



**AUTOMATIC
MICROSCOPIC CONTACT ANGLE METER**

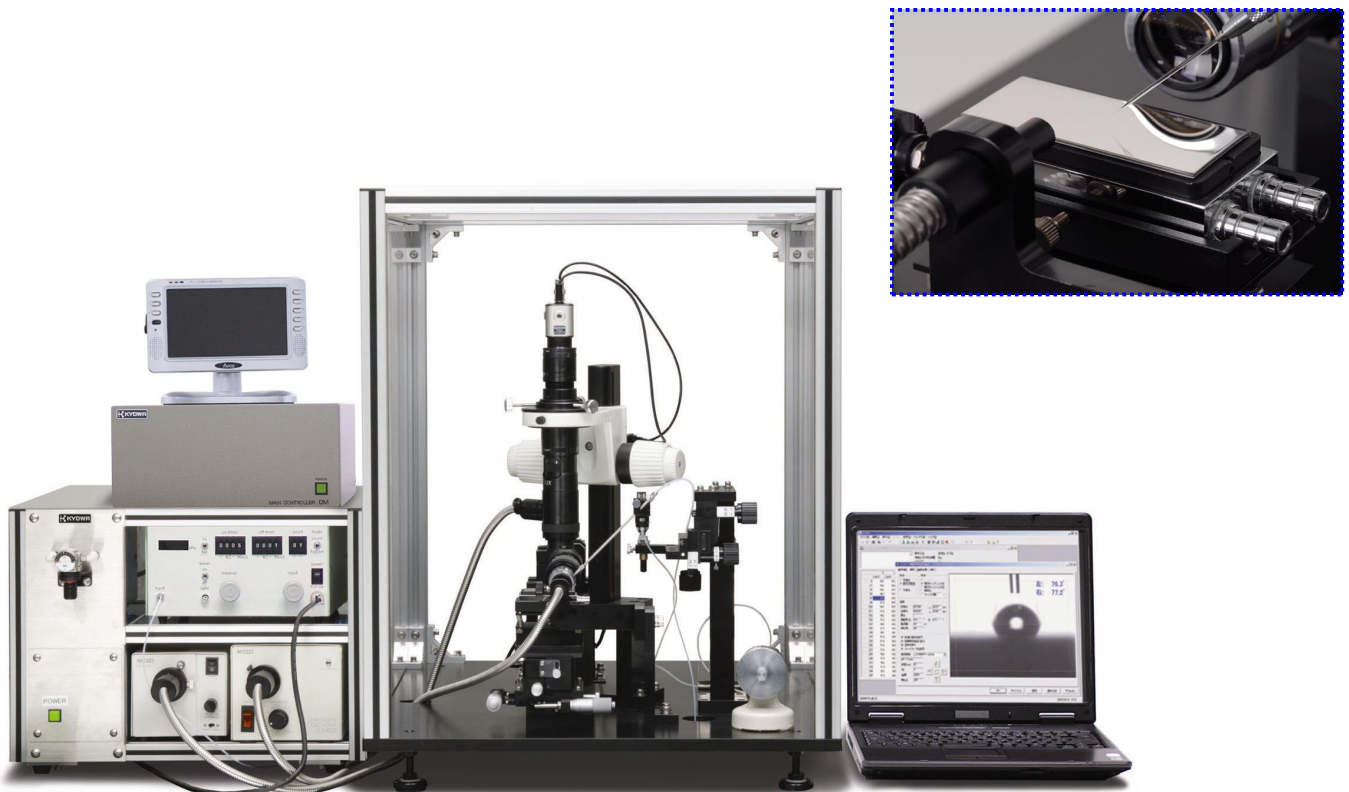
MCA-3

Kyowa Interface Science Co., Ltd

Wetting behaviour in Nano technology!

The patterns to be designed on wafers and glass panels are miniaturised according to the recent technological development, and studying wettability of micro area is demanded increasingly.

With the development of special capillary of inner diameter about $5\mu\text{m}$, generating a micro droplet such about 10^{-3} to $10^{-6}\mu\text{L}$ (droplet diameter several dozen μm) is enabled. That technology allows to measure contact angle on micro area within $100\mu\text{m}$ wide for evaluation of wettability.



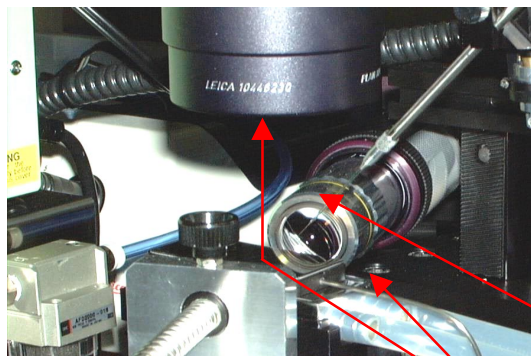
Features

- Measuring area can be pinpointed by observing monitor displaying the upper view.
- Fast capture system (60FPS) gets quick motion image and analyzes contact angle automatically.
- Very small droplet of pico liters order can be dispensed.
- Measurement of contact angle on an area within $100\mu\text{m}$ wide is possible.
- Pushing measure button synchronizes dispensing droplet and capturing images automatically.
- Optional high speed camera enables to capture 1000 images per second (1000FPS).

Applications

- Measurement on miniaturised pattern area of wafers, glass panels, etc.
- Measurement on very thin wire materials like single fibers, hairs, etc.
- Measurement on samples requiring to specify a pinpointed area.
- Ink at very small volume to be emitted a jet from nozzle.
- Other area that conventional droplet volume cannot accept..

Measurement



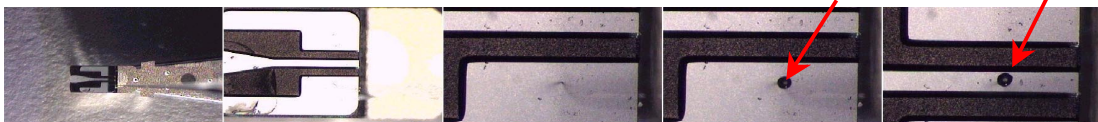
The camera equipped above the stage monitors measuring point and the flush-mount camera measures contact angle.

The specially designed capillary (inner diameter 5 μ m) dispenses a very small droplet in pico liters order with a pneumatic shot. It enables to deposit on a tiny area.

Capillary for dispensing droplet

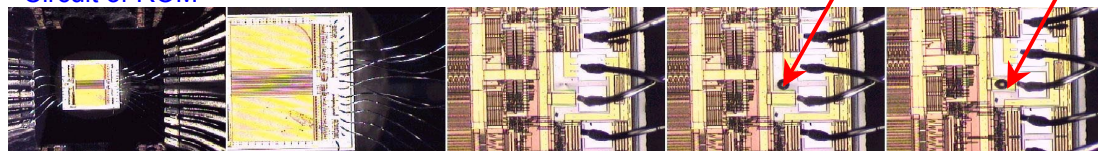
CCD camera

Elemental devices of hard disk



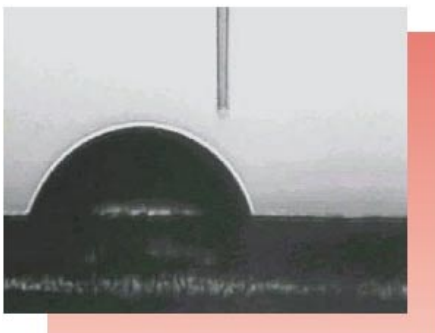
Droplets observed from the upper

Circuit of ROM



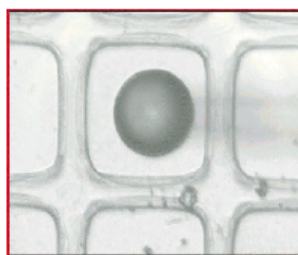
Example of Measurement

Contact angel of droplet on a hair.

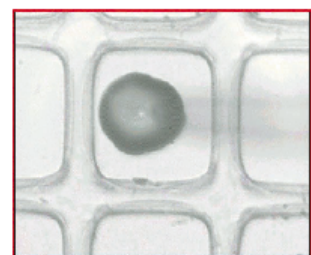


Example of Observation

Observation of wetting condition on the cell of OLED panel in the respect of homorogenous broadening.



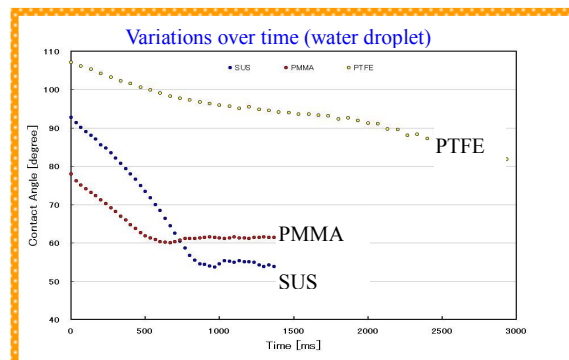
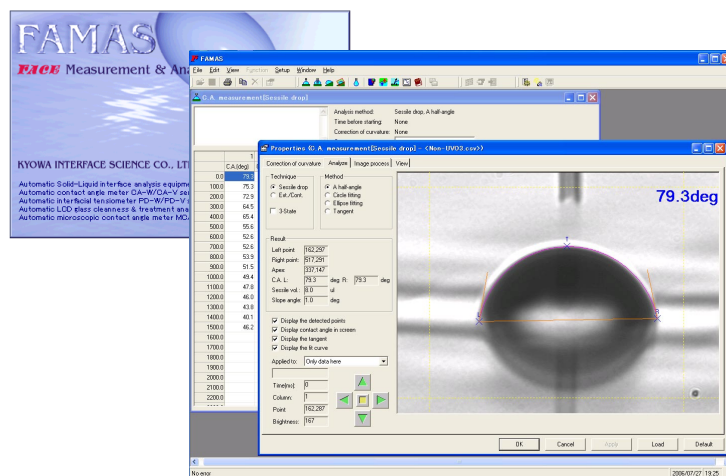
homorogenous broadening



inhomorogenous broadening

Analysis System

The MCA-3 adopts the analysis software FAMAS, which captures 60 images per second for measuring contact angle (about every 17 msec). It enables to measure a droplet of high evaporation due to small volume.



The data can be copied to spreadsheets commercially available.

Specifications

Measurement method	Sessile drop method
Measurement range	0 ~ 180° (varies depended on sample and conditions)
Resolution	0.1°
Measuring temp.	ambient temp.
Primary magnification (PMAG)	5.2 ~ 64 times (x12 zoom) [Video magnification is about 1,800 times in case of using 17" TFT]
Droplet size	Diameter: 20 ~ 200 μ m Volume: 10 ⁻³ ~ 10 ⁻⁶ μ L
Applicable sample size	Solid size: max. 50 ^W x 25 ^D x 5 ^T mm Measurement area (width) : 100 ~ 1000 μ m
Power requirements	AC100V, 5A, 50/60Hz
Dimensions, Weight	Mainbody : 550 ^W x 620 ^D x 700 ^H mm, about 50kg Controller rack : 420 ^W x 320 ^D x 343 ^H mm, about 17kg
Installation area	Larger than 1000 ^W x 620 ^D mm x 700 ^H mm

Standard Components

- Main chassis composed of camera assembly in vertical & horizontal, stage unit, control box, micro-manipulator, and dispenser
- Laptop PC, Image capture board
- Analysis software FAMAS
- Standard accessories: Capillary, TFT monitor for observation

* The specifications and designs are subject to change without notice.

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