

Your partner of choice for
complete solutions in the pharmaceutical,
biotechnology and cosmetics industries



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Business Unit Technology

DKSH is a leading provider of Market Expansion Services, proficient across various industries. As a total solution provider and system integrator, we serve our customers as a one-stop-shop and provide customized technology solutions. We do not only provide professional after-sales services, but also cover the entire product life cycle including installation and commissioning, final acceptance testing, production start-up support, training, maintenance, repair, spare parts and consumables supply as well as trade-ins. We operate as a trusted link between suppliers from Asia, Europe or America and customers in Asia, enabling suppliers to expand their markets.

Sales and services are our core competencies. Our sales, service and applications specialists are highly trained and dedicated to deliver complete, integrated laboratory solutions to our customers. Industry-specific expertise, in-depth process knowledge and complementary product-service portfolio enable us to stand out as a total solutions provider.

Business Line Scientific Instrumentation

Business Line Scientific Instrumentation supplies a wide range of industries and sectors with advanced and innovative laboratory equipment, scientific instruments, life science products, consumables, professional technical services as well as applications support of the highest quality and integrity.

Your partner for integrated safety, quality and productivity solutions

Many manufacturing processes in pharmaceuticals, cosmetics and biopharmaceuticals industries such as new ingredients selection, formulation preparations, material packaging and shelf storage involve a complex flow of materials. Producing effective and high quality products with reasonable investment in these industries requires reliable, comprehensive and validated lab equipment. Especially in Malaysia, having the right equipment in compliance with the National Pharmaceutical Regulatory Authority (NPRA) standards is essential.

The documented regulation applies to cos-

metics, pharmaceuticals, and biopharmaceuticals industries to ensure the standard is being practiced as below:

For cosmetics:

Good Manufacturing Practices (GMP) in accordance to the ASEAN Guidelines for Cosmetic Good Manufacturing Practice.

For pharmaceuticals and biopharmaceuticals

- CGMP and GMP
- FDA (CPG Sec. 490.100 Process Validation Requirements for Drug Products and Active Pharmaceutical)
- OECD Good Laboratory Practice (GLP)
- United States, Europe and Japan Pharmacopeia

Formulation process typically covers pre-formulation, product development, bio-availability, bioequivalence studies, clinical trials, efficacy studies, quality control and sample production. This is the general process of drug and food manufacturing and each consists of a series of unit operations intending to modulate certain properties of the material being processed.

Market specific applications

With our profound market knowledge we are best positioned to provide tailored solutions to serving customers' needs. We provide products and services to the following industries across Malaysia.



Aerospace



Automotive



Biotechnology and life sciences



Die and mold



Healthcare and hospital



Metals, minerals and mining



Chemicals, oil and gas, plastics and polymers



Pharmaceutical, biotechnology and cosmetics



Education and academics



Food and beverage



Semiconductor and electronics



Energy and environment

Analytical solutions for laboratory processes

The pharmaceutical industry plays an important role in healthcare all over the world. It consists of many public and private organizations that discover, research, develop and manufacture commercial medicine for humans and animals. Current

science and technology is accelerating the development processes of innovative pharmaceutical products with improved therapeutic activities and reduced possible side-effects. This can be achieved by having a

complete platform for product validation services, supported by a wide range of analytical capabilities including advanced surface analysis and expert knowledge.

DKSH – your partner for efficient production processes

Discovery

Early development

Formulation development

Up-scaling



Enhance
Operational quality
and productivity of
the entire facility

Increase
Employee
satisfaction
and productivity

Reduce
Operational costs

Achieve
Continuous
improvements

Meet
Regulatory
compliance

Maximize
Your facility
performance



Research and development

Occurring early in the value chain, product innovation is one of the most important aspects in the pharmaceutical, cosmetics and biopharmaceutical industries. Innovation can arise from new active ingredients, new combination of actives with synergetic effects, formulation technologies, product delivery and even new claims.

At DKSH, we are experienced in providing total laboratory solutions for product re-

search and development. Our solutions are innovatively designed and widely versatile to:

- Improve the quality of pre-clinical and clinical trials of pharmaceuticals, biopharmaceutical and cosmetic products
- Enable researchers to have a better understanding on the inner-workings on the molecular level for drug, therapeutics pharmaceutical, biopharmaceutical products and cosmetics treatments

- Enhance the development of new active ingredients from natural resources (e.g. plants)
- Build up confidence in theoretical and practical analysis of new cosmetic product formulations
- Refine the development of functionalized nanomaterials including nanomedicines, nanotreatments and nanotherapeutics

ProteinSimple Simple Western Systems

- Automation in Western Blot eliminates manual analysis that does not require transfer gels, blots and transfer devices which promote greater reproducibility and accurate quantification
- Speed up Western Blot processes that quantitate and perform size based separation for 25 samples in three hours, eliminates the tedious works of manual analysis and allows user to perform other tasks while waiting for results

- Flexibility on applications, separate and detect proteins as small as 2kDa or as large as 440kDa in only three hours

Applications:

Pharma, biotech and cosmetics

- Alternative to Western Blot and total protein analysis
- Size and charge based immunoassays
- Quantitative protein characterization



Protein Simple Ella Automated ELISA Reader

- Automates ELISA process: no manual washes or tedious reagent involved, eliminate all the challenges that comes on manually ELISA and ensures reproducible picogram per ml or lower sensitivity, a 4 to 5 log dynamic range and zero cross reactivity result
- Faster workflow and minimal sample usage: the set up of Ella only takes 10 to 15 minutes and provide results for multiple samples in 60 minutes flat with only 25 ul of sample in need

- Runs multiple assays on same samples: ELLA can analyze 72 samples for a single analyte or 16 samples for four analytes in flat 60 minutes, adds flexibility to your assay

Applications:

Pharma, biotech and cosmetics

- Alternative to multiplex enzyme-linked immunosorbent assay (ELISA)
- Multi-analyte immunoassays
- Biomarker research



ProteinSimple FluorChem R System Infrared Fluorescent Western Blot Imaging

- An all in one imaging system that equip with Infrared Fluorescent, Multiplex Fluorescent Western, Chemiluminescent, UV Fluorescent DNA and Protein Gel, Colorimetric Protein Gel that add versatility and flexibility in assay applications
- Ease of use with preset protocol. User would only need to select the method from drop down protocol list, eliminates the need for trained personals to operate

- Sensitive imaging system that identify bands that are hard to detect on a 26.4 cm screen with a 8.3 mega pixel CCD camera that provides clear and sharp images for viewing results

Applications:

Pharma, biotech and cosmetics

Infrared fluorescent westerns, multiplex fluorescent westerns, chemiluminescent westerns and gel documentation.



Malvern Mastersizer Range

- Highest data quality on every sample. Samples can be presented as wet dispersions or dry powders
- Particle size measurement of a broad range of sizes - from 10 nm to 3.5 mm, and excellent sub-micron resolution with rapid measurement time
- Hydro SV is a sample cost effective liquid dispersion unit which uses small volumes of sample and disperse expensive and highly concentrated sample

Applications:

Pharma and biotech

Nanoparticle and microparticle size distributions for drug delivery research.

Cosmetics

Nanoparticle and microparticle size distributions for quality assurance and control of powdered and wet cosmetics.



Malvern Zetasizer Nano ZSP Particle Size Analyzer

- Suitable for characterization of nanoparticles, colloidal dispersions, polymer and protein solution
- Uses combination of zeta potential and electrophoretic mobility of colloids and nanoparticles technique. 2 in 1 solution for thorough researching over nanosize particle characterization
- Unique feature of high concentration zeta potential ZEN1010 cell enables measurements of solutions without dilution
- High sensitivity for nanoparticles, protein and macromolecules
- Optionally compliment micro rheology of protein and polymer solution

Applications:

Biotech

Measurement of protein size, electrophoretic mobility, and microrheology.

Pharma

Pharmaceutical formulations through measurement of zeta potential.

Cosmetics

Measurement of zeta potential and size of nanoparticles and microrheology of cosmetics for stability of formulations.



Morphologi G3 Particle Size and Particle Shape Analyzer

- Measures particle size, shape and chemical identity in one platform with automatic selection, targeting and chemical classification of thousands of individual particle
- Integrated drug powder dispersion with accurate dispersions energy control, automated sample preparation for consistent measurement of both fragile and robust materials
- Simple SOP operation from sample

dispersion through to size, shape and chemical analysis powered by intuition and vigorous software that make interpretation of data easier

Applications:

Pharma and cosmetics

Determine the size distribution of solid or liquid particulates (colloids, emulsions, nanoparticles and submicron suspensions)



Malvern Rosand Capillary Rheometer RH2000

- Characterize rheology of materials by extrusion under high pressures and shear rates, under temperatures ranging from 5 to 500 °C allowing test correlation with real material processing conditions
- Maximum drive force (up to 20 kN) and maximum speed (up to 1200 mm/min) capabilities enable wide range of shear rates
- Rosand twin bore principle for direct measurement of die inlet pressure and determination of absolute viscosity

- Rigid one-beam cantilever frame design provides extreme mechanical strength and stiffness for compact bench-top unit
- Unique swivel head design gives easy access for sample loading and instrument cleaning

Applications:

Pharma and cosmetics

Characterization of polymer or suspension rheology across a range of shear rates and temperatures.



Microfluidics Lv1 Low Volume Microfluidizer Processor

- The LV1 is capable of handling samples as small as 1 ml, samples smaller than many other liquid processors can handle to provide the narrowest particle size distributions, better recovery and fewer, shorter passes
- Performs high-pressure homogenization at pressures up to 30,000 psi and can operate at shear rates of 12.25 million sec⁻¹ which contributes to efficient cell

disruption, less protein damage and more stable emulsion

- Payback is measured in days, rather than years, when processing high value samples

Applications:

Pharma and cosmetics

Immiscible liquid emulsions, solid-in liquid suspensions, submicron particle size reduction, deagglomeration and dispersion.



LAUDA iVisc Capillary Viscometer

- The fully automatic, space-saving iVisc is easy to operate and suitable for getting started in professional viscometry
- Using "pull down" menus, important application-specific evaluations and all common approximation formulas for intrinsic viscosities (IV values) can be specified as a measure for polymer chain lengths
- It's an open system concept whereby it is possible to apply new capillaries at

any time, to select them and to modify and delete the parameters. This eases the modification and meets user preference depending on their needs

Applications:

Pharma, biotech and cosmetics

Kinematic, dynamic, relative and inherent viscosity of a biological/chemical material suspended in liquid.



LabPRO Analytical Balance

- Quick and accurate ease of operations; Precise measurements with up to 0.1mg readability
- Stable readings of measurement up to ± 0.0001 (S.D) (mm) repeatability
- Dynamic temperature compensation accounts for changes in environment for accurate weighing

- Large backlit LCD screen for easy reading

Applications:

Pharma, biotech and cosmetics

Weight measurement of dry/wet biological/chemical materials.



LabPRO Micropipette

- Micropipette models for a range of volumes from 0.2 μ l to 10000 μ l designed for maximum accuracy and precision
- Completely autoclavable to ensure minimal sample contamination in tightly regulated environments

- Universal tip cone design for compatibility with major brands of micropipette tips

Applications:

Pharma, biotech and cosmetics

Molecular biology, microbiology, cell culture, and analytical chemistry.



LabPRO Bottletop Dispenser

- Bottletop dispenser models for a range of volumes from 0.25 to 100 ml, designed for high chemical compatibility and smooth movement
- Designed with a recirculation valve for bubble free dispensing without any loss of reagent

- Adjustable dispensing nozzles with adaptors for fitting on a range of regular laboratory reagent bottles

Applications:

Pharma, biotech and cosmetics

Molecular biology, microbiology, cell culture, and analytical chemistry.



Claind Industrial Plug and Play Nitrogen Generator

- Plug and play nitrogen generator base on pressure swing adsorption principle with Claind's patented "Fast Purity" Technology – the most efficient and robust system nowadays
- Standard production of 3.5 NL/min of nitrogen gas at 7 barg, requiring only one working day to produce the nitrogen contained in a cylinder
- System includes oil-free air compressor and air filtration system as well as basic or multi-channel mixer that when connected with CO₂ cylinder can supply up to 5 different gases (pure N₂, Pure CO₂ and 3 mixtures of N₂ + CO₂)

- Nitrogen purity better than food grade E941
- 50 to 100 liter external tank for storage of nitrogen produced

Applications:

Pharma, biotech and cosmetics

To feed both Carrier Gas and as a fuel supply for FID, NPD, FPD, TCD detectors



Telstar Biological Safety Cabinet Class II

- Double integrated and removable arm rest which provides comfort experience to the operator during long working sessions
- The V-shaped air slits, positioned at the front of the work top, increase safety by preventing accidental obstruction of the openings and therefore blocking the inflow air
- The silicone window gasket seals the working chamber hermetically, providing optimal protection for both operator and product

- In working position, the gasket prevents environmental particles to enter the working chamber, thus reducing possible contamination of samples and keeping the inner side of the glass clean

Applications:

Biotech

PC2 lab use for handling continuous cell lines and defective/infectious viruses in molecular biology and vaccine development.



Telstar Ultra Low Temperature -86°C

- The slim VIP insulated Igloo increases the storage capacity up to 30% and easily fits through every standard lab door as well as moving to a new laboratory
- With only 80 mm of insulation, it creates a much better insulation value than 125 mm of regular PU foam, which promotes space saving in the design of the ULT while ensures high performance in cooling samples
- Uses 100% pure natural refrigerants, CFC, HCFC and HFC free combined of

low power consumption, lowest noise level, the feature makes Telstar ULT the most environmental friendly ULT freezer in the market

Applications:

Pharma and biotech

Stem cells, continuous cell lines, virus, bone marrow, tissue storage, blood, DNA, enzymes, proteins, and pharmaceuticals storage.



Telstar GMP Production Freeze Dryer

- Industrial freezer dryers for the elimination of solvent from solution without damaging or changing solute properties
- Factory acceptance testing (FAT) of all freeze-dryers in simulated conditions closely replicating real-life working conditions
- Series of products designed in accordance with strict GMP and regulatory standards for performance in clinical trials, pilots, and small and large scale industrial drying
- Also available are robot systems for direct loading & unloading of bulk product onto shelves



LTE Multipurpose Autoclave

- Wide range of chamber sizes from 23 to 10,000 litres with either rectangular or cylindrical chambered models with the flexibility to configure according to different application
- Air ballast system to avoid volume loss or breakage in liquid loads for fast and safe processing of fluids
- Floating O-ring type door seal with high temperature silicon rubber-sealing gasket will automatically retract from the door

prior to opening or closing is much better than the normal door seal which always go out of alignment and need adjustment

- The re-circulating exhaust condensate unit will enable discharge water temperatures to be kept below 70°C to avoid damage to plastic pipes and the environment
- Large LED alphanumeric display with touch pad sensitivity state of the art PLC system for user friendly and interactive menu



Applications:

Pharma, biotech and cosmetics

Steam sterilizing for laboratory apparatus and materials in R&D.

Claisse LeNeo Fluxer

- Fully automated one-touch operation with 10 ready to use preset function programs that ensure high fusion success rate to prepare glass disks for XRF or solution for AA and ICP analysis
- User-friendly touch screen interface that allows the adjustment of all settings and fusion parameters to prepare a wide range of materials
- Automated safety door locks to prevent operator contact with high heat

- 3 in 1 Sample Preparation - prepares samples for ICP and AA analysis

Applications:

Pharma, biotech and cosmetics

- Sample preparation by borate fusion of catalysts and high silica samples
- Using peroxide fusions for the dissolution of chromite ores, ferrochromes and chromium slags



- Metal determinations in cosmetics samples by using peroxide fusion and borate fusion for ICP-OES determination

Surface Measurement Systems iGC-SEA Inverse Gas Chromatography-Surface Energy Analyzer

- The world's only commercial instrument based on the IGC principle and fully automated iGC-SEA can be operated at different solvent vapor, flow rate, temperature, humidity and column conditions to give full sample flexibility
- Cirrus Plus, unique data analysis software to measure surface energy heterogeneity, isotherm properties and related physical characterization parameters, bulk solid

property experiments resulting from probe-bulk interaction and solubility theory which give reliable data than manual calculations

Applications:

Pharma

Provides access to unique physicochemical information for pharmaceuticals cosmetics and personal care products.



Surface Measurement Systems Dynamic Vapor Sorption Analyzer

- DVS Vacuum is the only gravimetric vapor sorption system which offers static and dynamic sorption experiments to produce accurate and precise measurement of adsorption and desorption isotherms and adsorption and desorption isobars over a broad range of temperatures
- The entire system and sample chamber are at thermal equilibrium in the temperature controlled enclosure, variable sorbate molecules and temperature can be easily changed without condensation and decontamination concerns

Applications:

Biotech

Cell and protein stability and comparison studies.

Pharma

- Vapor Sorption of polymorphic compounds and compound stability studies
- QC analysis of packaged dry cosmetics



Telstar Laboratory Freeze Dryer

- Specially designed for R&D phase freeze drying requirements - available range from small table-top units to sophisticated pilot equipment
- State-of-the-art control system with a range of specially designed accessories
- Flexible usage with options for adapter

manifolds and for connection of different types of chambers

Applications:

Pharma, biotech and cosmetics

Dehydration process typically used to preserve a perishable material or make the material more convenient for transport.



Product development and formulation

For an effective delivery of active pharmaceutical and therapeutic ingredients, we provide total laboratory solutions to study the formulation development, including:

- Enhancing the formulations of liquids, semi-solids and solids and sprays
- Assisting in the development of new drug delivery systems including drug incorporation in microparticles, microcapsules, nanoparticles and nanocapsules

- Improving on the formulation optimization, improving stability, flavour and odor, drug delivery, drug absorption, etc.

For cosmetic products, the appearance, touch and comfort of the end product plays a major role in customer satisfaction, therefore reaching the desired texture is essential during formulation development.

At DKSH, our solutions benefit our customers in studying the formulation development, rheology, shear properties and viscosity on different textures. Products such as emulsion, ointments, lotions, oils, gels, gel-creams and scrubs with pre-existing formulas can be improved. Products' stability profile, skin feel and tolerance can be optimized and in compliance with regulatory requirements.

Desaga HPTLC-Applicator AS 30

- Instrumentation Thin Layer Chromatography (TLC) / High Performance Thin Layer Chromatography standardize TLC/HPTLC process and offer reproducible results
- Ease of use with friendly operation software and semi or fully automation in instrument operation simplify TLC/HPTLC process

Applications:

Pharma, biotech and cosmetics

Separation, identification, and quantification of components in a biological, pharmaceutical, and cosmetics mixture.



Microfluidizer High Shear Fluid Homogenizer M-110P

- Converts pressure energy more efficiently into shear and impact forces, attaining targeted size reduction at lower peak pressure, which results in less sample temperature rise during processing
- Micro-channel architecture of each interaction chamber enables linear volumetric scale-up for larger capacity processing, guaranteeing process performance at pilot/production scales and minimizing additional development time
- Product stream accelerates to high velocities, creating shear rates that are

orders of magnitudes greater than any other conventional method

- Emulsion applications – achieve stable emulsions in submicron to nanometer range for optimized properties (e.g. diffusion, drug delivery)

Applications:

Pharma, biotech and cosmetics

Stable nanodispersions, stable nanoemulsions, cell disruption (E. coli, yeast, etc.) microencapsulation in polymers, liposomes and oils.



Microfluidics Plug and Play Homogenizer

- Has been designed to reliably achieve continuous operating pressures up to 30,000 psi. This processor maximizes the energy-per-unit fluid volume, resulting in uniform submicron particles
- Capable of processing a wide-variety of fluids, including oil-in-water emulsions, solids-in-liquid suspensions and cell disruptions - of even the most difficult yeast and plant cells - in as few as one or two passes

- Recommended for stable nanodispersions, stable nanoemulsions, cell disruption, deagglomeration and microencapsulation in liposomes, polymers and oils

Applications:

Pharma, biotech and cosmetics

Immiscible liquid emulsions, solid-in-liquid suspensions, submicron particle size reduction, deagglomeration and dispersion.



Malvern Spraytec Aerosol/Droplet Analyzer

- Accurate particle size over an extremely wide 0.1 - 2000 microns range using just 2 lens systems
- Rapid measurements at acquisition rates of up to 10kHz capture the dynamics of any spray process in exceptional details
- A patented multiple scattering analysis ensures accurate measurements can be made at high concentrations

- Automated software and advanced analysis features ensure repeatable aerosol measurements can be made at high spray concentrations

Applications:

Pharma

Use for the analysis of nasal sprays and aerosols, and inhalers and nebulizer drug delivery devices.



Malvern OMNISEC GPC/SEC Detector

- Upgradable to any existing system to triple detection to add the power of light scattering (low angle or right angle) or multiangle light scattering (SEC-MALS) to measure absolute molecular weight, or a viscometer to measure intrinsic viscosity
- Concentration detectors such as refractive index and UV are also available

Applications:

Pharma, biotech and cosmetics

Comprehensive molecular characterization, quality assurance, and quality control of polysaccharide, protein, polymer, copolymer products through measurement of absolute molecular weight, intrinsic viscosity, hydrodynamic radius, Mark-Houwink parameters, radius of gyration, branching.



Malvern Research Grade Rheometer Kinexus Range

- Next generation rheometer redefines ease of use; Unique rSpace software provides a user interface that offers total flexibility of test set-up for research and development
- Analyzes the rheology, flow and deformation properties of pharmaceutical materials; Time and cost savings by reducing reliance on sensory testing and manual analysis
- Unique rSpace software provides a user interface that offers total flexibility of test setup for R&D

- "Plug and Play" functionality for all measuring systems and environmental control unit

Applications:

Biotech, pharma and cosmetic

- Topical and dermatological products (squeezing, spread ability and suspension and emulsion stability)
- Syrups and suspensions
- Ophthalmic products



Malvern Nanoparticle Tracking Particle Size Analyzer

- Suitable for measurement of particles within the 10 - 2000 nm range
- Simultaneous measurement of multiple characteristics to minimize cost, time, and sample volume used
- On board temperature control with a temperature range from 5°C below ambient temperature to 50°C
- Choice of multiple laser wavelengths to suit your desired application

Applications:

Biotech, pharma and cosmetic

- Development of drug delivery systems
- Viral vaccine research
- Nanotoxicology and biomarker detection
- Protein aggregation research
- Extracellular vesicle characterization for various disease state studies



Malvern Viscotek TDMax Multidetector GPC/SEC System

- Absolute molecular weight of small polymers, protein stability and protein aggregation using Right angle light scattering (RALS)
- Direct output of absolute molecular weight of polymers without extrapolation using low angle light scattering (LALS)
- Protein and polymer structure (including branching) information using intrinsic viscosity detector Molecular size in terms of hydrodynamic diameter (Rh) and the radius of gyration (Rg)
- Copolymer composition using photo-diode array UV detector
- Autosampler incorporated to increase throughput and improve repeatability
- Advanced GPC/SEC software capable of going from data to results in just two clicks
- 3D absorption plot for chemical identification of each component
- 21 CFR part 11 compliant
- Full suite of calibration and GPC/SEC calculation types



Applications:

Pharma, biotech and cosmetics

Absolute molecular weight, molecular conformation, molecular size and solution viscosity.

Malvern MicroCal VP-DSC Calorimeter

- Non-reactive Tantalum cells, one of the most inert metals that does not react to most chemicals, excellent for analyses wide range of samples which may contain corrosive material.
 - Ultrasensitive fixed in-place cells, encourages reproducible results without adding more sample cost and low maintenance
 - Three user selectable response times which caters up to 3 customizable settings to analyze different solutions, enhance efficiency in sample analysis activities
 - Intelligent safety measure that features Self-contained pressurization system (0.45 psi) that enable solutions studies above their boiling point
- Pressure Perturbation Calorimetry accessory is typically performed on a DSC that is capable of increasing and decreasing the pressure on a sample during a DSC temperature scan or during isothermal measurements.
- Includes MicroCal Thermovac™ sample preparation and cleaning device that requires no additional accessories, reagents or consumables.
- Controlled by VPViewer™ software and data analysis performed with Origin®
- Tm shift ligand binding screens is available for quick and easy analysis



Applications:

Pharma, biotech and cosmetics

For protein, synthetic and natural polymers, molecular weight, structure and size.

Malvern MicroCal PEAQ ITC Microcalorimeter

- User-friendly guided workflows with embedded help videos give any level of user the ability to generate high quality data
- High signal to noise gives more confidence in accessing data quality and relevance of generated affinity and thermodynamic parameters
- Automated washing with detergent of the sample cell and titration syringe assists in producing high quality reproducible data
- All binding parameters (affinity, stoichiometry, enthalpy and entropy) in a single experiment
- Quick to first results with no assay development, no labeling, no immobilization and no molecular weight limitations
- Nonreactive Hastelloy for chemical resistance and compatibility with biological samples
- Compatible with non-aqueous solvents.
- Upgradable to fully automated MicroCal PEAQ-ITC Automated
- Sensitivity to investigate any biomolecular interaction using as little as 10 µg of protein
- Directly measures millimolar to nanomolar affinities (KDS) (10 – 2 to 10 – 9 M)
- Measures nanomolar to picomolar disassociation constants using competitive binding techniques (10 – 9 to 10 – 12 m)



Applications:

Pharma, biotech and cosmetics

For protein, synthetic and natural polymers, molecular weight, structure and size.

LUMiSizer Dispersion Analyser

- Quick characterization of any demixing phenomena and consolidation and calculation of the velocity distribution in the centrifugal field as well as of particle size distribution
- Run up to 12 samples simultaneously
- Accelerated phase separation 6 - 2300 times compared to gravity

- Particle size distribution 20 nm - 100 µm
- Observation time is 1s to 99 hours

Applications:

Pharma and cosmetics

In-depth qualitative and quantitative characterization of dispersions from innumerable products.



PANalytical Multi-Purpose Research Empyrean X-ray Diffractometer

- Alignment-free PreFIX modules with pre-aligned fast interchangeable X-Ray modules which is flexible, fast and future proof, allows its users to switch between standard geometry, to top performance mode in matter of minutes and continues to perform different analysis depending on needs within short period of time
- The only X-ray detector that can be used as a point, line and area detector, the PIXcel^{3D} has been able to design a multipurpose system that handles measurements on powders, nanomaterials and solid objects in one instrument, with no compromise in data quality, to create superior resolution and speed of data collection and also maintenance free

- The ScatterX78 attachment is a versatile tools which is compact, ergonomic and easy to use for nano material analysis and produce complementary information about the crystalline phases and the size of nanocrystallites, suitable for weakly scattering samples

Applications:

Pharma, biotech and cosmetics

- Compatibility study between end product (tablet) and pharmaceutical excipients used in solid dosage forms
- Predicting polymorphs of pharmaceuticals
- Online monitoring of polymorph growth



PANalytical Epsilon 3X Benchtop EDXRF Spectrometers

- Epsilon 3X feature a high-performance ceramic tube, 50 kV excitation capabilities and the latest in silicon drift detector technology to deliver accurate, precise and reliable analysis right across the periodic table which can detect concentrations from 100% down to sub-ppm levels
- Enhanced by a variety of software modules regardless analysis, oil analysis, rapid identification fingerprinting, multi-

layer analysis or regulatory compliance, Epsilon 3X is affordable, highly flexible analytical tools suitable for a wide range of applications

Applications:

Pharma and cosmetics

Elemental analysis from carbon to americium for drug and cosmetics formulations.



Postnova Analytics AF2000 MultiFlow FFF Universal Separator

- Postnova AF2000 MultiFlow FFF Series was invented to become the first professional modular Flow FFF platform available to ease the operation by the lab personnel
- The technology sets a new standard in the area of Flow FFF and marks a real break-through in FFF science and therefore naturally has become the leading Flow FFF solution for many scientists around the world
- The AF2000 can be run with different eluents, at various temperature conditions and is able to employ various channel dimensions and principles

Applications:

Pharma and cosmetics

- Size-exclusion chromatography (SEC) for mAb
- Temperature stability augmentation and aggregation of antibodies



Protein Simple iCE 3 and Maurice – cIEF and CE-SDS Analyzer

- Automation, develop cIEF (in fluorescence and absorbance mode) and CE-SDS methods in a day
- Provides heterogeneity and molecular sizing on biologics in short development time. pI and charge heterogeneity analysis data can be acquired in less than 10 min flat in both absorbance and native fluorescence detection mode with sensitivity of detection down to 0.7 ug/ml

Applications:

Pharma, biotech and cosmetics

- Measure protein purity
- Identity and charge heterogeneity analysis
- Method development
- Formulation development
- Screen cell lines



ProteinSimple MFI 5000 Micro-Flow Imaging

- Automated imaging-based particle analyser detect and count sub-visible protein aggregates in biopharmaceutical - Address the FDA's requirement to characterize and quantify aggregates and particulates in bio-therapeutics
- Maximize particle analysis throughput. MFI require less than 30 min set up time and allow unattended overnight operation with the option of auto sampler

Applications:

Pharma, biotech and cosmetics

- Sub-visible particle analysis
- Quantify protein aggregates
- Characterize particulates
- Detect translucent particles
- Monitor formulations
- Distinguish silicone oil droplets from aggregates



Hielscher UIP 4000 Ultrasonic Laboratory Device Laboratory Device

- The only handheld ultrasonic processor
- Flow cell reactors for larger volume processing
- Sound protection boxes for noise reduction

Applications:

Biotech

Cell extraction, dispersion, intracellular deagglomeration.

Pharma and cosmetics

Molecule/compound milling, grinding, and dispersion for pharmaceutical and cosmetics development.



Schmidt + Haensch Refractometer ATR-B-TOUCH

- Highest measuring accuracy with continuous measuring mode
- Highly accurate and reproducible results in all times
- Extreme flat sample chamber easy to clean and easy to handle
- Fast and reliable control of sample
- Temperature by built in peltier thermostat

Applications:

Pharma, biotech and cosmetics

Determination of concentration, purity analysis, quality control of a biological/chemical material.



Schmidt + Haensch VariPol C Digital Polarimeter

- High performance basic polarimeter with built in peltier system for automatic temperature control
- High quality basic polarimeter integrated with automatic wavelength control (AWCT) for easy calibration

Applications:

Pharma, biotech and cosmetics

Determination of concentration, purity analysis, quality control of a biological/chemical material.



Rigol L-3000 Series High Performance Liquid Chromatography

- The high pressure pump of Rigol L-3000 could reach 9000 psi (62 Mpa) working pressure with the flow rate up to 10 ml/min and this high performance extend the application field from normal HPLC to Fast HPLC
- As low as 5×10^{-9} g/mL detection limit, creating higher sensitivity with $\pm 0.6 \times 10^{-5}$ AU noise floor
- User friendly HPLC workstation, complies with the FDA 21 CFR Part 11, GLP, GMP regulations and this results easy penetration to pharma industry

Applications:

Pharma, biotech and cosmetics

Separation, identification, and quantification of components in a biological, pharmaceutical, and cosmetics mixture.



LAUDA iVisc Capillary Viscometer

- The fully automated, space-saving iVisc is easy to operate and suitable for getting started in professional viscometry
- Using "pull down" menus, important application-specific evaluations and all common approximation formulas for intrinsic viscosities (IV values) can be specified as a measure for polymer chain lengths
- An open system concept whereby it is possible to apply new capillaries at

any time, to select them and to modify and delete the parameters. This eases the modification and meets user preference depending on their needs

Applications:

Pharma, biotech and cosmetics

Kinematic, dynamic, relative and inherent viscosity of a biological/chemical material suspended in liquid.



LAUDA Microcool Recirculation Chiller

- Lauda Microcool Circulation Chiller is compact in design and space saving unit that guarantees reliable, continuous operation contributes to fast and heat dissipation in the laboratory
- The user interface with large LED display and the membrane keyboard make the devices easy to use even by beginners
- The interface and alarm contact standard allows the system integration into processes and this saves lots of cost

Applications:

Pharma, biotech and cosmetics

Use for optimum environment temperature.



LAUDA Integral XT Process Thermostat

- LAUDA Integral XT process thermostats allow extremely rapid temperature changes, resulting from the low volume of internal, thermally active, heat transfer medium and furthermore achieve an extremely broad temperature range and rapid temperature changes
 - Pivoting control unit with clear keypad and large display allows easy accessible yet splash-water protected for easy operation
 - Enhanced pump and low pressure pump available as options to ease the adaption
- to various application and this option broaden the interest among users without any limitation. This adds a flexible option to customize according to user's requirement based on the extreme heating and cooling application

Applications:

Pharma, biotech and cosmetics

Use for extreme cooling and heating of external applications in process, pilot, and manufacturing plant environments.



ASD LabSpec 4 Hi-res Analytical Spectrometer

- Lab analyzer that rapidly measurement of samples (few seconds) with highest accuracy, along with non-destructive capability
- Ability to measure multiple constituents simultaneously in order to save time and provide fast result
- Versatility to measure API and excipient such as binders and coolant simultaneously eventually increase the flexibility and time saving
- Large LED alphanumeric display with touch pad sensitivity state of the art PLC system for user friendly and interactive menu

Applications:

Pharma, biotech and cosmetics

Measure purity of each batch of API, excipients and raw material.



Surface Measurement Systems iGC-SEA Inverse Gas Chromatography-Surface Energy Analyzer

- The world's only commercial instrument based on the IGC principle and fully automated iGC-SEA can be operated at different solvent vapor, flow rate, temperature, humidity and column conditions to give full sample flexibility
 - Cirrus Plus, unique data analysis software to measure surface energy heterogeneity, isotherm properties and related physical characterization parameters, bulk solid
- property experiments resulting from probe-bulk interaction and solubility theory which give reliable data than manual calculations

Applications:

Pharma

Provides access to unique physicochemical information for pharmaceuticals cosmetics and personal care products.



SHEL LAB SMO3 Forced Air Oven

- A turbo blower assisted airflow design and heavy duty motors offers excellent temperature uniformity and fast temperature recovery
- Triple wall construction keeps laboratories and oven surfaces cool which greatly improve laboratory environment
- Advance PID temperature control system for sensitive response which assures the sample environment

- Over temperature safety thermostat to control abnormal temperature control which improves the guardian of sample environment

Applications:

Pharma, biotech and cosmetics

Aging, asphalt testing, conditioning, curing, drying, life cycle testing, and pre-heating of biological/chemical material.



SHEL LAB SHC28 Humidity Cabinet

- Water vapor injector to control chamber humidity without introducing additional heat to chamber atmosphere which compromises temperature control for better sample testing environment
- Over temperature safety thermostat to control abnormal temperature range which improves the guardian of sample environment

Applications:

Pharma, biotech and cosmetics

Shelf-life testing, stability testing, MIL-SPEC packaging, component burn-in, and vapour transmission of a biological/chemical material in research, QA, and QC.



Kirsch Froster-labo-330 Laboratory Freezer

- External housing made from galvanised sheet steel (rust-proof), with white, anti-scratch powder coating which withstands damages to the body
- Automatic defrost refrigerator system that has time limited and temperature monitored reversal of the refrigerant circuit that saves time and energy
- Intelligent rapid freezing cycle ensures that the goods to be cooled are frozen quickly

- Have the highest thermal insulating characteristics (-5°C to -30°C) and the lowest ignition temperatures to maintain a consistent temperature in order to minimize the risk of bacterial contamination and explosions of volatile materials

Applications:

Pharma and biotech

Antibodies, reagents, proteins, vaccines, and pharmaceutical storage.



Manufacturing

At DKSH, we offer and deliver advanced and innovative solutions focused on optimizing your production efficiency, ensuring Good Manufacturing Practice (GMP) compliance whilst maintaining consistent product quality. Our wide array of solutions extend

from offline testing and online quality control to on-site analysis to help you fulfil the most stringent quality standards and industry requirements.

Equipped with unrivalled industrial experience

and expertise, we know how to optimize your manufacturing processes and maximize your return of investment by reducing operating cost, improving productivity and minimizing production downtime via risk mitigation and preventive analysis.

Hielscher UIP 4000 Ultrasonic Laboratory Device

- The only handheld ultrasonic processor
- Flow cell reactors for larger volume processing
- Sound protection boxes for noise reduction

Applications:

Pharma and cosmetics

Molecule/compound milling, grinding, and

dispersion for pharmaceutical and cosmetics development.

Biotech

Cell extraction, dispersion, intracellular deagglomeration.



Astoria-Pacific Astoria 2 Analyzer

- An analyzer which has pump, cartridge base and detector modules combined into a single unit that creates an affordable solution to cost conscious laboratory to run discrete analysis
- The A2 uses micro-segmented flow analysis which has fast analysis rates which uses low reagent and able to

perform low level detections, promoting low cost solutions and save reagent costs

Applications:

Pharma and biotech

Monitoring fermentation and manufacturing processes, quality control of raw materials to finished product.



Claind Brezza HyGen Hydrogen Gas Generator

- Comprising of hydrogen, nitrogen, zero air generators, as well as gas purifiers
- Flexible structures with independent modules to minimize footprint, allow for greater flexibility in placement
- Variety of applications including but not limited to gas chromatography, LC-MS, TOC, ICP, ELSD, thermal analysis and sample preparation

- Pressure Swing Adsorption for delivery of high purity nitrogen from compressed air in minimal time

Applications:

Pharma, biotech and cosmetics

In GC as a fuel for the flame detectors FID, NPD, FPD, LCMS and TOC.



Rigol L-3000 Series High Performance Liquid Chromatography

- The high pressure pump of Rigol L-3000 could reach 9000 psi (62Mpa) working pressure with the flow rate up to 10 ml/min and this high performance extend the application field from normal HPLC to Fast HPLC
- As low as 5×10^{-9} g/mL detection limit, creating higher sensitivity with $\pm 0.6 \times 10^{-5}$ AU noise floor

- User-friendly HPLC workstation, complies with the FDA 21 CFR Part 11, GLP, GMP regulations and this results easy penetration to pharma industry

Applications:

Pharma, biotech and cosmetics

Separation, identification, and quantification of components in a biological, pharmaceutical, and cosmetics mixture.



Schmidt + Haensch VariPol C Digital Polarimeter

- High-performance basic polarimeter that specially designed for pharmaceutical with built in high quality peltier system for automatic temperature control
- High quality basic polarimeter integrated with automatic wavelength control (AWCT) for easy calibration, equipped with durable LEDs that permits every saving

Applications:

Pharma, biotech and cosmetics

Determination of concentration, purity analysis, quality control of a biological chemical material.



Schmidt + Haensch Refractometer ATR-B-TOUCH

- Highest measuring accuracy with continuous measuring mode with reproducible results of all times
- Easy to clean and easy to handle sample chamber
- Fast and reliable control of sample
- Temperature by built in peltier thermostat, protects the sample as well as the unit itself

Applications:

Pharma, biotech and cosmetics

Determination of concentration, purity analysis, quality control of a biological chemical material.



Biochrom 30+ Amino Acid Analyzer Oxidized Hydrolysate Instrument

The Biochrom 32+ Amino Acid Analyzer is dedicated to the analysis of oxidized protein hydrolysate.

- Dedicated amino acid analyzer used by pharmaceutical and industrial labs
- Protein and peptide analysis for pharmaceutical applications that provide highly reproducible and accurate results in less than 10 minutes (e.g. Lysine and

Taurine content) for rapid sample throughput

Applications:

Pharma and biotech

Detection and monitoring of in-born errors of metabolism, PKU testing, clinical analysis, proteomics, drug synthesis, infusion fluids, protein hydrolysate, and quality control.



GBC SavantAA Zeeman Enduro Atomic Absorption Spectrometer

- Unique Variable Magnetic Field Strength between 0.6 and 1.1 Tesla in 0.1 Tesla increments for maximum precision and sensitivity to achieves optimal background correction and sensitivity
- Eight-lamp auto turret with auto lamp align for rapid element selection and accurate lamp optimization
- Automatic wavelength and choice of 20 slit widths between 0.1 and 2.0 nm in 0.1 nm increments in both normal and reduced height for ease of operation
- New 10 Volt Super Lamp capability, fitted standard for one lamp ensures highest sensitivity with low power consumption and low heat output



Applications:

Pharma, biotech and cosmetics

Impurity tests for trace metals as well as for assay of various commonly occurring elements.

GBC Quantima ICP-OES Spectrometer

- Patented PIP (Plasma Integrity Protection) significantly reduces parasitic plasma or "donuts" from melting the torch
- At 11 l/min for a typical aqueous sample, It has the lowest Argon consumption of any ICP-OES currently available which makes it cost effective
- The Quantima is able to analyse slurry and high dissolve solids without dilutions or digestion to enhance productivity where organic samples can be directly aspirated without oxygen accessories



Applications:

Pharma, biotech and cosmetics

Impurity tests for trace metals as well as for assay of various commonly occurring elements.

HF Scientific Chlorine Pocket Photometer

- With the addition of the Patented DPD Powder Pop Dispenser, the chlorine pocket photometer is packaged in a rugged, self-contained package that has everything needed for measuring free or total chlorine
- Meets EPA Standard Method 4500-Cl G.DPD colorimetric method for measuring residual chlorine

Applications:

Pharma, biotech and cosmetics

Water treatment and water quality testing.



HF Scientific DRT-15CE Portable Turbidimeter

- With resolution of 0.01 NTU and an extended range to 1,000 NTU, the DRT-15CE is a perfect fit for both field and laboratory use
- Comes ProCal Calibration Standards for quick and easy calibration across all ranges without the need to mix formazin

Applications:

Pharma, biotech and cosmetics

Water treatment and water quality testing.



Fungilab Viscolead Viscometer

- User friendly viscometer with auto test feature that checks its internal function to ensure the unit ready to use at all times
- Complete with AISI 316 stainless spindles that can be easily identified by number and letter when spindles are needed to be changed according to range of viscosity

Applications:

Pharma, biotech and cosmetics

Viscosity studies.



Water systems and solutions

Our water solutions and technology focuses on engineering design, project management and execution of construction projects for water and wastewater applications.

We provide the pharmaceutical, biotechnology and cosmetics industries with the most comprehensive water systems that meet these standards through compliance with:

- USP and Ph. European standards
- cGMP requirements
- GAMP validation control systems
- FDA requirements
- ISPE Engineering Guide
- CE marking
- IPPC environmental requirements

Your purified water is much more than a waste product – it is also a recyclable resource. Water scarcity and conservation of water

resources influence your production and effluent treatment costs. We use the latest technologies available to improve manufacturing efficiency and reduce costs, without compromising on process security and product quality. All aspects of our product development, project management and service offerings are high quality. We also ensure that our dedicated team of experts are up to speed market needs.



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