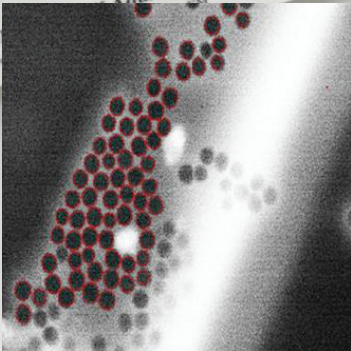
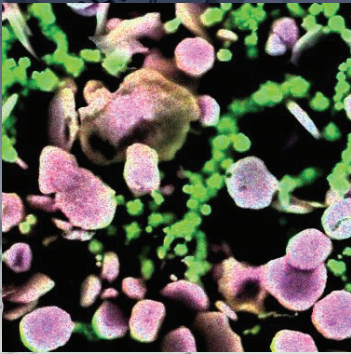


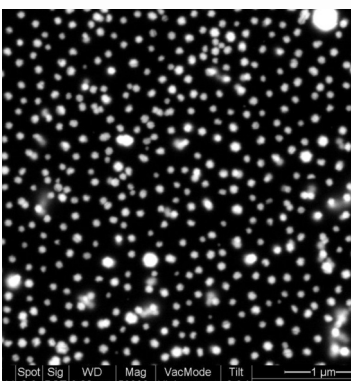
Creating a liquid environment in SEM

# FlowVIEW Aquarius

“Liquid” Scanning EM Kit



**Electron  
Microscopy  
Sciences**



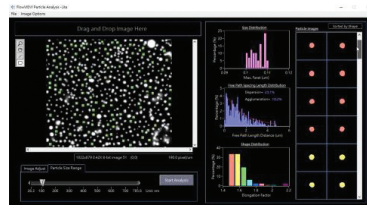


# FlowVIEW Aquarius "Liquid" Scanning EM Kit



## The FlowVIEW Aquarius Starter Kit contains:

- (12) Microscopic Fluid Chips
- (12) Micro-Channel Substrate
- (24) Tips, (1) Adapter, (1) O-Ring
- Pipette (reusable)
- Tweezer (reusable)
- Acrylic Case with Holder
- Software



## The FlowVIEW Aquarius Supplementary Pack contains:

- (12) Microscopic Fluid Chips
- (12) Micro-Channel Substrate



## Creating a liquid environment in SEM

### Overview

Aquarius is the pioneer of using e-beam to test original fluids and liquid samples. Aquarius can test and monitor coating materials in their original form, especially the liquid state.

The system is capable of displaying the images of a sample in its liquid state under original conditions and providing analysis results such as particle size distribution, dispersity, uniformity, concentration, shape and composition required for R&D and production.

The liquid sample holder in the MFC system is compatible with different preparation tools (such as powder disperser for powder size distribution analysis, centrifuge for bio-sample morphology observation and membrane filter for liquid defect identification) for static inspection in various applications. The sample in the holder can be transferred to different inspection platforms to obtain the correlative information and make versatile and in-depth analysis of the sample possible.

### Key Features

**Simple** — The liquid sample holder has special mechanical design to boost the operational efficiency and can finish the sample loading within 0.5 minute.

**High Resolution** — Objects smaller than 10 nm can be easily observed.

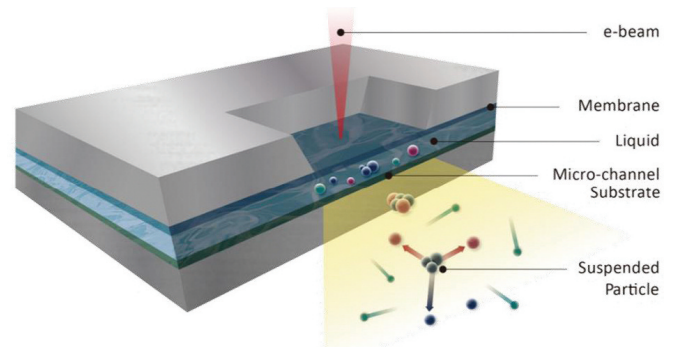
**High Compatibility** — Highly compatible with various models (FEI, JEOL, Hitachi, ZEISS, Phenom, TSCAN, TEMIC...). It can be a shuttle to an Optical Microscope/Fluorescence Microscope for in-situ observation.

**Customized** — It can be placed with the silicon wafer & biochip substrate for in-situ observation



## Scientific Principles

### Ultra-Thin Sample Adaptive Chips



Produced using the semi-conductor manufacturing process together with surface treatment, the membrane can be made hydrophobic, hydrophilic or bifunctional linkers for different applications, allowing samples under test to automatically adhere to the observation window for best image resolution. To ensure image quality, the membrane thickness is designed to be less than 30 nm, yet it is made robust by adjusting the window size and shape to withstand the pressure difference between the vacuum and atmosphere.

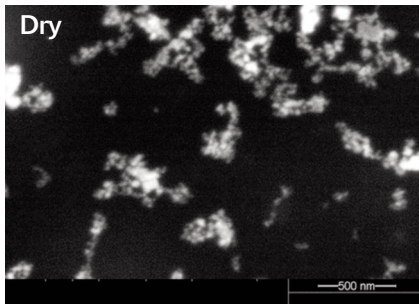
## How to Use...

### Liquid Sample Holder

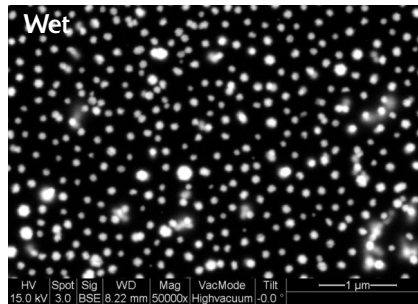
Combined with microfluidics and high-precision pogo pin featuring leak-free sealing design, the liquid sample holder is capable of controlling and monitoring the micro-environment. The microfluidics designs were optimized by Computational Fluid Dynamics (CFD) simulations to achieve the best transportation model for the samples. The liquid sample holder has special mechanical design to boost the operation efficiency and can finish the sample loading within a minute. The electrical charging/discharging can also be transmitted to the control system and inside the microfluidics via pogo pin design. Additionally, the heat exchange fluid can be circulated in one of the flow channels, thereby accomplishing the functions of temperature control and fluid properties monitoring, allowing nano-scale in-situ testing of the samples under their original activity.

### Performance

Aquarius is the pioneer of using e-beam to test original fluids and liquid samples. Aquarius can test and monitor coating materials in their original form, especially the liquid state.



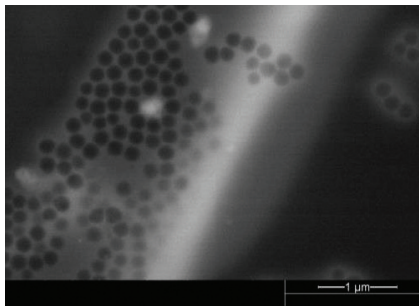
Dry  
Aggregation after dry-out



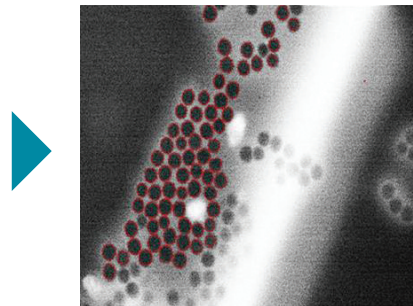
Wet  
Liquid sample in original state

### Example from Polystyrene Manufacturing

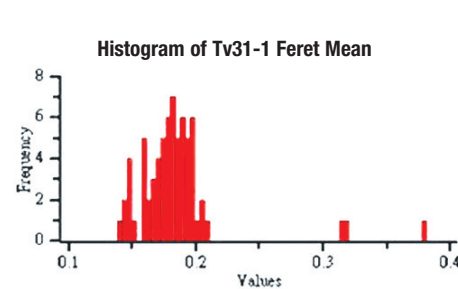
"In-situ" observation can include: Size/Size distribution, Aggregation, Shape, and Composition



Well produced Polystyrene manufacturing process



Incorrect Polystyrene manufacturing process (Polystyrene can't form a sphere)

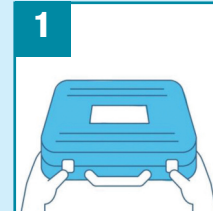
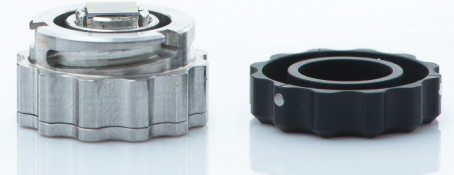


### Ordering Information

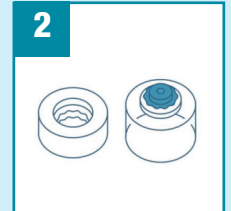
Cat. No.	Description	Qty.
FV-102	FlowView Starter Kit	kit
FV-103	Supplementary Pack (1 set)	each
FV-104	Supplementary Pack (5 set)	each
FV-105	Supplementary Pack (10 set)	each

#### IMPORTANT:

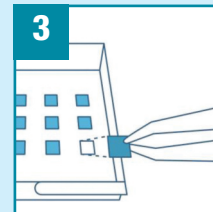
1. Please don't blow on the Microscopic Fluid Chip.
2. Do not drop the Microscopic Fluid Chip.
3. Drop liquid sample below 5uL



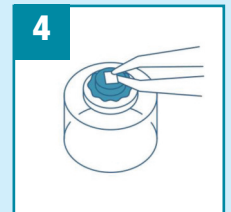
1  
Open up starter kit.



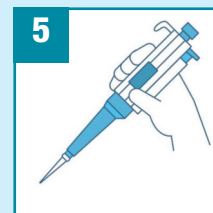
2  
Take out acrylic case equipped with holder.



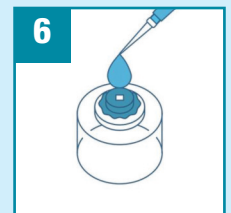
3  
Take out chip with tweezers.



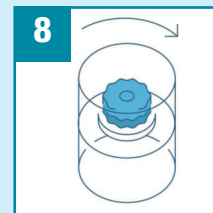
4  
Put chip onto center of holder and align the chip with tangent line.



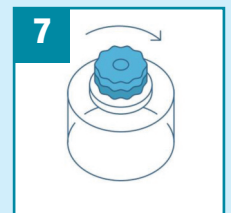
5  
Take out pipette and install tip.



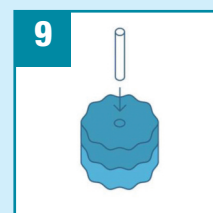
6  
Draw up liquid sample onto the center of the chip (5uL at a time).



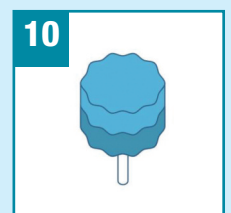
7  
Twist acrylic case to fit holder. Make sure upper and lower lines align.



8  
Cover holder with lid and twist slightly.



9  
Assemble adapter.



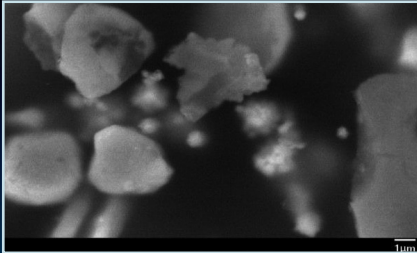
10  
Finished!



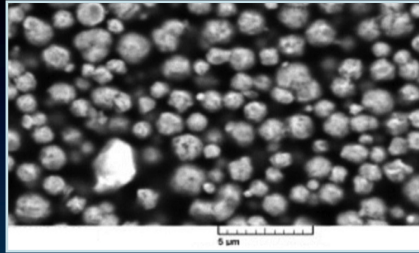
# FlowVIEW Aquarius

"Liquid" Scanning EM Kit: **Applications**

## Energy

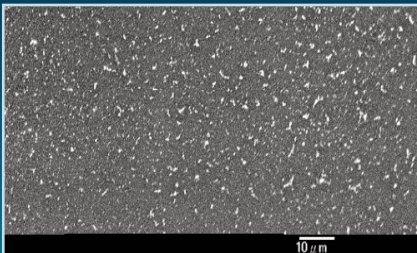


Copper Paste

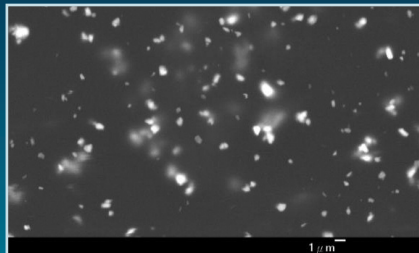


Aluminum

## Electronics

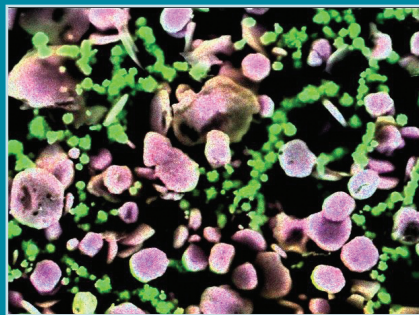


Metal Plating

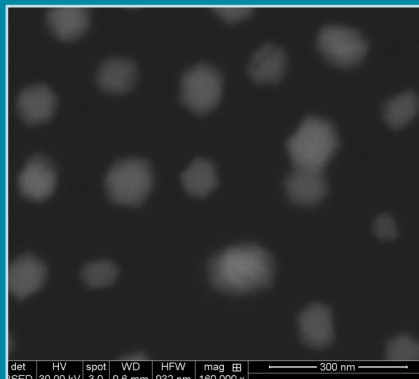
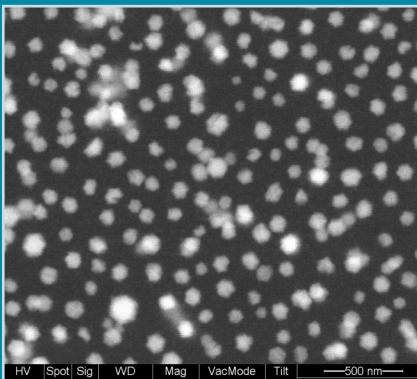


Paint & Coating Material

## Precise Mapping of Silver Paste in EDS



## High Magnification Image of CeO<sub>2</sub> Slurry



## Electron Microscopy Sciences

P.O. Box 550 • 1560 Industry Rd. •  
Hatfield, PA 19440  
Tel: (215) 412-8400 • Fax: (215)  
412-8450

email: [info@emsdiasum.com](mailto:info@emsdiasum.com) or  
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