



## Advanced Metallurgical Image Analysis System



MIAS<sup>®</sup> is a windows based imaging application that delivers state of the art imaging solutions in Metallography.

**MIAS<sup>®</sup>** provides superior tools for image capturing, visualization, enhancement, analysis and report generation. Our Imaging Solution is a powerful integration of software and hardware that enables metallurgist to automatically capture images, performs metallurgical analysis and generates reports.

**MIAS<sup>®</sup>** conforms to ASTM standards and is based on technology transfer from BARC (Bhabha Atomic Research Center).

A powerful image analysis software application, MIAS<sup>®</sup> is available as a stand-alone solution or part of a turnkey image analysis system including all necessary hardware components.

### Turnkey Image Analysis system consists of:

- Trinocular Metallurgical microscope
- High resolution digital camera
- MIAS<sup>®</sup> – a highly advanced Metallurgical Image Analysis Software



**Based on technology transfer from BARC**

# Specifications

## Grain size analysis

- Follows ASTM E112 standard
- Automatically creates grain boundary structure
- Supports Planimetric method
- Supports Hayn Linear Intercept method
- Supports Hillard/Abrams circle intercept method
- Manual grain analysis of particular grain(s) or grains of a specific region
- User can manually draw grains if structure is not properly visible
- User can add or remove grain boundary formed
- User can create Custom Grain analysis programs using different image analysis functions that suites different types of grain image
- ALA grain size (ASTM E930) analysis

## Porosity Analysis

- User can define configurations with different filter conditions
- User can manually select or unselect a feature
- User can in between switch to Live Video to further analyze a feature by focus adjustment and can select or unselect a feature in processed image
- User can group the selected features into different buckets based on length or area

## Nodularity Analysis

- Using ASTM standard E2567
- User can define configurations with different filter conditions
- Gives Nodularity by count, Nodularity by area and Nodule size
- Group results using Nodule size 1 to 8

## Flakes Analysis

- As per ASTM A247 method
- Detects and groups Flakes into types A, B, C, D and E
- Detects and groups Flakes into size 1 to 8
- User can manually change Flake type

## Phase/Segmentation

- As per standard ASTM E562
- User can define different configurations for different measuring conditions and analysis
- Can import data from Nodule analysis or Flakes analysis (Graphite data)
- Can detect Nodules in the image
- Can split phases which has same colour range
- Supports manual point count method for phase analysis
- Reports with Graphite (Nodule/Flake) data and Phase data

## Inclusion Analysis

- Using ASTM standard E45
- Groups results as per type A, B, C, D and further classification as THIN and THICK

## Decarburization Analysis as per ASTM E1077

## Dendrite Arm Spacing (for Aluminum)

## Particle size analyzer

- Analyze and detects particles/features in an image
- User can define configurations with different filter conditions
- Analyze features/particles for length, area, circularity
- Can group features into different buckets based on length, area, circularity

## Coating Thickness Measurement

- By analyzing the cross section image gives minimum thickness, maximum thickness, average thickness and standard deviation
- Automatically identifies the coating boundary

## 2D Measurements

- All 2D measurements like length, area, radius, diameter, angle, distance between
- Supports boundary tools like line, point, circle, arc, curve, angle

## Reports in PDF and Excel



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