

Drop Shape Analyzer DSA100W



Fully automatic quality testing of wafer surfaces

We have specially geared the DSA100W instrument configuration of the universal Drop Shape Analyzer – DSA100 towards the automatic, standardized quality control of wafer surfaces. The DSA100W precisely determines the homogeneity of the cleaning of a wafer surface based on the contact angle. It also enables coatings to be characterized, for example by differences in wetting of exposed and unexposed photo varnish.

Tasks and applications

- Characterization of the cleaning and coating homogeneity of wafers
- Adhesion evaluation between wafer and coating
- Wetting investigation of exposed and unexposed photo varnish
- Ideal for analyzing other round samples, e.g. hard drives or brake disks

Measuring methods and options

- Contact angle between a liquid and a solid
- Surface free energy from contact angles of several test liquids using all common models
- Static contact angle, advancing angle, and receding angle
- Measurement of surface tension and liquid-liquid interfacial tension using the pendant drop method
- Position-dependent surface free energy and contact angle measurement (mapping)

Fast and automatic measurement at any position

The heart of the DSA100W is a software-controlled setup of a round rotating sample table mounted on a horizontal axis. Wafers are kept safely in position thanks to a vacuum connection. With this arrangement, every position on the wafer can be accessed quickly, automatically, and accurately for measuring the contact angle.

The dosing unit produces drops with precisely adjusted volume, which guarantees exactly reproducible measuring conditions. The gentle depositing of the drop and our dynamically controlled dosing system prevent measurement deviations caused by unintentional prewetting.



Automatic drop positioning on a wafer

Software-controlled analysis of the whole sample

The ADVANCE software controls the measurement automatically based on standardized measuring procedures. In doing so, positions, which have been defined and stored in a template, are approached and measured one after the other. This ensures a fast and completely standardized measuring procedure with high sample throughput.

Reliable drop shape analysis thanks to high imaging quality

The DSA100W features a high-resolution camera and a quality zoom lens for accurate display of the drop with optimum size. The high image quality that this achieves leads to a precisely measured contact angle. Combined with the intelligent image evaluation algorithm of the ADVANCE software, drop shape analysis with the instrument provides exact results.

Specifications

Camera system		Rotation axis	
Performance	CF04: 2.3 Mpix, up to 2300 fps CF10: 5.3 Mpix, up to 3450 fps	Control	software-controlled
		Resolution	0.1°
Illumination		Contact angle	
Type	high power monochromatic LED	Range	0 to 180°
		Resolution	0.01°
Dosing system		Interfacial and surface tension	
Dosing	software-controlled syringe	Range	0.01 to 2000 mN/m
Liquid Needle dosing (optional)		Resolution	0.01 mN/m
Resolution	0.1 µL		