

Particle Science Solutions

Products | Service | Support



Quality Advice, Superior Products & After Sales Service

The Right Solution

Crea Laboratory Technologies provide a range of laboratory testing instrumentation to help you obtain better outcomes from your laboratory practices.

Providing superior testing instrumentation and products for research laboratories across a variety of industry sectors our products have been categorised in a variety of divisions.

Each division provides a complete product range designed specifically for the unique requirements of different industry sectors and associated applications.






Client Services

At Crea, we work alongside you to provide superior products and technical advice to achieve the best possible solutions for your individual requirements.

Our staff are highly trained technical professionals who listen to your needs, gain an understanding of your specific application requirements and source the right practical solution to exceed your expectations.

Our objective is to achieve a successful business relationship through good advice, superior products and comprehensive after sales service.

Product Divisions

-  **Particle Science**
Specialising in the field of particle and surface sciences
-  **Materials Testing**
Testing solutions for your aggregate, cement, coal, ore etc.
-  **Petro**
Instruments for all your ASTM and ISO test requirements
-  **Life Science**
Assisting you with all your laboratory needs.
-  **Oil Analysis**
From online to onsite to a complete laboratory setup.

Customer Care

Crea Laboratory Technologies have a comprehensive after sales service centre to provide fast and reliable trouble-shooting for your business.

Our commitment is to providing reliable service when you need it. Our qualified technicians have a complete knowledge base of our full range of products and are continually trained to keep up-to-date with ever evolving technology.

Our service structure includes both onsite and back to factory servicing, spare parts and accessories plus technical advice to ensure you're back up and runningfast.

Physisorption - Surface area and pore size analysis

The Specific Surface area and the pore size analysis are the basic properties to evaluate the materials especially for fine particles, those are essential factors to evaluate their performance.



BEL -Mini

BEL instruments evaluate the physical properties of material surfaces.

BELSORP -mini II is a compact, high precision instrument for measuring the surface area and pore size distribution by the volumetric gas adsorption technique. Powerful and easy to use software makes this unit ideal for both research and QC applications.

The **BELSORP-max** is designed to measure wide ranging adsorption isotherms for the surface area, pore size distribution and micropore analysis. BELSORP max was the first commercially available instrument to have 0.1 Torr transducer for low pressure analysis. Adsorption isotherms of a variety of gases and vapours can be measured. 3 samples can be measured simultaneously.



BEL -Max XRD

BELSORPmax + XRD



As the adsorption proceeds, the pore structure changes. This phenomenon is especially prominent in case with some metal organic frameworks. Combining the BELSORP-max with an X-ray diffractometer allows both the structural change of the adsorbent and the amount of adsorption to be evaluated simultaneously.



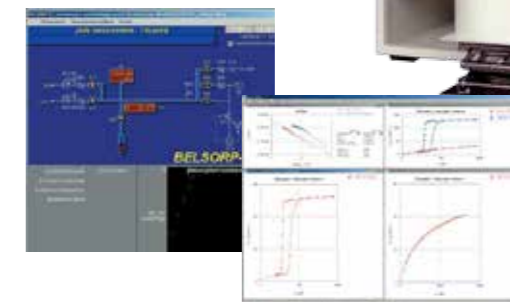
High Pressure - Gas Adsorption Measurement

The importance of high pressure adsorption measurement is growing in various industries. Hydrogen or methane storage, pressure swing adsorption (PSA), CO₂ absorption into hypolymer etc.

The **BELSORP HP** - high pressure gas sorption measurement (13.5MPa Max), H₂ storage (PCT-curve) and features a small footprint and sized as a benchtop type instrument.

Features:

- High Pressure adsorption measurement up to 13.5MPa
- Compact bench-top type
- Easy to use
- Variety of measurement / pretreatment temperature control systems from 4.2K to 400°C
- BELSim™- Analysis Software
- BELDyna™- Adsorption rate analysis software
- JIS H7201 compliant



Chemisorption - TPD, TPR, TPO, Metal dispersion

These systems evaluate the surface chemical characteristics of samples such as the amount of acid sites and strength of catalytic surface, metal dispersion of metal supported catalyst, oxidation and reduction of catalyst.



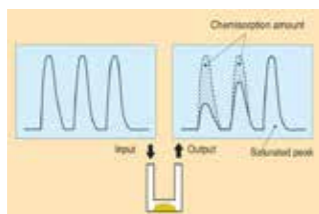
BELCAT B

The **BELCAT-M** is compact and inexpensive performing a variety of measurement such as pulse chemisorption, **TPD, TPO, TPR** and single point **BET**.

The **BELCAT-B** is the standard model automatically carrying out temperature control, data acquisition and valve operation. Gas flow rates for carrier and pretreatment lines are controlled accurately by MFC's.

BELCAT-A is the high end model including the function of vapour dosing such as water or pyridine. The vapour concentration is controlled by a heater.

Valves and gas plumbing are placed in the temperature controlled air oven to prevent vapours from condensation, meaning that the vapour concentration can be controlled more accurately in the wider range.



Now Available

BEL-CAT-B3 High Throughput Analyser

Similar to BEL-CAT-B with capability to run 3 samples simultaneously

High Pressure Chemisorption / Microreactor

BEL - REA

Compact fixed bed flow reactor. The Reactor can be observed based on a variety of conditions and can be tailored to your needs.



Steam reforming of DME

Dimethyl ether (DME) is expected as a clean fuel of the next generation. Hydrogen can be produced by the following steam reforming reaction.

$(CH_3)_2O + 3H_2O \rightarrow 6H_2 + 2CO_2$ This system is mainly used for the steam reforming reaction research of dimethyl ether.

Fischer-Tropsch reaction (GTL)

This BEL-REA system is the Fischer-Tropsch reaction system for study of gas to liquids process. The Fischer-Tropsch process is a catalysed chemical reaction in which carbon monoxide and hydrogen are converted into liquid hydrocarbons of various forms.

$(2n + 1) H_2 + n CO \rightarrow C_n H_{2n+2} + n H_2O$ The principal purpose of this process is to produce a synthetic petroleum substitute, typically from coal or natural gas, for use as synthetic lubrication oil or as synthetic fuel. The Fischer-Tropsch reaction is one of the most important processes in C1 chemistry.

Water Gas shift reaction

The water gas shift reaction is an inorganic chemical reaction in which water and carbon monoxide react to form carbon dioxide and hydrogen (water splitting). The water gas shift reaction is part of steam reforming of hydrocarbons and is involved in the chemistry of catalytic converters. $CO + H_2O \rightarrow CO_2 + H_2$ While this reaction could be used to produce hydrogen, the high temperatures required make it cost-prohibitive. The generation of hydrogen, itself has significant promise as a replacement clean burning fuel itself however this reaction is usually done via the byproducts of fossil fuel combustion. Attempts to lower the reaction temperature of this reaction have been done primarily with a catalyst such as Fe₃O₄ (magnetite), CuO, or other transition metals and transition metal oxides.

Biomass to liquid

Biomass refers to dead biological material that can be used as fuel or for industrial production. It includes livestock excreta, raw garbage, wood waste, etc. Since 1990s, biomass attracts lots of attention as an approach to carbon-dioxide emissions reduction or creation of a recycling society. This BEL-REA is used for studying a process to convert biomass to liquid organic compounds, such as ketones.

Multi Gas Adsorption

BELSORP-VC

The combination of volumetric method and gas chromatography allows measurement of multicomponent gas adsorption, as well as the dynamic adsorption behaviour such as the rate of adsorption can be obtained.

BELSORP-BG

The binary gas adsorption system provides adsorption measurement of 2 kinds of mixed gases by using unique measurement principles. Non-corrosive gases, water, amines & hydrocarbons are available to use as adsorptives. The measurement range is between 0 to 250 °C and maximum measurement pressure is 15MPa.



Gas-Liquid Displacement Porometry

Our POROLUX™ instruments comprise a range of instruments based on gas-liquid displacement porometry for the rapid measurement of through-pores in membranes, filters, nonwovens, papers, hollow fibers and ceramics. They are widely used to measure pore sizes, pore size distribution and gas permeability with improved accuracy and reproducibility compared to other porometers in the market

Our POROLUX™ series come standard equipped with all necessary hard and software and only need to be connected to compressed gas and power.

POROLUX 1000

Gas-liquid displacement Porometer for the rapid measurement of through-pores in materials such as porous membrane, filters, paper, plastics, thin films, hollow fibers and many other applications.

The Porolux 1000 series uses a pressure step/equilibrate method to measure pore diameters. The inlet valve for the gas is a large, specially designed needle valve that is opened with very accurate and precise movements. To increase pressure, the valve opens to a precise point and then stops its movement. The pressure and flow sensors will only take a datapoint when the used defined stability algorithms are met for both pressure and flow. In this way, the Porolux 1000 detects the opening of a pore at a certain pressure and waits until all pores of the same diameter are completely opened before accepting a datapoint. This results in very accurate measurement of pore sizes and allows a calculation of the real pore size distribution.

Measurements

The POROLUX 1000 measures bubble point, maximum pore size, mean flow pore size, minimum pore size, average pore size distribution of uniform materials and air permeability.

Pore Size Range

Measurable pore size range from +/-15 nm to 500 µm equivalent diameter (depending on the wetting liquid). Standard Pressure Range and Flow Rates 0-35 bar with flow rates of up to 200 liters per minute.

Sample Holders

The POROLUX 1000 comes with 3 sample holders: 13mm, 25mm and 47mm. Switching between sample holders is done in a matter of seconds via a quick coupling connection. The availability of 3 sample holders allows the user to analyse a wide range of structures.



Laser Diffraction Particle Size Analyser

Utilising the patented Tri-laser technology Microtrac provides accurate, reliable and repeatable particle size information for applications ranging from research and development to production, process and quality control. By increasing the number of light sources incident on the material being measured the Microtrac Tri-Laser system makes more effective use of photo-detection devices while maintaining maximum stability and alignment of the optical system.

Resolution. The patented Tri-laser, multi-detector optical system delivers unsurpassed resolution over the entire measuring range of the instrument.

Accuracy. Microtrac S3500 utilises full Mie compensation for spherical particles. It also applies proprietary Modified Mie calculations for non-spherical materials – the majority of real life materials. This feature is unique to Microtrac!

Stability. Optical bench design incorporating fixed detectors and lasers provides a rugged platform for consistently repeatable measurements. The enclosed optical path ensures protection of the optical components leading to little or no operator intervention.

Alignment. Laser alignment is automatic.
Range. Measurement capability is from 0.024 to 2800 microns covering most particle size analytical requirements.

Detector Activity. Non-scanning, simultaneous parallel channel integration provides full constant signal accumulation to maximize signal acquisition.

Wet and Dry Measurements. Using a selection of wet and dry sample delivery systems the S3500 can be converted from wet to dry mode in under 2 minutes.

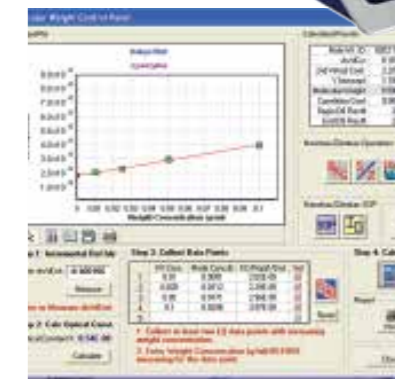
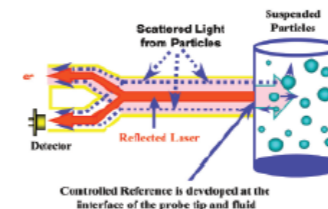
Flexibility. The modular design allows the user selectable configurations based on application requirements. The S3500 system is easily up-gradable to meet future requirements.



Microtrac S3500

Nanotracs - Particle Size, Zeta Potential, and Molecular Weight Analyzer

- Dynamic Light Scattering incorporating the patented Controlled Reference Method for advanced power spectrum analysis of Doppler shifts under Brownian Motion
- Capable to measure up to 40% concentration, which reduces the need to dilute samples
- No "A Priori" or advance knowledge of the particle size distribution is required
- Typically less than 750µl in zeta cell, or as low as 250µl with size only cell option
- Measurement capability from 0.8 to 6500 nanometers. Zeta Potential from -200 to +200mV



Blue Wave

Through the introduction of two Blue Lasers at off-axis angles of incidence to the sample, the Bluewave significantly enhances the sensitivity and resolution of distribution measurements.

Resolution - The patented Tri-laser, multi-wavelength, multi-detector optical system delivers unsurpassed resolution over the entire measuring range of the instrument. This is achieved through the use of both Red and Blue lasers (not LEDs)

Accuracy - As well as Fraunhofer diffraction, Microtrac Bluewave utilises full Mie compensation for spherical particles. It also applies proprietary - Mie calculations for non-spherical materials – the majority of real life materials. This feature is unique to Microtrac!

Wet and Dry Measurements - Using a selection of wet and dry sample delivery systems the Bluewave can be converted from wet to dry mode in under 2 minutes.

Flexibility -The modular design allows the user selectable configurations based on application requirements. The Bluewave system is easily up-gradable to meet future requirements.

Calibration - Internal uniform light source utilised for testing and calibrating detector segments.

Validation - Full IQ/OQ support documentation available.

Automation- Microtrac FLEX software allows programming, saving and recalling of Standard Operating Procedures (SOP's). This facilitates increased precision in sample preparation and operation through automated, multi sample accessories.

The Bluewave meets or exceeds 21 CFR Part 11 security requirements.



Hydrodynamic Particle Size, Zeta Potential and Concentration

First principal electrophoresis zeta potential and Brownian diffusion size

With ZetaView® individual particle tracking, classical micro-electrophoresis and Brownian motion have a modern analysis tool. Auto-alignment and auto-focussing make the "Seeing is Believing" principle alive. Highly resolved zeta potential- and size- histograms as well as profiles are derived from thousands of particles in a routine way. In addition, low particle concentrations can be determined. A separate model with a short wavelength laser is available for discrimination of fluorescent particles. The visualisation in general contributes to analysis certainty and to new discoveries.

NANO-flex
System for characterisation of colloids by dynamic light scattering

The NANO-flex 180° DLS System measures size distributions in the range of 0.8 nm to 6.5 µm. The applied heterodyne 180° back scattering principle of the Nanotracs® is characterised by its high selectivity in the nano-range and is therefore also suitable for samples with broad size distribution. Highly concentrated samples are measured without interfering multiple scattering.

The applied Nanotracs® back scattering in the NANO-flex is designed as a flexible measuring probe with 8 mm ø. Thus, it can be used in many ways, even in-situ and in the measuring cylinder of the Stabino®!



3D Image Analysis



The Microtrac DIA incorporates the latest developments in multi-imaging technology to provide comprehensive information in both particle size and shape of dry powder particles, granulates and aggregates. The optical arrangement and software allow the user to view particles in 3D for the first time. With the ability to measure materials up to 35 millimeters in size, the Microtrac DIA offers a fast, accurate and simple alternative to sieve analysis with the additional benefit of image analysis.

- Particle Size and Shape Analysis
- Measurement Ranges - 20 µm to 15mm / 50 µm to 35mm
- 3D Particle Image Analysis Capability
- Process and Product Quality Control
- Product Development/R&D
- On-Line and Off-line Capability
- Reduce Costs
- Improve Quality
- Increase Productivity
- Easy Maintenance
- Faster, More Accurate and More Repeatable than Sieves

Size, Shape, Counting for Suspensions, Emulsions



For high-level powder characterisation the OCCHIO FC200 Flow-Cell brings you accuracy, profit and innovation.

Flow-Cell provides your R&D and Production departments with dedicated parameters, specially engineered for your industrial purposes.

With its proprietary light and high quality lens, measuring suspensions or emulsions which are invisible under normal microscopy.

Size measurements
(from 200 nm up to 1000µm)
Area diameter - Mean diameter - Length - Width - Maximum distance and more.
Shape parameters
Elongation - Circularity - Convexity - Shape factor - Luminance & Special parameters and more.

Morphology measurement is more than shape description. To improve, you need robust and significant measurement. Based on decades of university research, the OCCHIO



Dry Powder - Particle size & Morphology (size range 0.4 µm- 3000µm).



ZEPHYR ESR is an automatic device dedicated to sieveable powders characterisation. Associated with the software CALLISTO, it is easy to use and carries out rapid analyses in less than few minutes.

Applications
Powder, granulate, fibre, pellet, ceramic, wood, sand, geology, sugar, fertiliser, metallic particles, chocolate, coffee, rice, corn, mining particles, polymers, diamond, lactic acid etc.

Accuracy
With its proprietary Light and high quality lens, OCCHIO ZEPHYR ESR will change your own perception of image analysis, measuring particles like granulate, sand, ceramics & fibres.

Principle and innovation
Based upon a combination of mechanical and gravity dispersion, the OCCHIO ZEPHYR provides for a fast and accurate size and shape analysis of sieveable powders. The instrument combines a high quality imaging system with a robust mechanical quality design for at-line and on-line process control. The powder is dispersed by means of vibrating feeder and gravity dispersion. The system uses a combination of specific lens & lights.

Particle Counting

The PAMAS SVSS is a standard particle measuring system for the measurement of clean, low viscous fluids and of pharmaceutical liquids. The laboratory instrument is designed especially for the particle analysis of low viscous, aqueous solutions. For the contamination analysis of higher viscosities, PAMAS offers the particle analysing system PAMAS SBSS.

SVSS Features:

- Size of sample container 1 ml - 2,000 ml
- Analysis volume: 100 µl - 1,000 ml
- Constant sample flow and exact volume control via stepper-motor-driven syringe
- Interchangeable syringes with 1 ml, 10 ml and 25 ml volume



SVSS Small Volume Syringe System

Particle Size of Concentrated Slurries

The DT-1202 can measure particle size 0.005 - 1000µm as well as zeta-potential in your undiluted sample. This model can also be provided with several options to enhance the capabilities of the unit these include;

- Titrations option, with one or two burettes allows conducting of complicated experiments involving modification of chemical composition of the liquid medium according to a certain protocol
- Conductivity aqueous option allows for measuring electric conductivity of aqueous systems within a range from 10-3 to 10 S/m.
- Conductivity non-aqueous option allows for measuring conductivity of various solvents including non-polar liquids within the range from 10-11 up to 10-4 S/m
- Rheological option allows calculation of high frequency (MHz range) longitudinal rheological parameters such as compressibility, elastic

modulus, viscosity, and performs test on Newtonian nature of the liquid sample.

- Porous materials option allows characterisation of porosity using the aqueous conductivity probe, as well as pore size and zeta potential of a porous material with electroacoustic probe.

Applications

- Nanotechnology
- Colloid stability
- Ceramic slurries
- Cement slurries
- Battery slurries
- CMP slurries
- Cosmetics
- Paints and pigments
- Non-aqueous systems
- Clays and minerals
- Food emulsions
- Mixed dispersions
- Structured systems
- Photo materials



Particle Charge

Rapid charge titrations for stability analysis of colloids and dispersions enhance the efficiency of formulation and particle interface analysis. The Particle Interface Potential of particles is measured as streaming / zeta potential and represents the degree of electrostatic repulsion between particles. It reacts to pH, conductivity and polyelectrolyte surrounding, respectively. A charge titration with the Stabino® specifies which parameters require special attention. The isoelectric point can be titrated within short time, gathering information on charge density and stable zones, whilst pH, conductivity and temperature are monitored simultaneously.

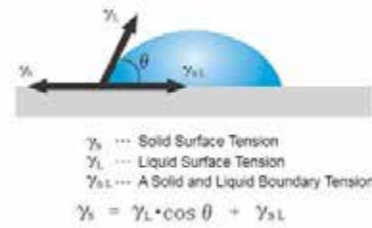


Interface Science

Contact Angle Meters

The DropMaster series.

The DM-701 and DM-501 are the most flexible and popular models in KYOWA's versatile line of contact angle meters that are widely used for research and development and quality control purposes. They are upgradable with several software or accessories to extend the capability of each model, and even with customisation for special applications.



DM501

- Applicable sample size is up to 150mm x 150mm.
- Computer controlled automatic dispenser discharges precise volume of droplet in 0.1 μ L resolution.
- Applicable to wide variety of optional accessories to extend the capability.

DM701

- Measurement of Contact Angle -Sessile Drop method: Extension/Contraction method:
- With Options: Sliding method: Dynamic sliding method: Three-state method:
- Measurement of Surface/Interfacial Tension by Pendant Drop method [Option]
- Surface free energy analysis [Optional kit recommended]
- Fast image capture system (Standard max. 60fps, Option max. 1,000fps)
- Automatic dispenser
- Zoom lens
- Temperature control systems for solid and droplet [Option]
- Multi dispensers for surface free energy analysis [Option]



DM701

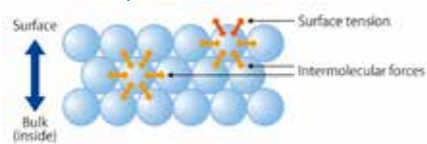
Surface Tensiometer

DY700

The DyneMaster DY-500 and DY-700 are multi-use instruments capable beyond that of a simple surface and interfacial tensiometers. Measurements of powder contact angle (Washburn powder wettability), Wilhelmy dynamic contact angle, automatic determination of CMC, lamella, density, and sedimentation measurements can be achieved through optional upgrades. The systems are computer controlled and measures fully automatically by a single command.



DY700



- Precise and high sampling frequency balance system suited to Wilhelmy dynamic contact angle measurement
- Built-in balance calibration system
- Built-in magnetic stirrer, jacket type stage, and platinum resistance thermometer
- Fully covering the capable functions by DY-300/500

Friction, Scratch and Abrasion

This is an instrument for measuring Static/Kinetic Friction Coefficient by the system of horizontal linear reciprocating motion. The measurement conditions of vertical weight, motion speed, frequency of reciprocating cycles, kinds of contact parts can be changed. The variations of friction coefficient over the numbers of cycles are displayed on chart for reference of abrasion.



- Simple installation by connecting the compact body to a laptop PC.
- Four kinds of contact parts; point, line, flat facet, and round facet, are provided as standard accessory. Customisation available
- Dependencies on weight, speed, and frequency of cycles can be obtained.
- Temperature control options are available.
- User's periodical calibration is possible.

Maximise the life and reliability of your specialist instruments



CREA's industry-leading instruments are designed to help your organisation meet its analytical and testing demands.

Preventative care and maintenance offered through our Lifetime Service & Support plans will extend the life of your vital equipment, cut unexpected repair costs and minimise downtime.

Choose from three annual plans, each designed to offer flexibility in the level of service and support you receive:

Lifetime Service & Support Plan	Silver	Gold	Platinum
Scheduled visits per year	2	2	2
2 Working Day On-Site Guarantee*	Yes	Yes	Yes
Emergency call outs	-	1	Unlimited
Savings on parts purchased	-	10%	20%

All CREA Lifetime Service & Support plans include two scheduled visits each year. During these visits we test, calibrate and maintain your instrumentation, with work completed in accordance with manufacturer's specifications by trained engineers.

In the event of an emergency requiring on-site attention, we also guarantee we will have one of our senior, qualified technicians on-site within 2 working days* if required.

CREA Lifetime Service & Support helps to extend the life of your valuable instrumentation, keeping it operating like new.

* Subject to customer approval.

Contact Crea Service Department for
All Enquiries, Servicing, Repair, Calibration and Estimates
for all your laboratory instruments - both **on-site and off-site**

1300 LAB SUPPORT
522 787



Oil Analysis



Petro



Life Sciences



Particle Science



Materials Testing

Your Partner in Lab

Oil Analysis



- Particle Analysis
- Viscosity
- FTIR
- Wear Metal
- Fuel Dilution
- Lubricant Monitoring
- Trivector Analyser

Petro



- ASTM Testing for:
- Viscosity & Penetration
- Flash Point
- Fuels
- Lubricating Oils
- Tribology (Wear & friction)
- Lubricating Greases

Life Science



- Sample Handling
- General Lab
- Safety Cabinets
- Water Purification
- Liquid Handling
- Microbiology
- Biotechnology

Particle Science



- Physiorption
- Chemisorption
- Surface Area
- Multi Gas Adsorption
- Particle Size
- Morphology
- Nanosizer

Materials Testing



- Sieves & Shakers
- Aggregates & Rocks
- Bitumen - Asphalt
- Concrete
- Cement & Mortar
- Steel
- Soil