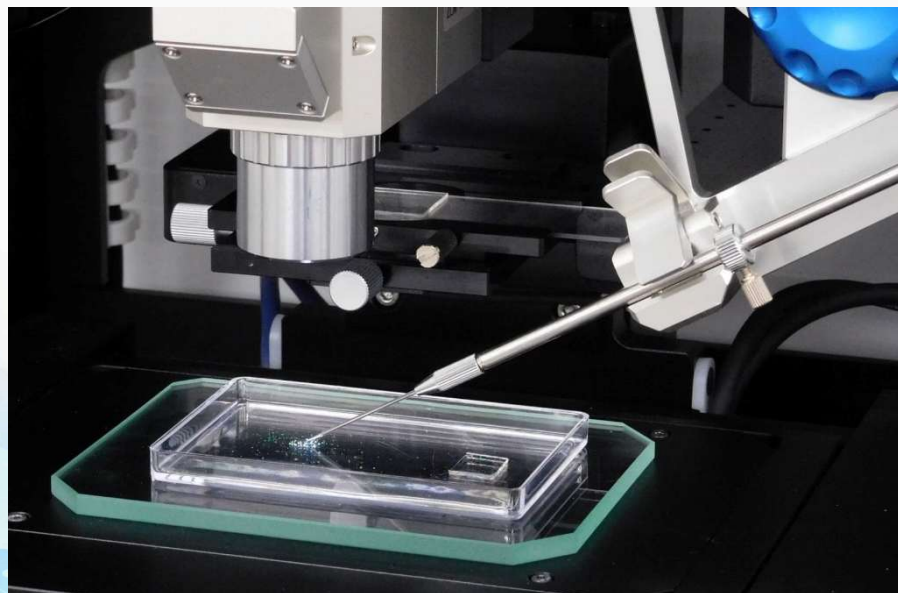


Automatic Collection and Sorting of Microparticles

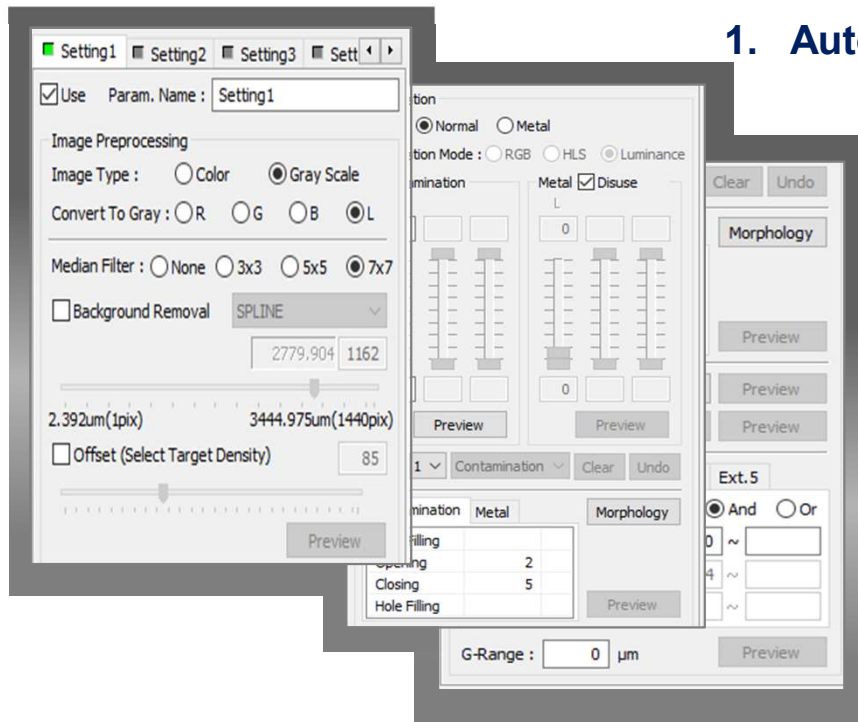
CollectionPro AI

CollectionPro

Powerful Support for Quality Management
by Micro-sampling



MicroSupport



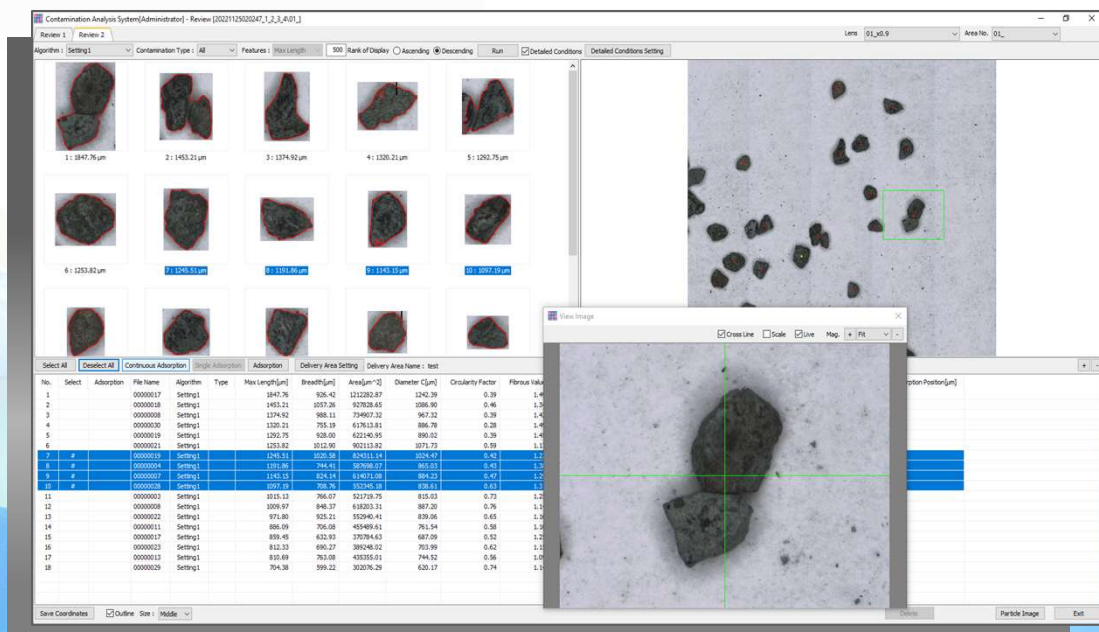
1. Automatic selection of target samples through image processing

- Advanced Image Analysis Technology**
 Advanced image analysis is utilized to automatically sort micro-samples of $\geq 50\mu\text{m}$ dispersed under a microscope visualizations. Extraction parameters, including color, morphology, and size can be tailored to match the characteristics of the samples.
- Rapid Sorting**
 By parallel processing of capture and image data, rapid processing is achieved. For instance, the scanning speed is $\sim 40\text{mm}^2/\text{min}$.

- Automatic Correction of Lighting Inconsistencies** Eliminates irregularities in brightness caused by lighting and lens aberrations stemming from capture conditions, ensuring precise selection. Additionally, even slight variations in illumination due to external light sources are rectified through an automated correction function, ensuring stable and consistent selection.

2. Optimization of Selected Results

- Efficient Result Verification**
 Mapped representation of the screening outcomes facilitate the review process, accompanied by particle tabulation. Clicking on a specific map area displays the corresponding captured image and stage movement to particle positions is also feasible.
- Enhanced Assurance through Visual Confirmation**
 During review, particles that have been erroneously detected in terms of location or image can be visually confirmed. These incorrectly identified particles can be removed and corrected, while undiscovered particles can be manually added through input.



3. Easy Preparation Steps for Automated Collection and Accumulation

- **Selectable Sample Accumulation Positions**

The accumulation area can be selected from five locations, and one of them can also be designated for nozzle cleaning.

The collected samples move from the starting point to the right in the accumulation area and are placed in rows with the specified interval for particles.

- **Selectable Collection Methods**

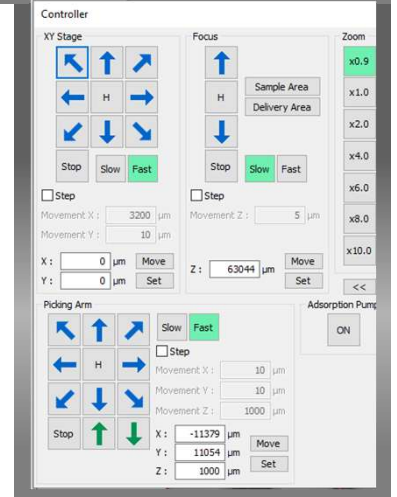
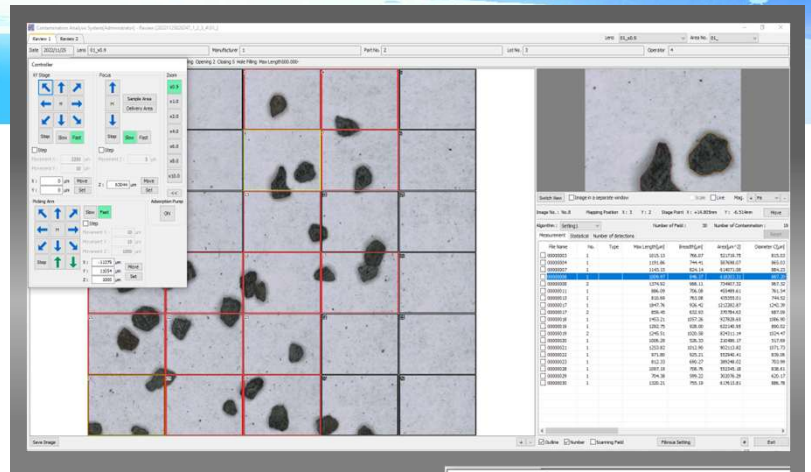
Automatically collect selected objects on the analysis result screen with a single button for continuous collection, or perform individual collections as needed depending on the situation.

- **Simple Attachment of Adhesion Tools with Wizard Interface**

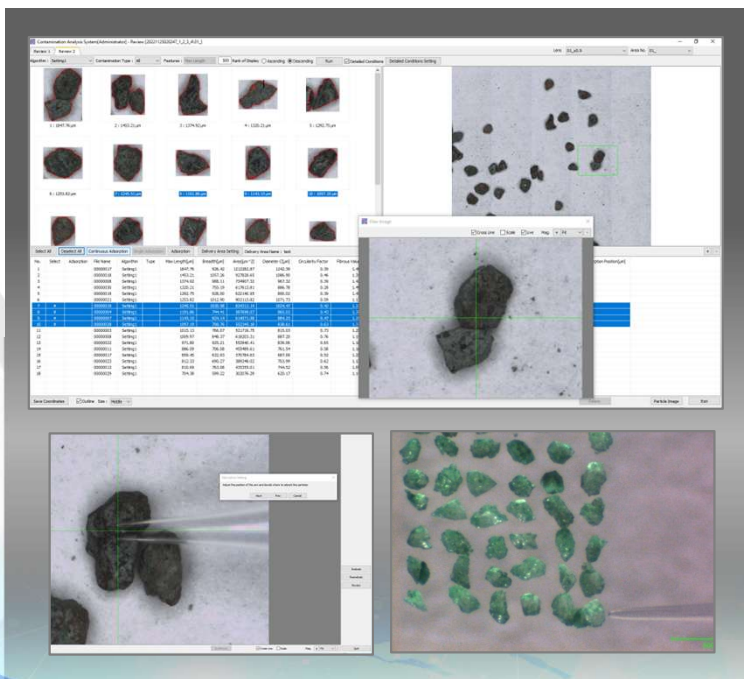
Easier attachment process of tools that may vary based on individual preferences through a user-friendly wizard interface.

- **Centralized Control for Positioning Operations**

Utilize complete control over multiple units, including the electronic microscope (focus and zoom magnification), and sample suction pump. Manage unit operations such as speed settings, jog or incremental movement, and suction ON/OFF commands.



4. Automated Collection Execution



- **Machine Works for You**

Press the collection button to initiate a series of automated actions. Verify the smooth progress of operations via live video feed even during the collection movement. Upon completion of collection, a checkmark will be placed next to the corresponding particle's collection entry.

- **Simple Attachment of Adhesion Tools with Wizard Interface**

Streamline the attachment process of tools that may vary based on individual preferences through a user-friendly wizard interface.

- **Nozzle Size Variations**

Selectable I.D of micro-pipettes are selectable within the range of 20-100μm. We will provide optimal recommendations tailored to match the characteristics of your samples.

- **Reporting Functionality**

Extraction results can be exported to MS Excel®. Easily manage maps, particle information, extraction outcomes, and more by exporting them to Excel® for convenient organization.

Specifications

Microscope

- Optical Magnification: x1.4-15
- Motorized Zoom: Zoom Ratio x11
- Working Distance: 45.6mm
- Motorized XY Stage: Stroke 100x50mm
- Motorized Focus: Stroke 70mm
- Illumination: LED Reflection/Transmission Spotlight
- Video Camera: 1.3 M-Pixels CMOS

Sample Collection Function

- Motorized Micromanipulator (single-handed)
Stroke: 20x20x30mm
- Suction Tool: Micro-pipette adjustable for samples
with inner diameters of 20-100µm
- Vacuum pump with electromagnetic valve

Software

- Image Processing/Image Extraction/
Mapping/ Reporting
- Control of Stage/ Focus/ Zoom/
Micromanipulator/ Pump Electromagnetic Valve
- Automated sample dispensing
- Image saving
- Scale/crosshair display

Dedicated Control Unit

- Dedicated Computer: Windows10
- Two regulators
- 21.5-inch color monitor

Hybrid AI Deep Image Inspection Solution

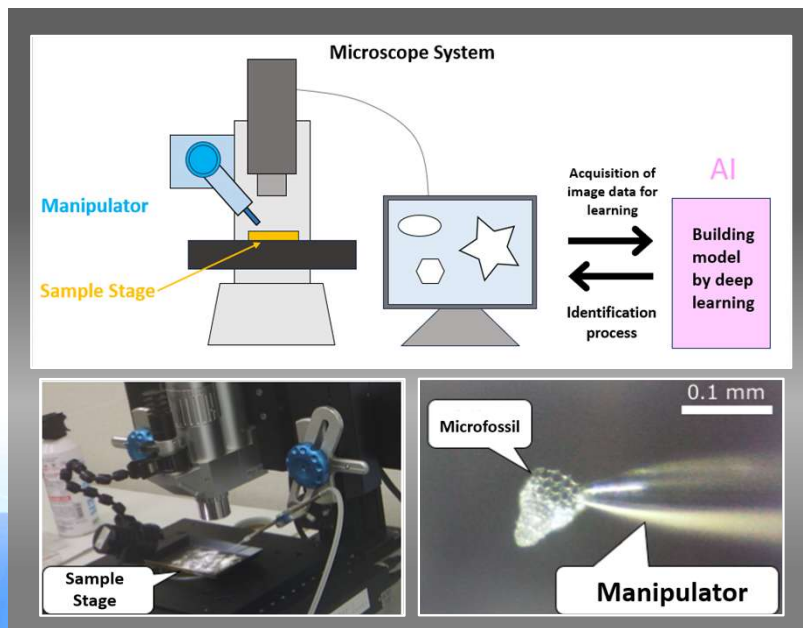
Conventional Image Processing
x AI Deep Learning

Using this approach, the optimal system is proposed to customers.



If required, optical systems selection and pre/post-processing are carried out.

Addressing any inefficiencies by integrating AI Deep Learning with conventional image processing, we offer an optimal inspection workflow.



A new system has been developed, combining AI with traditional automatic microfossil identification and separation systems. This innovation is a collaborative effort between the National Institute of Advanced Industrial Science and Technology, NEC, Mitani Corporation, and Micro Support.

Transfer

