Enterprise Ireland
Technology Gateway Network

Equipment List

ENTERPRISE IRELAND
where innovation means business

TECHNOLOGY GATEWAYS
delivering solutions for industry
an **Enterprise Ireland** network

Contents

Enterprise Ireland Technology Gateways works in partnership with Institutes of Technology and Technological Universities across Ireland. Our specialised Gateways and sectoral clusters deliver innovation expertise and solutions for Irish industry.

The Technology Gateway Network focus on key technology areas, aligned to industry needs in areas such as mobile, polymers, photonics, coatings, industrial design, mechatronics, biotechnology, pharmaceuticals, wireless technologies and precision engineering. Each centre works in conjunction with industry to aid the research and development of innovative products and services through a dedicated team of full-time researchers and engineers.

This booklet details equipment currently available within the Technology Gateway Network.

Please note equipment listed is subject to change.

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Equipment type and description of use	Sector applicable
Scanning Electron Microscope System with EDX Detector	
• SEM can be utilised to take highly detailed images of areas of interest on a sample (e.g. – fracture surfaces, contamination, etc). • The EDX detector can be utilised to determine the elemental profile of the area under investigation (e.g. – elements present in material to defined steel type)	All Sectors
Mechanical and physical properties suite	
• ISO testing on standard specimens or custom made samples • Tensile testing to measure material strength and elongation (flexibility). • Compression testing • 3-point bend flexural testing to measure flexural strength and modulus (stiffness). • Weld strength, tear strength and bond strength. • Friction testing of materials	All Sectors
Parallel plate rheometry	
• Determination of the storage (elastic) modulus, loss modulus, viscosity and shear strength of swollen or molten polymers	All Sectors
3D Systems Viper Stereolithography (SLA)	
• Rapid Prototyping of concept/prototype parts	All Sectors
Prototyping suite	
• Mark forged composite printer • Numerous FDM printers • Formlabs 2 (x2) • Prusa MK2 • Sinterit Lisa	All Sectors
Accelerated Ageing & Weathering of Polymer Products by Humidity Chamber & QUV	
• Accelerated Weathering assessment of Products according to ISO 4892, ASTM D 4329, ASTM D 4587, ASTM G 154. • Pre- and Post-Accelerated Weathering assessment of Product in conjunction with Visual Assessment and Supporting Chemical and Mechanical Testing.	All Sectors
Polymer and Product Visual Assessment Suite	
• Visual Assessment of Polymer and Product Surfaces by Colourimetry, Gloss and Haze/Transmission changes. • Pre- and Post-Weathering assessment of Product by Colourimetry, Gloss and Haze/Transmission changes. • Pre- and Post-Accelerated Aging assessment of Product by Colourimetry, Gloss and Haze/Transmission changes.	All Sectors
Arburg Freeformer	
• Novel 3D printer which is capable of printing medical approved polymer granulate from a range of different properties due to its multiple printing heads.	Pharmaceutical Medical Aerospace

Equipment type and description of use

Equipment type and description of use	Sector applicable
Wittman BattenFeld Micro 15 Micro Injection moulding machine	
• This machine has the ability to mould micro plastic components all within its self contained clean room chamber. A part of its offering is a optical vision system which is used for quality tracing perposed and dimentional requirements. This is the only machine of its kind available to the medical sector with Ireland and the UK.	Pharmacutical Medical Aerospace
High Temp. Gel Permeation Chrotography NEW FOR 2020	
• Molecular weight determination of polymers / Comparative Analysis of loss of molecular weight of polymers through degradation	All Polymer Sectors
High Temp. Extruder	
• Compund and extrude high temperature, hig performance polymers such as PEEK.	All Polymer Sectors
3D Scanning System	
• Process of analyzing a real-world object to collect accurate data on its shape/ dimensions. The collected data can then be used to construct digital 3D models.	All Sectors
Packaging barrier testing equipment	
• Measure oxygen permeation, water vapour permeation and a respirometer to measure packaging degradation	Packaging
Large Bed FDM printer	
• Prototyping/printing of larger concept/prototype parts	All Sectors
Conventional polymer processing equipment	
• Extrusion - Twin screw compounding using, Leistritz 27mm & Prism 16mm bespoke pharma extruder, Betol Single Screw Extruder, Boston Matthews Single Screw Extruder 40mm, Labtech 250ml Blow Moulding, 3D Filament extruder, Lab scale blown film, Melt Spinning Fibre line. • Injection moulding - IntElect2 Sumitomo Demag (cleanroom spec), 130 Ton Fanuc, 130 Ton Sumitomo Demag, 60 Ton Arburg (x2), 35 Ton Arburg, 6 Ton Babyplast.	All Manufacturing and construction sectors
Scanning Thermal Microscope with Nano Thermal Analysis (nanoTA)	
Nano thermal analysis (nanoTA), is as a module that integrates with AFM. Provides insights into: • Tg and Tm transition measurements on thin films and nanoscale domains within polymer blends • Spatial variation of polymer cross-linking; Cure rates/defects in coatings • Composite materials • Transition temperature microscopy to quantify and map thermal transitions (TTM) • Scanning thermal microscopy (SThM) for device failure analysis and other applications	All Manufacturing and construction sectors
Planetary roller extrusion	
• A planetary roller extruder is a highly novel compounder extruder, is able to masticate, mix, homogenize, disperse and de-gas highly viscous substrates. Moreover it can serve as a continuous reactor for chemical conversions	All Manufacturing and construction sectors

Equipment type and description of use

Equipment type and description of use	Sector applicable
HySpex - Visible Hyperspectral Imaging Camera • Machine Vision • Remote sensing • Chemical imaging • Chemometrics	Pharmaceutical Manufacturing
Spero - QT - IR chemical imaging microscope • Rapid micrometer scale chemical structure elucidation • Identification of unknown contaminants-aqueous or particulate • Chemometrics	Large and small scale food proccessing industries
Witec Alpha R Microscope - Raman confocal microscope NEW FOR 2020 • Non-destructive sample analysis-identification of unknown contaminants • Micrometer scale surface topography measurement • Analysis of aqueous solution based formulations • Micrometer scale chemical imaging • Micrometer scale depth profiling • Chemometrics	Engineering Medical device fabrication
Horiba Xplora - Raman confocal microscope • Non-destructive sample analysis-identification of unknown contaminants • Micrometer scale surface topography measurement • Analysis of aqueous solution based formulations • Micrometer scale chemical imaging • Micrometer scale depth profiling • Chemometrics	Water treatment Industrial cleaning
HySpex - SWIR Hyperspectral Imaging Camera • Machine Vision • Remote sensing • Chemical imaging • Chemometrics	Engineering Coating analysis
Hitachi S 3700 N - SEM • Elemental contrast imaging-useful for contaminant analysis • Sub micrometer scale imaging • Micrometer scale depth profiling • Micrometer scale surface topography measurement	Optical source/ lighting design Optical Engineering
Oxford Instruments X Max - EDX • Elemental map, line and point analysis • Quantitative analysis of metal alloy composition	Laser engineering
Shimadzu UV1800 - UV Vis Spectrometer • Colorimetry	Life sciences
Perkin Elmer - Fluorescence Spectrometer • Flourescence Analysis	In-vitro diagnostics

Equipment type and description of use

Equipment type and description of use	Sector applicable
Thermo Scientific iN10 - FTIR microscope with MicroTip ATR • Surface chemical analysis (ATR-MIR) • Chemical imaging • Chemometrics	Pharmaceutical Manufacturing
Beam characterisation suite • Beam characterization (shape, temporal satability, M^2) • Optical source characterization (output power, LIV, wavelength)	Large and small scale food proccessing industries Engineering
Steady-state fluorescence microscope • Steady-state fluorescence imaging • Fluorescence detection • Fluorescence colour based sensing	Medical device fabrication Water treatment
NKT high power supercontinuum laser source • Imaging • Illumination for characterisation (absorption/emission)	Industrial cleaning Engineering
Andor high resolution vis-SWIR spectrometer • High resolution absorption spectroscopy • High resolution fluorescence/phosphorescence spectroscopy • Solid/liquid/gas sensing • Imaging	Coating analysis Optical source/ lighting design Optical Engineering Laser engineering Life sciences In-vitro diagnostics

Equipment type and description of use

	Sector applicable
Dell r300 X 6	
• Cloud - Research and Industry	Software
Dell Optiplex 755 PC	
• Cloud - Research and Industry	Software
Dell r710	
• Cloud - Research and Industry	Software
Dell Poweredge 2950	
• Cloud - Research and Industry	Software
Dell Poweredge R730	
• Cloud - Research and Industry	Software
HP DL380 G5	
• Cloud - Research	Software
HP DL580 G5	
• Cloud - Research	Software
Dell r710	
• Cloud - Research	Software
Dell Optiplex 745 PC	
• General Research	Software
SuperMiro (GPU)	
• General Research	Software
Supermicro	
• General Research	Software
HP DL380 G7	
• General Research	Software
Dell R200	
• General Research	Software
Suprimicro (GPU-4V100)	
• General Research	Software

Equipment type and description of use

Equipment type and description of use	Sector applicable
Differential Scanning Calorimeter (DSC)	
• Thermal stability of materials	Pharmaceutical Materials
Thermogravimmetric Analysis	
• Thermal stability and weight loss of materials	Pharmaceutical Materials Engineering
Scanning Electron Microscopy (SEM)/EDX	
• (High) Vacuum imaging and elemental analysis	Pharmaceutical Materials Engineering
Scanning Electron Microscopy (SEM)	
• (Variable) Vacuum Imaging	Pharmaceutical Materials Engineering
Infrared Spectroscopy (FTIR)	
• Chemical fingerprinting of several materials	Pharmaceutical Materials Engineering
Raman Spectroscopy	
• Chemical fingerprinting of several materials	Pharmaceutical Materials Engineering
Nuclear Magnetic Resonance Spectroscopy (NMR)	
• Chemical fingerprinting of organic materials	Pharmaceutical
Corrosion Suite (Salt Spray/Humidity/UV)	
• Corrosion testing for grant approval	Engineering
BET Surface Area	
• Material porosity	Pharmaceutical Materials
Electrochemical Analysis (Solartron)	
• Corrosion testing	Pharmaceutical Materials
Taber Abraser	
• Abrasion resistance of a surface	Engineering
Atomic Force Microscopy (AFM)	
• Surface profilometry	Pharmaceutical Materials

Equipment type and description of use

	Sector applicable
Plasmatreat Openair	
• Surface cleaning and thin film deposition	Materials Engineering
Pull Off Adhesion Tester	
• Coating adhesion strength	Engineering
Anodising/Electropolishing Pilot Line	
• Materials processing	Engineering
Zwick UTM (tensile tester)	
• Tensile strength, Coefficient of Friction	Materials Engineering
Handheld XRF	
• Elemental identification	Pharmaceutical Materials Engineering
X Ray Diffraction	
• Powder crystallinity and material composition	Pharmaceutical Materials
Refractive Index (Metricon)	
• RI Measurement on thin films	Materials
Nanovea Nanoscratch	
• Nanoscratch testing/Profilometry	Materials Engineering
Corrosion Chamber (Kesternich)	
• SO2 resistance	Materials Engineering

Equipment type and description of use

	Sector applicable
3D Systems Projet MJP 5600 3D Printer	
• Large format high resolution multimaterial prints	Design Engineering
3D Systems Viper 3D Printer	
• SLA high res 3D printer (Using Taurus material)	Design Engineering
Mark Forged X7	
• High Resolution continuous fibre carbon fibre printer	Design Engineering
Microsoft Surface HUB 2S	
• 50” 4K Interactive Whiteboard for industry collaboration activities	Design
ATOS I Rev2 3D scanning system	
• 3D Scanning / Digital Optical Measuring	Design
mK Technology Vacuum Casting system	
• Rapid prototyping / Rapid Tooliing activities	Design Engineering
50 kN static load test rig	
• Tensile, compression, 3-/4- point bending	Engineering
3D Infinite Focus microscope	
• High-resolution 2D and 3D images of failure surfaces, or colloids	Engineering
100 kN static/dynamic test rig	
• High/low cycle fatigue testing within a temperature range of -80 °C to +250 °C	Engineering
Inverted microscope with dark field	
• Illuminates unstained samples causing them to appear brightly lit against a dark background	Engineering
Novastar Rapid Electronics Pilot Suite	
• Electronics Prototyping (Stencil, Pick and Place etc)	Engineering
Ingrid West E300W Winder	
• Coil Winder for Electromagnetic Circuits	Engineering
5 Axis CNC: HURCO VM30i.	
• 40 tool CNC vertical milling machine	Engineering

Equipment type and description of use	Sector applicable
MDX-40A Compact milling machine	
• Desktop prototyping	Engineering
Alvatek Potentostat	
• Measurement of corrosion/ tribocorrosion processes and ion- exchange process	Engineering
NI Data Acquisition Suite	
• Development suite of tool for sensors and instrumentation calibration, processing. Includes machine vision software capabilities.	Engineering
NI Vision Acquisition	
• 3D Scanning / Digital Optical Measuring	Engineering
E4990A Impedance Analyzer	
• Characterising and evaluating electronic components, semiconductor devices and materials.	Engineering
Chauvin Arnoux C.A 6555	
• A high-end instrument for the measurement of very high electrical insu- lation and resistance values	Engineering
PCR, DGGE/TGGE, quantitative PCR, bioinformatics workstations	
• Full suite of molecular biology equipment	Engineering
GC-MS, LC-MS, GC-FID, ion chromatograph, HPLC, lab scale anaerobic digestor, HACH water analysis spectrophometer	
• Full suite of chemical analysis instrumentation	Science Environmental
QPik robotic system	
• High through-put colony picking	Science Environmental
Multiple Biosciecnce Lab access	
• 4oC Research Lab, Plant Growth Lab, -20oC Lab	Science Environmental

Equipment type and description of use

Equipment type and description of use	Sector applicable
Electrochemical Analysier (potentiostat/galvanostat)	
• Metrohm Autolab Electrochemical Analyser	Electrochemical Analysis
Portable High-spec Data Processing Rig	
• High Power Data Processing Server ~16 TFLOPs • Flightcased for on-site usage/	Data Analytics AI
Industrial Wireless Communication Testbed - for sensor connectivity	
• Wireless Sensor Network - 4G/3G/GPRS/GSM/Narrowband IoT/ Bluetooth/BLE/ LoRa/Sigfox/ZigBee/	Industrial IoT Industry 4.0
Industrial Sensing Suite	
• Retro-fittable Sensing - Vibration, Temperature, Noise, Power, Rotation, Displacement, Actuation	Industrial IoT Machine Monitoring
Programmable DC Power Supply	
• PC Controlable & Programmable DC Power Supplies - 0V - 30VDC	Electronics
Programmable Arbitrary Function Generator	
• Keithley - 50MHz Arbitrary Waveform/Function Generator	Electronics
High Precision Electronic Meter	
• 6.5 Digit Agilent 34461A - Electrical Test	Electronics
Mobile Robotics Testbed	
• 6.5 Digit Agilent 34461A - Electrical Test	Automation Manufacturing

Equipment type and description of use

Equipment type and description of use	Sector applicable
Digital Fluoroscope (Philips Azurion) NEW FOR 2021 **Medical Imaging** Used to: - create a simulated use environment for device/prototype evaluation, design verification and/or design validation. - test/evaluate the radiopacity of devices/device components. **Key capabilities:** 3D Rotational Angiography XpertCT to generate CT-like images, 2D Quantitative Vascular Analysis, SmartPerfusion to assess perfusion post-intervention, HeartNavigator to support structural heart interventions, and, real-time segmentation.	MedTech Medical Devices
Ultrasound (GE LOGIQ e, Siemens Acuson) **Medical Imaging** • create a simulated use environment for device/prototype evaluation, design verification and/or design validation. • test the echogenicity of devices/device components. • analyze flow profiles and conditions	MedTech Medical Devices
Pulsatile Replicator (BDC pulsatile pump, Transonic flow meter and sensors, pressure gauges) **Physiological Replication.** Replication of the physiological parameters of blood flow (i.e. Systolic and Diastolic (Pulse) pressures, cardiac output, heart rate, flow rate) Used to: • create a simulated use environment for device/prototype evaluation, design verification and/or design validation. • simulate vascular flow conditions.	MedTech Medical Devices
Scanning Electron Microscope (SEM) with Energy-Dispersive X-ray Spectroscopy (EDX) **Surface Analysis.** • High resolution images of surface topography. • Elemental Analysis or chemical characterisation of a sample.	MedTech Medical Devices LifeSciences Pharmaceutical Engineering Manufacturing
Tensile Testers (Zwick (Horizontal) and Instron (Vertical) **Material Characterisation** • Mechanical characterisation of materials. • Device deployment/actuation. • Device/Prototype Evaluation. • Design Verification, Design Validation	MedTech Medical Devices LifeSciences Pharmaceutical Engineering Manufacturing
Viscometer (Brookfield, DV-II+ Pro) **Material Characterisation** • determine the viscosity of liquid materials. • characterise the effects of temperature and shear rate on the viscosity of liquid materials.	MedTech Medical Devices LifeSciences Food Pharmaceutical Engineering Manufacturing

Equipment type and description of use	Sector applicable
High Speed Camera (Photron Fastcam Mini UX 50)	
High-speed imaging Used for: • Observation and recording of product deployment/actuation. • Device/Prototype Evaluation. • Design Verification, Design Validation.	MedTech Medical Devices LifeSciences Food Pharmaceutical Engineering
3D Printing (FDM (Ulitmaker, Prusa), SLA (Formlabs)	
Rapid Prototyping Used for: • Fabrication of prototypes. • Device/Product Prototype Evaluation.	All Sectors
ECAL technologies	
Metabolic testing. • Used to measure how food effect human metabolic rates.	Food Sports Performance
Lactate PRO2	
• Lactase Testing	Food Sports Performance
Range of Food Metabolic Technologies:	
• Glycaemic Index testing (GI), Cholesterol and Triglyceride measurements and Blood Glucose responses to food.	Food Sports Performance
Cortex Metalyzer	
• Used for Cardiopulmonary Exercise Testing (CPET), most comonly named a VO2max test. • Used to test maximum rate of oxygen consumption on treadmills, bicycles, and rowing machines.	Sports Performance
3D Forceplates	
• X-Y-Z force platform measurement for athlete and patient analysis. • Most commonly used for testing jump performance as well as Iometric Mid-Thigh Pull testing.	Sports Performance
Minnesota Dexterity and Batak Pro	
• Reaction and visual acuity tests	Sports Performance
Ultrasound (Siemens Acuson)	
Medical Imaging • create a simulated use environment for device/prototype evaluation, design verification and/or design validation. • test the echogenicity of devices/device components. • analyze flow profiles and conditions	MedTech Medical Devices

Equipment type and description of use	Sector applicable
GC, GC-MS, HS/SPME, SPE, LCMS/PDA uPHLC, capillary	
• Substance/material characterisation	All Sectors
SEM, AFM, Ellipsometry, Langmuire Blodgett, Contact Angle, Drop Shape Aalyser, STM, Confocal microscopy	
• Substance/material characterisation	All Sectors
NMR, FT-NIR, Raman and UV/Vis, Fluorescence spectroscopy, Q-TOF LC-MS, Thermogravimetry analysis, differential scanning calorimetry	
• Substance/material characterisation	All Sectors
Malvern Laser 2000 Rheometry	
Flame and Graphite Furnace Atomic Absorption Spectrometry	
Prototype and Fabrication Lab for electrochemical and microfluidic systems	
• Sensor development	
Class II Biosafety Laboratory	
• Microbiology	All Sectors

Equipment type and description of use

Multiple 3D printers	Sector applicable
	Industry 4.0 Medtech AgriTech Water Energy
Environmental Testing Chambers	
• Chambers are used to heat / cool hardware to test resilinece	Hardware development testing All sectors
AR/VR Lab NEW FOR 2020	
• Development of AR/VR technology	All Sectors
Energy Test Bed	
• Extensive suite of energy generation, usage simulation, CHP and storage of micro-renewables.	Energy Industry 4.0
LoRa Test Bed and The Things Network	
• The Things Network (TTN) is a “platform” that participates supporting IoT (Internet of Things) topic. In this case, LoRa is the technology chosen and LoRaWAN is the protocol that makes the “magic” happen.	All sectors where IoT equipment needs a communication network - previously used in Energy, Water, Industry 4.0
High Performance Computing Infrastructure (HPCI)	
• The HPCI will enable us to expand our innovation capacity to meet current and forecast client demands for applications such as high	All sectors where data analytics or AI is being used.

Equipment type and description of use

	Sector applicable
5 Axis Milling Machine	
• The Mori Seiki NMV1500 DCG HSC offers both high-speed and high-precision machining. This machine is the best suited for complex shapes that require high-speed machining and take time to be machined. The high-speed, high-output spindle 60,000 min-1, 14.9 kW provided as standard allows the machine to perform a wide range of machining from high-speed machining to heavy-duty cutting.	Precision Machining
3 Axis Milling Machine	
• Haas VFOE 20 Vector Dual Drive 3-Axis vertical milling machine is used for 2D and 3D Milling operations such as milling slots, cutting profiles, drilling and tapping holes.	Precision Machining
600kN Tensile tester NEW FOR 2020	
• The high capacity universal tensile testing machine will be capable of performing tensile and compression testing, as well as shear, flexure, peel, tear, cyclic and bend tests.	Materials Testing
Gas Displacement Pycnometer	
• This instrument will be used to determine the true volume and true density of solids and powders.	Materials Testing
Universal Hardness Testing System	
• An automatic desktop Universal Hardness Testing Machine capable of performing a wide range of test forces (up to 250kgf) on different hardness scales including Vickers, Rockwell, Brinell and Knoop.	Materials Testing
Micro Hardness Tester	
• This Instrument will be used to execute Micro Vickers & Knoop Hardness for values within the load range from 10gf to 2kgf. Availability of this equipment would expand our capacity to determine a material's hardness or resistance to penetration when test samples are exceedingly small or thin, or when small regions in a composite sample or plating need to be measured.	Materials Testing
Low force benchtop tensile tester	
• This Instrument will be used to execute low-force Tensile Testing on small components and assemblies, for example, testing of small medical devices which would be very useful given all the medical device manufacturers in the region.	Materials Testing
3D Printer	
• The ProJet 3500 series of plastic 3D printers are ideal for creating durable, high-definition functional prototypes, rapid tooling such as injection molds and casting patterns, and end-use parts right in your office. This versatile range of printers is easy to use, with fast print times and easy post-processing. Parts made on ProJet 3500s are precise, with sharp edges and true-to-CAD reliability.	Additive Manufacturing

Equipment type and description of use

	Sector applicable
Polymer Laser Welder	
• The LPKF InlineWeld Series are turn-key, drop-in polymer welding machine which can be ultilsed in a wide variety of business sectors, such as, automotive, medical device and consumer products.	Precision Machining
Hexagon Tactile CMM	
• Global Classic 575 CMM is an affordable all-purpose CMM for the dimensional inspection of a variety of components. It can be equipped with touch-trigger probes or optional scanning probes. GLOBAL Classic CMMs are used in a number of industries for first and final part inspection, fixture qualification etc.	Metrology
Scanning Electron Microscope (SEM)	
• Scanning Electron Microscopy (SEM) is an imaging technique used to visualize components at very high magnifications. The system works by bombarding the specimen with a beam of electrons. This beam excites the electrons within the specimen, resulting in an emission of secondary electrons. Also, the electron beam may be backscattered by the sample and re-emerge on to the sample surface. These secondary and backscattered electrons are then collected and displayed as an image of the sample surface.	Materials Characterisation
Instron 8874 Bi-axial Servo hydraulic testing system	
• The 8874 is a bi-axial tabletop servohydraulic testing system providing a combined axial and torsion dynamic actuator in the upper crosshead. With a precision aligned twin-column frame and a lower t-slot table, the 8874 meets the challenging demands of a varied range of both static and dynamic testing requirements.	Materials Testing
Hounsfield universal testing machine	
• The mid range capacity universal tensile testing machine will be capable of performing tensile and compression testing, as well as shear, flexure, peel, tear, cyclic and bend tests.	Materials Testing
CNC 500 Smartcope	
• The OGP SmartScope CNC 500 utilises optics mounted on a bridge-type support structure for the ultimate in measurement stability, this dimensional metrology system is designed to support a variety of multisensor options including touch probes, Feather Probe, laser sensors, and Rainbow Probe scanning white light sensor and provide enhanced measurement capability and range in a small space.	Metrology
A CNC Lathe/Turning centre	
• A CNC turning Centre which offers multifunction capabilities and multi-axis capabilities. This machine incorporates a Y-Axis capable of milling and off-centre milling and driven tools on a multi-tool turret system to perform drilling, milling and tapping operations. It also contains sub-spindle capabilities for finishing operations to allow for one hit turning jobs.	

Equipment type and description of use

	Sector applicable
Differential Scanning Calorimeter (mDSC)	
• Material Characterisation	Pharma, Med Tech Food, Engineering
X-ray Diffraction (XRD)	
• Material Characterisation	Pharma, Med Tech Food, Engineering
Nuclear magnetic resonance, incl. solid state NMR	
• Analytical science, materials characterisation	Pharma, Med Tech Food, Engineering
Formulation suite (tabletting, spray drying, granulation, blending, coating)	
• Formulation	Pharma Food
Chromatography suite (LC/MS, GC/MS, SFC, IC, SEC, FPLC, CE)	
• Analytical science	Pharma, Med Tech, Food, Engineering
Aerosol jet printer, nanolithography	
• Materials deposition, sensor fabrication	Sensors, Med Tech Pharma
Microscopy (AFM, SEM-EDS, fluorescence)	
• Material Characterisation	Pharma, Med Tech, Food, Engineering
Real time PCR	
• Molecular biology	Biotechnology, Biopharma
Inductively coupled plasma - optical emission/mass spectroscopy (ICP-OES, MS)	
• Metal analysis and quantitation	Pharma, Med Tech Food, Engineering
Rheometry (liquid and powder)	
• Measuring flow properties	Pharma, Med Tech, Food, Engineering

Equipment type and description of use

	Sector applicable
GE VTOMEX L 300	
• Non destructive investigations, Nominal comparisons with original CAD, Metrology and Failure Analysis. Visibility of internal features without	Medical Device, Pharma Electronics, Food, All Industrial Technology sectors
GE Nanotom	
• Non destructive investigations, Nominal comparisons with original CAD, Metrology and Failure Analysis. Visibility of internal features without	Medical Device, Pharma Electronics, Food, All Industrial Technology sectors
Full suite of CT data analysis software including Avizo and Volume graphics	
• Failure analysis, Surface inspection, material identification, contaminant analysis	Medical Device, Pharma Electronics, Food, All Industrial Technology sectors
Hitachi SEM TM3030Plus with EDX analysis	
• Failure analysis, Surface inspection, material identification, contaminant analysis	Medical Device, Pharma Electronics, Food, All Industrial Technology sectors
Bruker Contour GT	
• Surface roughness, coating depth measurements	Medical Device, Pharma, Electronics, All Industrial Technology sectors
Alicona Infini Focus SL Surface analyser	
• An Optical 3D measurement system for easy, fast and traceable measurement of form and finish on micro structured surfaces. A tool to allow for inspection of 3D printed components.	Medical device, Precision Engineering and all industrial technology sectors
Attenuated Total Reflectance Spectroscopy (ATR,FTIR)	
• Material identification and contaminant analysis	Medical device, Pharma, All industrial technology sectors
Electropuls Mechanical testing system	
• Tensile, compression, torsion, durability, fatigue, dynamic mechanical analysis, fracture mechanics, etc.	Medical device, Precision Engineering, Ortho-paedics, All industrial technology sectors
Instron 8801 (100KN)	
• Tensile testing of metallic samples and room temperature and also at elevated temperatuers.	All Industrial Technology sectors

Equipment type and description of use

Equipment type and description of use	Sector applicable
Instron Ceast 9050 Impact test Charpy (5.4 J) Izod (5.5 J)	
• Impact strength measurement of polymers	Materials testing
Difference scanning Calorimetry TA DSC250	
• Phase transition characteristics including glass transition temperature, crystallinity determiniation, curing analysis, etc	Medical devices and all Industrial technology sectors dealing with polymeric materials
Thermal Gravimetric Analyser TA TGA 55	
• Degradaion characteristics of material	Medical devices all Industrial technology sectors dealing with polymeric materials
Rockwell, Vickers and Shore Hardness testers	
• Evaluating hardness characteristics	Medical device, Precision Engineering and all industrial technology sectors
Keyence VHXJ106 Optical microscope 100-1,000x Mag.	
• Optical inspection and imaging of components, surfaces and defects. 3D image stacking.	All Industrial Technology sectors
EOS M280 Metal 3D printer	
• Building prototypes and short run batches of complex metallic parts in a wide range of metals.	Medical Device and all industrial technology sectors
EOS100 3D Metal 3D Printer	
• 3D metal printer suitable for small components in expensive alloys suchs A gold, platinium and Magnesium	Medical Device and all industrial technology sectors
Rehenishaw AM400 Metal printer	
• Metal 3D printer with a wide range of materials available for all applications specialising in Aluminium. Includes R&D capacity for alterative powder development projects.	Medical Device and all industrial technology sectors
NeoTech AMT PJ15X	
• 5 axis printing machine capable of printing along 3D contours using conductive inks to produce complex circuitry	Medical device and electronics industry

Equipment type and description of use

	Sector applicable
LC-MS (Liquid chromatography–mass spectrometry)	
• Chemical detection/identification • Toxicology screening • Detection of residual chemical compounds • Confirmatory identification of small organic compounds	Pharmaceutical, Food, Cosmetic, Environmental, Marine
GC-MS (Gas chromatography–mass spectrometry)	
• Chemical detection/identification • Identification of smaller and volatile molecules such as benzenes, alcohols and aromatics • Ability to separate complex mixtures, to quantify analytes and to determine trace levels of organic contamination	Pharmaceutical, Food, Cosmetic, Environmental, Biotech, Marine
HPLC (High Performance Liquid Chromatography)	
• Chemical detection • Identifying, quantifying and purifying the individual components of the mixture	Food, Cosmetic, Environmental, Biotech, Marine
HP-TLC (high-performance thin layer chromatography)	
• Pharmaceutical – Quality Control; Content Uniformity Test; Identity and purity checks; stability tests • Herbals – Identification; Stability tests; Detection of adulteration; Assay of marker compounds • Food and Feed – Quality Control; Analysis of additives e.g. vitamins; pesticides; stability tests • Cosmetics – Identity of raw material; Analysis of preservatives, colouring materials etc; screening of illegal ingredients • Biotechnology – Characterization of enzymes (product profiles); Proteomics (coupling HPTLC to Mass Spectrometry); Process development and optimization	Pharmaceutical, Food, Cosmetic, Environmental, Biotech, Marine
ICP-MS (Inductively coupled plasma mass spectrometry)	
• Heavy metal analysis in soil and water • Mineral analysis in food products • Quality control in food and pharmaceutical analysis • Biomass screening	Pharmaceutical, Food, Cosmetic, Environmental, Biotech, Marine
Real time PCR	
• Quantification of gene regulation • Expression of genes associated with bioactive compounds • Expression of genes associated with stages of cell development	Food, Cosmetic, Environmental, Biotech
Super Critical Fluid Extraction	
• Green extraction technology • Extraction of lipids for food and cosmetic applications	Food, Cosmetic, Environmental, Biotech, Marine
100L Bioreactor	
• Pilot scale fermentation • Growth of: Yeast, Fungi, Bacteria, Mammalian Cells • Downstream purification	Pharmaceutical, Food, Cosmetic, Environmental, Biotech, Marine

Equipment type and description of use

	Sector applicable
Flow Cytometer	
• Measurement of impact of treatment of cells • Cell counting and sorting • Determining cell characteristics and function • Detecting microorganisms Biomarker detection • Diagnosis of health disorders	Pharmaceutical, Food, Cosmetic, Biotech, Marine
FPLC (Fast protein liquid chromatography)	
• Purification of large biomolecules: Proteins, Peptides, Nucleotides	Food, Cosmetic, Environmental, Biotech, Marine
Cosmetic Skin Probes	
• Measurement of impact of treatment on skin • In vivo validation of cosmetic products • Measurement of different skin parameters	Cosmetic, Healthcare
Fluorescence Microscope	
• Uses fluorescence to enhance microscopic studies • Live cell imaging (cell division, cell migration, movements and transformations of organelles, calcium imaging) • Detection and determination of the proteins localization in cell and tissue • Identification of apoptosis • Cyto- and geno- toxicity study	Pharmaceutical, Food, Cosmetic, Environmental, Biotech, Marine
Calorimeter	
• Measurement of calorific value: Food, Animal Feed, Biomass, Biofuel	Pharmaceutical, Food, Cosmetic, Environmental, Biotech, Marine
Single Use Bioreactor	
• Production of biomolecules in single use bags from a range of sources: Mammalian cells, Bacteria, Yeast	Pharmaceutical, Biotech, Healthcare
Preparative Chromatography	
• Pilot scale separation of complex mixtures: Proteins, Peptides, Carbohydrates	Food, Cosmetic, Environmental, Biotech, Marine
Microalgal Food Grade Suite	
• · Pilot scale production of microalgae for food and other application	Food, Cosmetics, Healthcare
FTIR Fourier transform infrared (FTIR) spectroscopy	
• Accurate-finger print identification and study of composition and properties of various materials from metalorganics to complex biological	Pharmaceutical, Food, Cosmetic, Environmental, Marine
Spray Dryer	
• Concentrating liquid solutions to a powder • Encapsulation	Pharmaceutical, Food, Cosmetic, Environmental, Marine

Equipment type and description of use

	Sector applicable
Mixed Reality Lab NEW FOR 2020	
• Hololens, Oculus Quest and VR Treadmill	Virtual Reality Augmented Reality
Smart Agriculture IoT Testbed	
• Distributed set of environmental and soil sensors, IoT-enabling radio basestations, gateway servers enabling edge processing capabilities, backhauling solutions and server capacity hosting specific to the agricultural sector	Agricultural Technology
Radio Communications Testbed	
• 4 x SDR nodes; 0 - 6GHz frequency range. Spectrum Analyser and Vector Network Analyser; 0 - 6GHz frequency range. Satellite Ground Station.	Satellite Comms, Telecommunications, 5G

Equipment type and description of use

	Sector applicable
LeCroy 725Zi 4+16-channel 22.5GHz Mixed Signal Scope	
• Measuring Signals and volatges on a PCB as well as signal decoding	Electronics Electrical
HM8118 LCR bridge	
• Measuring inducance/resistance and capacitance values	Electronics Electrical
Dimension Elite 3D Printer	
• Makes 3D Models of design parts and enclosures	Mechanical Industrial Design
FormLabs Form 3 3D printer	
• Makes 3D Models of design parts and enclosures	Mechanical Industrial Design
LPKF S63 PROTOMAT Milling machine	
• Circuit board plotter for production of single layer PCBs	PCB Manufacture
LPKF PCB Prototyping system	
• Photo-resistive prototyping of 4 to 8 layer rigid, rigid flex and flexible PCBs	PCB Manufacture
LPKF PROTOPLACE S SYSTEM and PROTOFLOW reflow oven	
• Semi-Automatic Pick & Place system for SMT Assembling	PCB Manufacture
Rhode & Schwarz SMF100A Microwave Signal Generator(43.5 GHz)	
• Generates RF Signals and data sequences	RF
Rhode & Schwarz ZVB 8GHz Vector Network Analyzer	
• Analyses RF Signals and Matching circuitry	RF
Rohde & Schwarz FSV40 Signal Analyzer 9kHz to 40GHz	
• Analyse RF Signals and data sequences	RF
FARO 8-Axis Quantum Scan Arm – Portable 3D Measurement Arm for contact and non-contact measurements	
• Used for dimensional analysis with an accuracy of +/- 25um • Fast scanning speed with an acquisition rate of up to 1.2 million points per second	

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