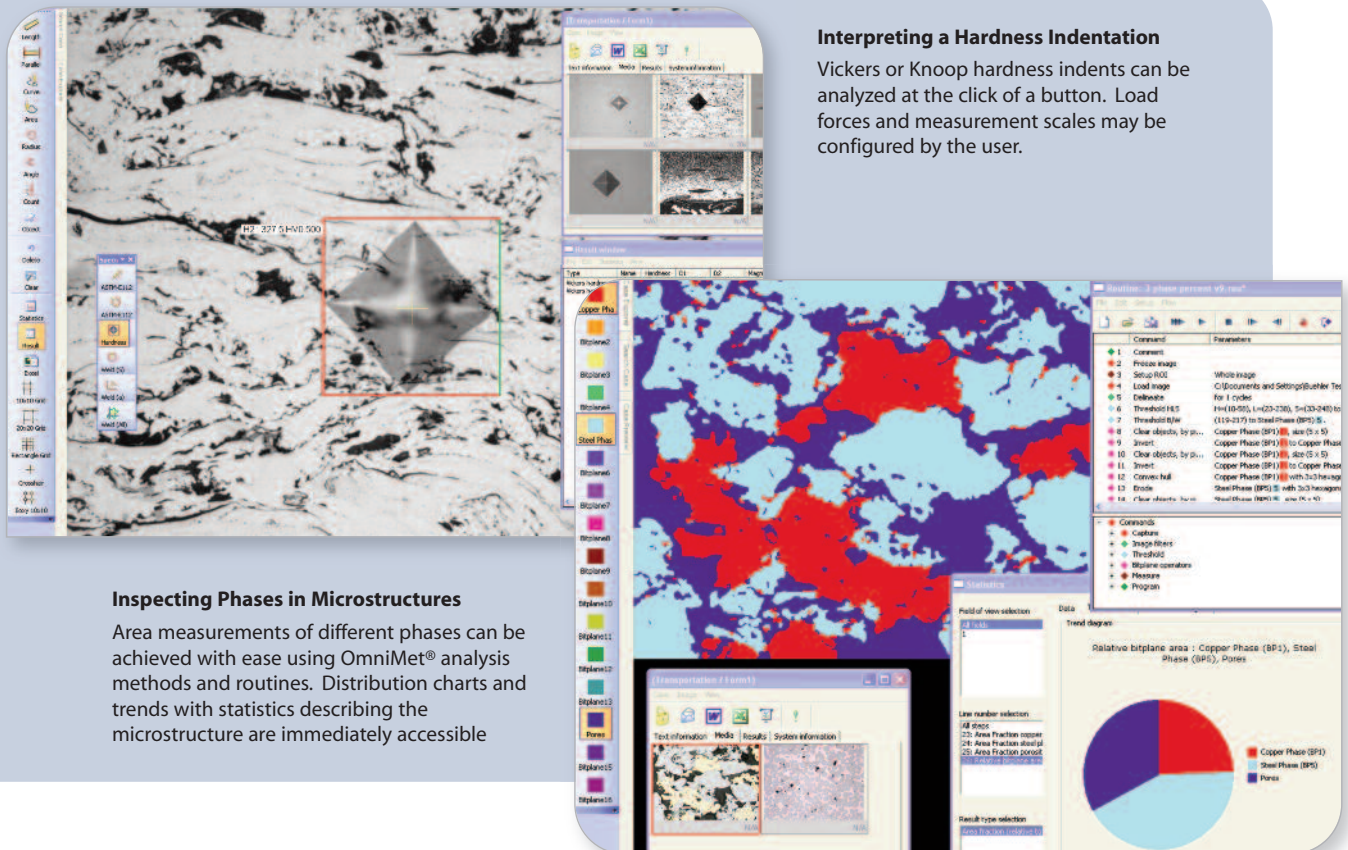
### Organize

Create a file structure, define a user profile, and organize image data and reports. Use the OmniMet® database to create a hierarchy that meets your organization or department requirements. Multi-format data can be easily overviewed and retrieved from the database at any time.



**Investigating Coatings and Surface Finishes**

Multiple measurements can be made and distributions of the results are readily accessible through the results window. In this case a custom analysis routine was used to automate the analysis. All data and images can be easily stored in the database.



**Interpreting a Hardness Indentation**

Vickers or Knoop hardness indents can be analyzed at the click of a button. Load forces and measurement scales may be configured by the user.

**Inspecting Phases in Microstructures**

Area measurements of different phases can be achieved with ease using OmniMet® analysis methods and routines. Distribution charts and trends with statistics describing the microstructure are immediately accessible

## OmniMet® Modular Image Analysis Packages

The OmniMet® system offers seamless point-and-click integration of microscopes, cameras, and image analysis software via an intuitive Microsoft Windows® interface. In general any standard format image may be viewed directly from a calibrated microscope or be imported into OmniMet® for analysis. OmniMet® software is offered at different levels of flexibility, functionality, and analytical power.

### OmniMet® Viewer

OmniMet® Viewer allows networked (LAN) users to view images, databases, measurements, and print reports completed on the higher level OmniMet® imaging systems. Requires purchase of at least one higher level OmniMet® imaging system to capture images and generate results. (System 86-2200, Software 86-0008)

### OmniMet® Capture Basic

OmniMet® Capture Basic offers image capture, calibration, simple measurements, and templates for presenting information and images. Manual interactive measurements include length, parallel width, area, curve (string) length, text annotation, and scale bars. It also incorporates further interactive measurement tools radius, angle and counting such as create reports in Microsoft® Word with a single mouse click or select from sample report templates. (System 86-0005, Software 86-2100)

### OmniMet® Capture Advanced

OmniMet® Capture Advanced expands upon the capabilities of OmniMet® Capture Basic. The numeric data can be accessed from a separate result window or stored long term in the database. Premium Measurement Modules may be added. Easy export of data to Microsoft® Excel is offered for unprecedentedly simple data manipulation and customized report generation. (System 86-0006, Software 86-4100)

### OmniMet® Express

OmniMet® Express is a simple “push-button,” affordable image analysis solution for laboratories that require a variety of imaging capabilities. It incorporates all options offered on the lower level OmniMet®’s and additionally offers the capabilities to execute automated analysis scripts. A series of optional Advanced Analysis, Premium Measurement and Premium Analysis Modules addressing metallographic applications are also available. These analysis routine scripts may be run and edited to suit the specimens being measured. Custom analysis routine scripts for specific solutions may be purchased from Buehler. Quantitative measurements can be enhanced with professional report generation in Microsoft® Word or Excel. (System 86-3001, Software 87-3005)

### OmniMet® Enterprise

OmniMet® Enterprise is a powerful analytical tool that incorporates all features offered on the lower OmniMet®’s and additionally, it includes an analysis routine ScriptBuilder that enables the user to write and customize routines for automated analysis of their specific applications. Standard interactive measurement tools and Advanced Analysis Modules are part of the Enterprise offering. Optional Premium Measurement and Premium Analysis Modules may be added. Custom analysis routine scripts for specific solutions may be purchased from Buehler. Quantitative measurements and automated analysis can be enhanced with professional report generation Microsoft® Word or Excel. (System 86-1005, Software 87-1002)

\* Systems include software, workstation, keyboard, and mouse

\* Software only solutions may be purchase without a workstation and minimum computer specifications are available from your Buehler representative

## Software Upgrades and Updates

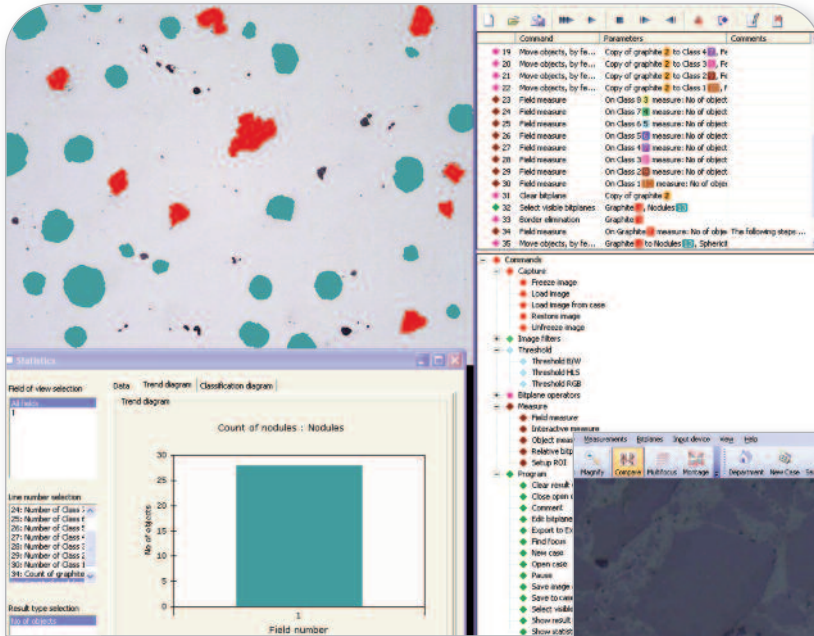
Existing customers may update their OmniMet® software to the latest versions. Additionally lower level OmniMet® software packages may be upgraded to higher level packages for increased functionality. Please see your local Buehler representative for terms and conditions regarding upgrading and updating OmniMet® software.

### Upgrade OmniMet® to a higher functional level

Upgrade From \ To	Capture Advanced	Express	Enterprise
Capture Basic	86-4002	86-3002	86-1002
Capture Advanced		86-3004	86-1004
Express			86-1003

### Update OmniMet® to the latest software release

- Update Capture Basic (86-4202)
- Update Capture Advanced (86-4204)
- Update Express (86-4201)
- Update Enterprise (86-4203)

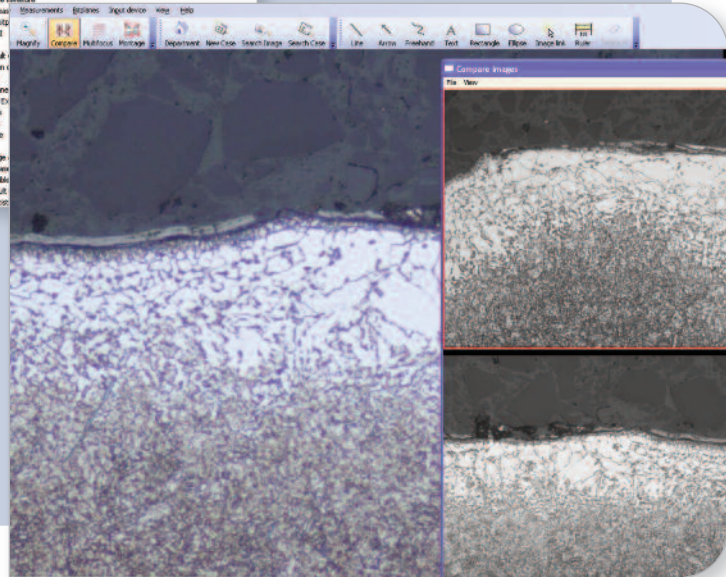


**Writing Analysis Routines with the OmniMet® ScriptBuilder**

The full power of OmniMet® image analysis may be realized using the OmniMet® ScriptBuilder. These scripts are custom analysis routines written to automate image analysis. Significant time may be saved by writing routines to handle common image analyses and complex analysis procedures.

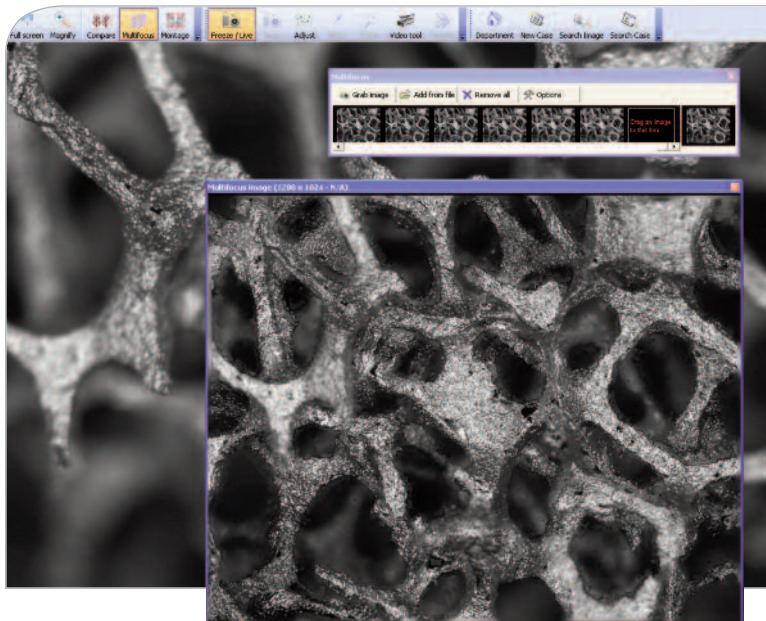
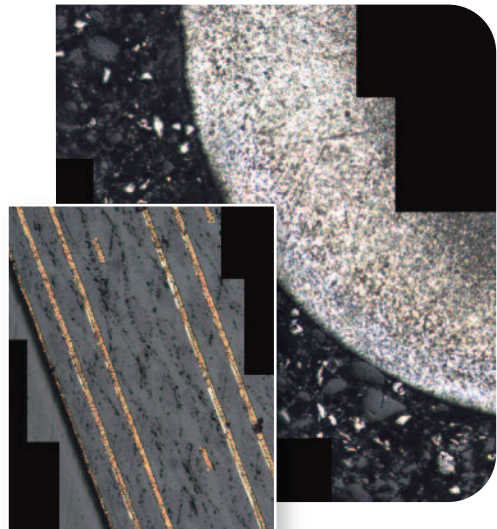
**Visually Comparing Multiple Images**

Images may be directly compared using the comparison functions within OmniMet®. Two or more images may be opened side by side and inspected visually. Take advantage of the option to resize multiple images to the same magnification.



**Stitching Images using the Mosaic Module**

Larger images may be easily stitched together using the Mosaic module. If the single view images are calibrated then the larger stitched image will also be calibrated and suitable for quantitative image analysis.



**Multi-Focal Imaging**

A multi-focal image of Aluminum foam. In this case due to the non-flat nature of the surface the image needs to be focused in multiple planes to create a multi-focal image suitable for subsequent analysis.

## OmniMet® Features & Optional Modules

Description	Viewer	Basic	Advanced	Express	Enterprise
<b>DATABASE FUNCTIONALITY</b>					
Database Interface & Creation	●	●	●	●	●
Database Administration		●	●	●	●
<b>IMAGE CONTROL</b>					
Load and Save	●	●	●	●	●
Brightness, Auto-White Balance, Rotate, Color Correction, Digital Zoom, Presentation, Calibration & Annotation	●	●	●	●	●
<b>IMAGING MODULES</b>					
Multi-Focal Images <i>(See details below, 86-4130)</i>	○	○	○	○	○
Mosaic Multiple Image Stitching Module <i>(See details below, 86-4140)</i>	○	○	○	○	○
<b>DATA PRESENTATION</b>					
Report Data, Report Generator (Requires Microsoft® Office Programs)	●	●	●	●	●
Results Window with measurements log			●	●	●
Color Threshold (size, intensity), 16 Report and Measure Bitplanes				●	●
<b>HARDWARE INTERFACING</b>					
Camera Interface (USB, EEE I394, Capture Cards, DirectShow, Twain, etc.) & Motorized Stage Controller		●	●	●	●
<b>MEASUREMENT &amp; ANALYSIS MODULES</b>					
Length, Width, Area, Exterior Curve Length	●	●	●	●	●
Circle Radius, Angles, Object Counting		●	●	●	●
Advanced Analysis Modules <i>(See details on next page)</i>				○	●
Premium Measurement Modules <i>(See details on next page)</i>			○	○	○
Premium Analysis Modules <i>(See details on next page)</i>				○	○
<b>AUTOMATED IMAGE ANALYSIS</b>					
Running Preprogrammed Analysis Routines				●	●
Custom Routines (86-3010)				○	○
ScriptBuilder for Writing Analysis Routines					●

● Included with package ○ Optional add-on module

## Optional Modules

### Imaging Modules

#### 86-4130 OmniMet® Multi-Focal Images

Used to create focused images from multiple images of the same specimen when the viewing surface exists in different focal planes. Beneficial for removing edge rounding or viewing rougher surfaces when sharply focused images are required for analysis.

### Advanced Analysis Modules

#### 86-3050 Manual Interactive Thickness Module

Measurements of line lengths with statistics for length and thickness measurements.

#### 86-3100 Grain Size Module

Automated grain size measurements in accordance with ASTM E112. Average grain size by intercept methods and grain size distributions using areas are delivered. Additional processing identifies ALA grain size and duplex populations in accordance to ASTM E930 and ASTM E1181 where appropriate. ISO 643 compliant.

#### 86-3200 Phase Area Percent Module

Determines phase area and percentage area of multiple phases in accordance with ASTM 562.

#### 86-4140 OmniMet® Mosaic Multiple Image Stitching

Used to stitch multiple images together to create one large, calibrated stitched image. Measurements are possible on the stitched image. Useful for documenting features larger than one field of view. A motorized stage is not required.

#### 86-3300 Coating Layer Thickness Module

Measures coating, plating or layer thickness of cross-sectioned samples in compliance with ASTM B487.

#### 86-3500 Particle Sizing Module

Detects and measures particles in a field of view providing statistics on quantity and size distribution. Suitable for non-agglomerated particulates, precipitates, and powders.

#### 86-3550 Porosity Assessment Module

Provides automated measurements of fine holes or pores in a material.

#### 86-3750 Dendritic Arm Spacing Module

Delivers measurements of lengths between dendrite arms in cast aluminum alloys.

## Optional Modules Cont.

### Premium Analysis Modules

#### 86-3150 Intercept Grain Size Module

Automated grain size determination delivering average grain size per field using straight line and circular intercept methods in accordance with ASTM E112.

#### 86-3310 Surface Roughness Module

Surface roughness measurements in accordance with ASME B46.1-02

#### 86-3350 Decarburization Depth Assessment Module

Determines depth of total or partial decarburization according to the relative amount of free ferrite present according to ASTM E1077.

#### 86-3400 Graphite in Cast Iron Module

Automated analysis of graphite in cast iron in accordance with ASTM A247. Measures size and class count of graphite nodules and area percentages of ferrite graphite and pearlite. For gray iron graphite length is also provided.

#### 86-3525 Cleanliness Assessment Module

Provides cleanliness assessment of particles on filter paper meeting the requirements of ISO 4406.

#### 86-3600 Indentation Hardness Module

Provides the capability to measure and analyze Knoop and Vickers indents in accordance with ASTM E384. Reports can be exported in HK, HV, HRC, and HRB scales with graphical displays of the hardness profile.

#### 86-3700 Banding Assessment Module

Determines the degree of microstructural banding in conformance with ASTM E1268. Delivers quantitative information on the degree of orientation, anisotropy index, and mean feature spacing.

#### 86-3850 Inclusion Rating Module

Determines area percentage, mean free path distances, and average numbers of intercepts for oxide and sulfide stringers in ferrous metals in accordance with ASTM E1245.

### Premium Measurement Modules

#### 86-4110 OmniMet® Object Measurements Module

'Single phase' image analysis for measurements of image features and field characteristics: Area Fraction, Area Position, Number of Objects, Perimeter, Compactness, Length, Feret Diameter, Center of Gravity, Inclusion and Exclusion of Objects by Size.

#### 86-4115 OmniMet® Weld Module

Measurement tools for determining weld characteristics. Use a circle radius to determine effective weld depth, angular A-measurements, or full weld outline characterization to determine effective depth, penetration and area.

#### 86-4120 OmniMet® Hardness Module

Measure Vickers and Knoop indentations interactively, quickly, and easily. Allows load force in gf or kgf and delivers accurate HV/HK values along with the diagonal indent dimensions.

#### 86-4125 OmniMet® Grain Size Module

Measure grain size interactively using ASTM-E112 methodology with linear intercept or circle intercept methods.

### OmniMet® Hardware Accessories

#### 1390-3002 NIST Traceable Stage Micrometer for Calibrating

#### 86-5105 Foot Pedal Switch

#### 86-5110 Internal Smart Card Reader

#### 86-5115 External Smart Card Reader

#### 86-5120 Objective Bar Coding System

#### 86-5125 Bar Code Scanner

#### 48-8575 TechMet® Image Analysis Table

Buehler offers a range of industrial and stereo microscopes, C-mount adapters and digital cameras suitable for interfacing with OmniMet®. Additionally we offer motorized stages for various microscopes, workstations, relevant PC peripherals, and technical training. Please contact Buehler for details.

For further details concerning OmniMet® or accessories please contact your local Buehler representative, consult the Buehler Equipment Buyers Guide, or visit us at [www.buehler.com](http://www.buehler.com). Buehler continuously makes product improvements; therefore, technical specifications are subject to change without notice.

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