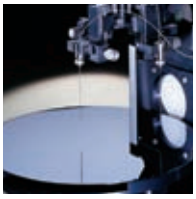
DataPhysics

Products for interfacial chemistry



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OCA 10/OCA 5

Manual optical contact angle measuring instruments

What you can measure with the OCA 10 and OCA 5

The OCA 10 and OCA 5 optical contact angle measuring systems are the manually operated entry-level systems for simple tasks.

Combined with the evaluation software SCA 10 v2 for Windows, the OCA 10 provides the following functions:

· static and manually conducted dynamic measurement of contact angles with max four different liquids,

· calculation of free surface energies on solids as well as their constituents with the software SCA 10 (optional).

The OCA 5 is a budget alternative for users who work predominantly with manual dosing systems only.

Both the OCA 10 and the OCA 5 can be upgraded for measuring the surface tensions of high-viscosity liquids. Here, both instruments can be equipped with an SD-D direct dosing system that also easily works with disposable needles and injectors.

Equipment and accessories

· MD manual multiple dosing system with up to four MS dosing needle receivers,

· SD manual single dosing system with adjustable horizontal and vertical needle positioning (optional),

· angle measuring objective providing precise read-offs against a 2 x 0–180° scale,,

· fast measuring objective with 700% zoom, focusing, and adjustable observation angle,

· TBA 60M manual tilters and WT 300M wafer plates up to 12“ (300 mm) with the extended variant OCA 10L (optional),

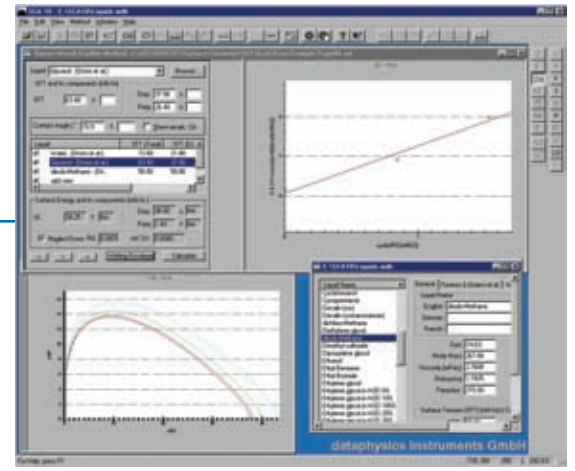
· TFC 100 throughflow thermostatting system and temperature display with installed Pt 100 temperature sensors (OCA 10 only).

The OCA 5 can be combined with the following accessories:

· SD-D manual single dosing system with adjustable vertical and horizontal needle positioning,

· MD manual multiple dosing system with up to four MS dosing needle receivers,

· max four MS manual injector modules.



SCA software for analysing the surface energy

· calculation of free surface energies on solids and their constituents with the specified error limits,

· generation of wetting envelope diagrams and adhesional work / contact angle diagrams derived from free surface energies,

· access to and management of a liquids and solids database with at present over 170 records on all surface energy analysis methods plus references to further reading.

Upgrades

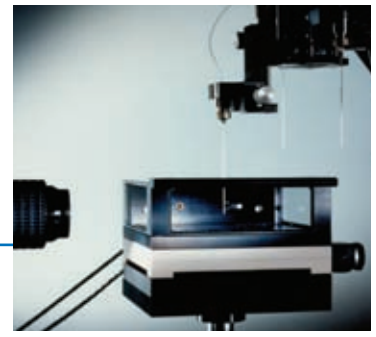
The optical contact angle measuring instrument OCA 10 and the extended variant OCA 10L can be upgraded either continuously or immediately to the OCA 30(L) incl. the high-speed video option OCAH 230(L). The OCA 5 can be expanded to the OCA 15+, after which it can manipulate an ES or ES-D electric dosing module with the SCA 20 software.

OCA 10 with MD multiple dosing system

OCA 5 with SD single dosing system

Windows software

The 32-bit software SCA 10 developed for Windows NT / 2000 / XP is available in various configurations for the following functions:



OCA with TFC 100 thermostatting system and MD dosing system

Specifications

	OCA 30/OCA 30L/OCAH 230/OCAH 230L	OCA 20/OCAH 200/OCA 15+ and L-variants	OCA 10/OCA 5	ACA 50
Max sample dimensions (L x W x H)	• 220 x x 70 mm, max 8" wafer on WT 200M/E with OCA 30/OCAH 230 • 330 x x 60 mm, max 12" wafer on WT 300M/E with OCA 30L/OCAH 230L	• 220 x x 70 mm, max 8" wafer on WT 200M/E with OCA 20/15+/OCAH 200 • 330 x x 60 mm, max 12" wafer on WT 300M/E with OCA 20L/OCA 15+L/OCAH 200L	• 220 x x 70 mm, 8" wafer on WT 200M with OCA 10/OCA 5 • 330 x x 60 mm, 12" wafer on WT 300M with OCA 10L	• 320 x x 70 mm, max. 12" wafer on WT 300M/E with auxiliary lens • active measuring surface: 150 x 150 mm, with swivel diameter 300 mm
Sample plate dimensions:	• 100 x 100 mm OCA 30/OCAH 230 • 160 x 160 mm OCA 30L/OCAH 230L	• 100 x 100 mm OCA 20/15+/OCAH 200 • 160 x 160 mm OCA 20L/15+L/OCAH 200L	• 100 x 100 mm OCA 10/OCA5 • 160 x 160 mm OCA 10L	• 100 x 100 mm
Traversing range of x-y-z sample plate:	• 100 x 100 x 50 mm OCA 30/OCAH 230 • 220 x 155 x 50 mm OCA 30L/OCAH 230L	• 100 x 100 x 42 mm OCA 20/15+/OCAH 200 • 220 x 155 x 42 mm OCA 20L/15+L/OCAH 200L	• 100 x 100 x 42 mm OCA 10/OCA5	• 150 x 150 x 40 mm
Measuring range for contact angles:	• 0...180°; ± 0,1° measuring precision of video system		• 2x 0...180°; ±0,1° with measuring lens • up to ± 0,1° reading precision	• 0...180°; ±0,1° measuring precision of video system
Measuring range for surface and interfacial tensions:	• $1{\cdot}10^{-2}$... $2{\cdot}10^{3}$ mN/m reslution: min ± 0,05 mN/m		—	• $1{\cdot}10^{-2}$...$2{\cdot}10^{3}$ mN/m resolution: min ± 0,05 mN/m
Positioning accuracy	• ± 0,01 mm in the sample plane • ± 0,005 mm perpendicular to the sample plane	—	—	• ± 0,01 mm in the sample plane • ± 0,005 mm perpendicular to the sample plane
Max sample weight	3,0 kg	—	—	• 3,0 kg
Optics	• fast 600% zoom lens (0.7–4.5 magnification) with integrated focusing (±6 mm) • CCD camera with a resolution of max 1600 x 1240 pixels (768 x 576 pixels standard) • FOV 1.75 x 1.4–11.7 x 9 mm, image distortion < 0.05%		• fast 600% zoom lens (0.7–4.5 magnification) with integrated focusing (±6 mm) • goniometer eyepiece with 3.8–25 mm diameter FOV	fast 600% zoom lens (0.7–5.25 magnification) with integrated focusing (±5 mm), CCD camera with a resolution of max 1600 x 1240 pixels (768 x 576 pixels standard), FOV 1.2 x 0.9–8.5 x 6.4 mm, image distortion < 0.05%
Video system	• high-performance image processing system with 132 MB/s data transfer rate (compatible with Euronorm CCIR and US standard RS-170), 50 (optionally 60) images per second with OCA 20/15+ • variable digitising rate with max 360 images per second for OCAH 200 / 230 (2000/4000 images per second with OCAH 2000 / 2030 planned)		—	high-performance image processing system with 132 MB/s data transfer rate (compatible with Euronorm CCIR and US standard RS-170), 50 (optionally 60) images per second, variable digitising rate
Measuring thechniques	• Sessile and captive drop method, tilting plate/base methode • pendant and oscillating drop methode, lamella method on test balls and rods		• Sessile and captive drop Method • Tilting plate/base methode	• Sessile and captive drop method, tilting plate/base method • pendant and oscillating drop method, lamella method on test balls and rods
Software	• **SCA 20**: video measurement of static and dynamic contact angles according to the sessile and captive drop as well as tilting plate / base methods, measurement of drop and lamella contours, manipulation of max 4 (6) ES electric dosing modules and other system components (E-MD/4(6), WT x00E/TBA 60E/TBU 90E, LDU) and of thermostatting systems (TPC 150, TEC 400, NHD 400, HTFQ 1200, HTFC 1500) • **SCA 21**: calculation of free surface energies on solids and their constituents with error limits based on measured contact angles with any number of test liquids, evaluation according to Fowkes (geometric mean), Wu (harmonic mean), extended Fowkes (incl. H bonds), Zisman (critical surface tension), Owens-Wendt (disperse and polar), van Oss and Good (acid-base theory), Schultz I + II (two-liquid method), Neumann's Equation of State (EOS), calculation of disperse and polar contents of liquids based on measured surface and interfacial tensions as well as contact angles with error limits, calculation of wetting envelopes and other diagrams • **SCA 22**: calculation of surface and interfacial tensions based on pendant drop contours and rising bubbles • **SCA 23**: calculation of surface tensions of liquids based on liquid lamellae on test balls and rods • **SCA 26**: calculation of complex interfacial dilatation moduli based on oscillating drop contours (with OCA 30 / 230 / 20 / 200 / 2000 and oscillating drop generator ODG 20 only)		• **SCA 10**: calculation of free surface energies on solids and their constituents with error limits based on measured contact angles with any number of test liquids, evaluation according to Fowkes (geometric mean), Wu (harmonic mean), extended Fowkes (incl. H bonds), Zisman (critical surface tension), Owens-Wendt (disperse and polar), van Oss and Good (acid-base theory), Schultz I + II (two-liquid method), Neumann's Equation of State (EOS), calculation of disperse and polar contents of liquids based on measured surface and interfacial tensions as well as contact angles with error limits, calculation of wetting envelopes and other diagrams	• **SCA 50**: video measurement of static and dynamic contact angles according to the sessile and captive drop as well as tilting plate / base methods, measurement of drop and lamella contours, manipulation of max 6 ES-A electric dosing modules and other system components (WT x00E / TBA 60E / LDU) and of thermostatting systems (TFC 100, TPC 150, TEC 400) • **SCA 51**: calculation of free surface energies on solids and their constituents with error limits based on measured contact angles with any number of test liquids, evaluation according to Fowkes (geometric mean), Wu (harmonic mean), extended Fowkes (incl. H bonds), Zisman (critical surface tension), Owens-Wendt (disperse and polar), van Oss and Good (acid-base theory), Schultz I + II (two-liquid method), Neumann's Equation of State (EOS), calculation of disperse and polar contents of liquids based on measured surface and interfacial tensions as well as contact angles with error limits, calculation of wetting envelopes and other diagrams • **SCA 52**: calculation of surface and interfacial tensions based on pendant drop contours and rising bubbles • **SCA 53**: calculation of surface tensions of liquids based on liquid lamellae on test balls and rods
Temperature measurement and measuring range	• integrated temperature measurement and digital display 2 x Pt 100 inputs for -60–+450 °C (Pt 100 as option), 0.1 K resolution, precision $^{1}/_{3}$, DIN IEC 751 (±0.03%), Class B			
Dimensions (L x W x H)	• OCA 30 / OCAH 230 / OCA 10 / OCA 5 OCA 20/OCA 200/OCA 15+ 590 x 220 x 550 mm • OCA 30L / OCAH 230L / OCA 10L OCA20L/OCAH 200L/OCA 15+L 700 x 280 x 550 mm		see OCA 30	• 830 x 330 x 450 mm
Weight	• OCA 30 / OCAH 230 / OCA 20 / OCA 200L 20 kg • OCA 30 L / OCAH 230 L 21 kg • OCA 20 L / OCAH 200 / OCA 15+L 18 kg • OCA 15 + 16 kg		• OCA 10, OCA 5 20 kg • OCA 10 L 21 kg	• 35 kg
Power pack	• 100...240Vac; 50...60Hz; 80 W	• 100...240Vac; 50...60Hz; 55 W	• 100...240Vac; 50...60Hz; 55 W	• 100...240Vac; 50...60Hz; 80 W

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