

PHOTONICS + OPTOELECTRONICS RESEARCH

Product Overview

A BOND WORTH FORMING

WE ENABLE INNOVATION

For over 30 years we've been enabling you to accelerate your research and development, proudly partnering with the most innovative minds in the science and technology sectors.

We're purpose designed to support your science and technology innovation, and take your ideas from lab-based concepts to full-scale production.

With our capabilities and extensive expertise we're the partner of choice for custom manufacturing solutions and niche product sourcing through our trusted network of UK and international suppliers.

Our PI-KEM Clusters of specialist product groupings:

- Energy Research
- Hydrogen Technology
- Photonics + Optoelectronics
- Thin Films + Nanotech
- Materials Processing + Analysis
- RF Shielding
- Electroforming
- Specialist Metallic Coatings

Accelerate your journey. We are PI-KEM.

MICRO-INFO

- 30+ years supplying advanced materials and equipment
- Custom manufactured components
- Niche product sourcing
- Comprehensive range of standard stock products and consumables
- Call off purchase options
- Support from an expert scientific team
- Low minimum order quantity
- UK, European & global delivery

We offer a wide range of advanced materials and equipment which are available as standard or custom manufacture.

Within this catalogue are our most requested lines, however we welcome any enquiry for other specifications.

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Our Partners

We distribute on behalf of leading manufacturers of advanced materials & equipment



SINGLE CRYSTALS + SUBSTRATES

We offer a wide range of single crystals and substrates, which are available as standard or custom manufacture.



Below are our most requested lines, however we welcome any enquiry for other specifications including purity, dopant or custom melts.

Single Crystal	Oxides	Other forms
Aluminium (Al)	Aluminium Oxide (Sapphire) <i>Available in all orientations</i>	
Barium (Ba)	Barium Oxide	Barium Fluoride, Barium Titanate
Calcium (Ca)	Calcium Oxide	Calcium Fluoride, Calcium Neodymium Aluminate, Calcium Titanate
Chromium (Cr)	Chromium Oxide	
Copper (Cu)		
Gallium (Ga)	Gallium Oxide	Gallium Gadolinium Garnet (GGG) / SGGG
Germanium (Ge)		
Gold (Au)		
Iron (Fe)	Iron Oxide (Fe_2O_3 , Fe_3O_4)	
Lanthanum (La)		Lanthanum Aluminate
Lithium (Li)		Lithium Fluoride, Lithium Niobate (Pure or Doped), Lithium Tantalate
Magnesium (Mg)	Magnesium Oxide (Pure or Doped)	Magnesium Fluoride, $MgAl_2O_4$ (Spinel)
Neodymium (Nd)		Neodymium Gallate
Nickel (Ni)	Nickel Oxide	
Silicon (Si)	Silicon Dioxide (Quartz)	Platinised Silicon
Silver (Ag)		
Sodium (Na)		Sodium Chloride
Strontium (Sr)	Strontium Oxide	Strontium Lanthanum Aluminate, Strontium Lanthanum Gallate, Strontium Lanthanum Titanate
Tin (Sn)	Tin Oxide (SnO ₂)	
Titanium (Ti)	Titanium Dioxide (Rutile/Anatase)	
Yttria (Y_2O_3)		Yttria Zirconia (YSZ)
Yttrium (Y)		Yttrium Aluminium Garnet (YAG), Yttrium Indium Garnet (YIG)
Zinc (Zn)	Zinc Oxide	Zinc Selenide, Zinc Sulphide

WAFERS

We provide an extensive choice of wafers.

Below are our most requested lines, however we welcome any enquiry for other specifications.



Glass Wafers

The following specifications of Borofloat glass wafers are all available from stock for immediate despatch.

We also offer wafers and tiles to custom specifications, including diameter, thickness and polish.

Material	Wafer Diameter	Thickness	Polish
Borofloat BF33 Glass	2" (50.8mm)	0.5mm ± 0.025mm	Double Sided Polished
Borofloat BF33 Glass	3" (76.2mm)	0.5mm ± 0.025mm	Double Sided Polished
Borofloat BF33 Glass	4" (100mm)	0.5mm ± 0.025mm	Double Sided Polished

Silicon Carbide Wafers

The use of Silicon Carbide (SiC) in the semiconductor industry has expanded due to its advantageous physical properties, including its hardness, high thermal conductivity and low coefficient of thermal expansion.

At PI-KEM we offer a range of Silicon Carbide (SiC) wafers in a number of polytypes including both 4H and 6H SiC in a range of wafer diameters. Please contact us for further information.

Semiconductor Wafers

III-V Wafers

Name	Formula
Gallium Arsenide	GaAs
Gallium Phosphide	Gap
Indium Phosphide	InP
Indium Antimonide	InSb
Indium Arsenide	InAs

II-VI Wafers

Name	Formula
Zinc Telluride	ZnTe
Zinc Selenide	ZnSe
Cadmium Sulphide	CdS
Cadmium Telluride	CdTe
Cadmium Telluride doped with Zinc	Cd-Zn-Te

SILICON WAFERS

We offer a wide range of silicon wafers, produced to exact customer requirements or as standard wafer specifications available from stock. Below are our most requested lines, however we welcome any enquiry for other specifications.

Grades

Prime	Test	Reclaim	Mechanical
Diameter & Thickness			
Size		Standard Thickness (µm)	Tolerance (+/- µm)
1" (25.4mm)		250	15
2" (50.8mm)		275	25
3" (76.2mm)		380	25
4" (100mm)		525	20
5" (125mm)		625	20
6" (150mm)		675	20
8" (200mm)		725	25
Specialist thin wafers available: 1" down to 10 µm thick / 4" down to 90 µm thick / 6" down to 150µm thick			
Custom thicknesses available on request			

Type & Dopant

Type	Dopant
Intrinsic	-
n-type	P- Phosphorous, Sb - Antimony, As - Arsenic
p-type	B - Boron
Heavy P or B doping is also available	

Resistivity

Crystal Growth Method	From	To
Czochralski (CZ)	1 milliohm-cm	150 ohm-cm
Float Zone (FZ)	-	Up to 10,000 ohm-cm

Orientation

Orientation	Tolerance
<100>	
<110>	Standard +/- 0.5° & Custom up to +/- 0.05°
<111>	
Custom Orientations & Off Orientations (up to 40°) available on request	

Surface

As cut	Lapped	Etched	Single Side Polished	Double Side Polished
On polished surface: Roughness <2Å / Total Thickness Variation (TTV) <1µm				
Laser marking available on request				



Silicon as a Substrate

Type	Specifications
Windows	As per customer drawings
Components	As per customer drawings
Blocks	To customer specification including surface roughness & flatness

We can also supply Germanium single crystal components

Platinised Wafers

Specifications	
Diameter	4" Standard or other sizes available upon request
Layers	Thermal SiO ₂ , TiO ₂ or Ti Adhesion, Platinum E-Beam

Silicon on Insulator (SOI) Wafers

Specifications	
Size	As per customer specification
Layers	Handle, Device, Buried Oxide (BOX) - All layers as per customer specification

SERVICES

Coatings

Type	Method	Thickness (nm)	Diameter
SiO ₂ Silicon Dioxide	Wet Oxidation	200-3000	From 1" to 6"
	High Purity Dry Oxidation	20-300	From 1" to 6"
Single face oxidation also available			
Si ₃ N ₄ Silicon Nitride	LPCVD or PECVD	20-500	From 2" to 6"
Metal Coatings including: Cr, Ti, Au, Al, Pt, Mo, W, Ni, Cu, Ir, Ta	PVD Sputtering or Evaporation	20-1000	From 1" to 6" (depending on metals)
Other metal coatings & multi-layer deposition available on request			

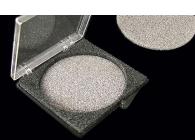
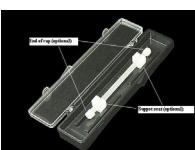
Dicing Services

Form	Specifications
Tiles	E.g. 10mm x 10mm, 20mm x 20mm (minimum size 1.5mm x 1.5mm)

SUBSTRATE + WAFER STORAGE

We supply a large selection of substrate and wafer storage.

Below are our most requested lines, however we welcome any enquiry for other specifications.

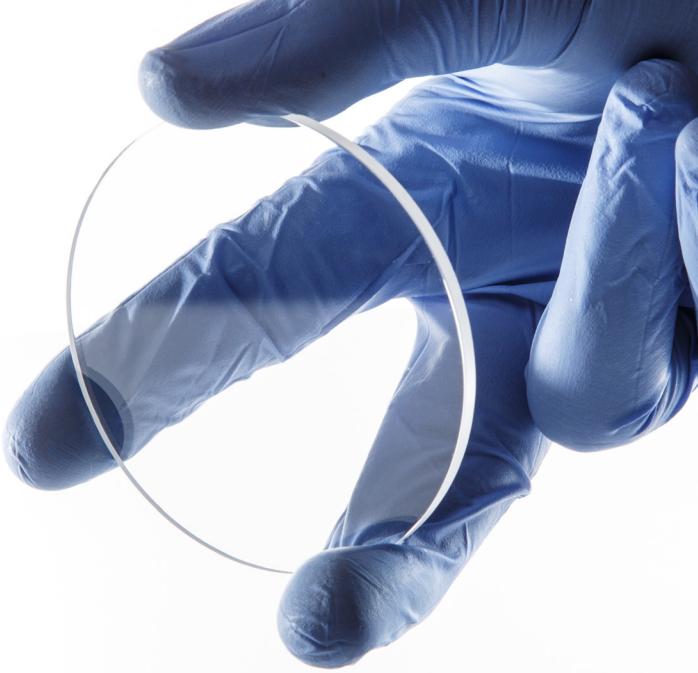
Product	Description	Sizes
	Individual Wafer Carriers Each carrier consists of base, lid and retainer spring. Base has concave profile so that only the extreme edge of the wafer is in contact with the carrier.	1", 2", 3", 4" and 6"
	Multi Wafer Storage Boxes Each box can hold up to 25 wafers. Lid and box have moulded supports so minimal contact is made with the wafer whilst keeping each wafer secure.	2", 3" and 4"
	Gel-Sticky Boxes Designed to protect delicate components by a sticky carrier gel layer. Components or devices are held securely on surface once in contact with the gel layer. The components can be taken off by tweezers or by hand.	2", 3" and 4"
	Membrane Boxes High-elastic film designed for packing fragile components with irregular shape or rods. The component is pressed tightly by two layers of high-elastic film and suspended in the middle of the carrier, preventing fragile components from damage. Can be used for various optoelectronic components.	1", 2", 3", 4" and 5"
	Plastic Foam Module Boxes This packing is designed to protect delicate parts. Used in many fields like optical materials, optoelectronic components, semiconductor, and optical communication. Consists of three cushions, the middle cushion can be customised to a specific shape.	3" and 4" single or multiple wafers
	Die / IC Trays This system provides a safe and convenient packing and delivery solution for bare die, CSP, optoelectronics and other microelectronic devices. Trays, lids and clamps for single and multiple layers available.	9 - 1600 pockets
	Smart Carrying Box for Rods Innovative packing box designed for protecting and carrying laser rods or devices of rod shape. Two silicone support seats in the base of the box hold the rods.	Diameter from 3-8mm and up to 160mm (L)



SAPPHIRE + QUARTZ

We offer a wide range of sapphire and quartz components, which are available as standard or custom manufacture.

Below are our most requested lines, however we welcome any enquiry for other specifications.



Sapphire

Sapphire Options	Specifications (if applicable)
Optical Windows	Up to 175mm Diameter
Rods	<ul style="list-style-type: none">As stock or polished partsDiameter 1mm - 150mm
Plates & Tiles	<ul style="list-style-type: none">Fine ground or polishedCircular, square or rectangular
Tubes	<ul style="list-style-type: none">ID from 1mm to 30mmLength up to 300mm

Precision Machined Sapphire Components & Assemblies

Single Crystal Substrates	<ul style="list-style-type: none">All orientations including A, C, M & R planeThickness 0.15mm - 1mm
Wafer Carriers	2" - 5" Diameter
Silicon-on-sapphire Wafers	
Sapphire Balls	

Quartz

Quartz Options	Specifications (if applicable)
Optical Windows	
Plates & Tiles	
Rods	
Tubes	
Precision Machined Quartz Components	
Laboratory Ware	Beakers, dishes etc
Single Crystal Substrates	All orientations including X, Y, Z, AT & ST

TARGETS FOR SPUTTERING + LASER ABLATION

We provide an extensive choice of targets, which are available as standard or custom manufacture, in an array of purities, materials and sizes. Targets are available as monobloc, multi-tile, circular and rotary, however we welcome any enquiry for other specifications.

Metals

Precious Metals and Alloys including:

Gold (Au)	Palladium (Pd)	Platinum (Pt)	Silver (Ag)
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Also related precious metal alloys

Base Metals including:

Aluminium (Al)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Germanium (Ge)
Indium (In)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)	Manganese (Mn)
Molybdenum (Mo)	Nickel (Ni)	Niobium (Nb)	Selenium (Se)	Silicon (Si)
Tantalum (Ta)	Tellurium (Te)	Tin (Sn)	Titanium (Ti)	Tungsten (W)
Vanadium (V)	Yttrium (Y)	Zinc (Zn)	Zirconium (Zr)	

Metal Alloys & Intermetallics including:

Aluminium:Copper (Al:Cu)	Aluminium:Silicon (Al:Si)
Chromium:Silicon Dioxide (Cr:SiO ₂)	Cobalt:Iron (Co:Fe)
Cobalt:Nickel (Co:Ni)	Germanium:Antimony:Tellurium (Ge:Sb:Te)
Indium:Tin (In:Sn)	Manganese:Iron (Mn:Fe)
Nickel:Chromium (Ni:Cr)	Nickel:Iron (Ni:Fe)
Nickel:Titanium (Ni:Ti)	Terbium:Iron (Tb:Fe)
Tungsten:Titanium (W:Ti)	Zirconium:Aluminium (Zr:Al)
Permalloy	Inconel

Non-Metals

Other Materials including:

Boron	Metallic Borides	Graphite	Metallic Carbides
Fluorides	Nitrides	Silicides	Sulphides



Oxides

Compositions including:

Aluminium Oxide (Al_2O_3)	Barium Copper Oxides (BaCu)	Barium Strontium Titanate (BaSrTiO_3)
Barium Titanate (BaTiO_3)	Barium Zirconate (BaZrO_3)	Bismuth Oxide (Bi_2O_3)
Bismuth Titanate ($\text{Bi}_{12}\text{TiO}_{20}$)	Cerium Oxide (CeO_2)	Chromium Oxide (Cr_2O_3)
Gallium Oxide (Ga_2O_3)	Germanium Dioxide (GeO_2)	Indium Oxide (In_2O_3)
Indium Tin Oxide (ITO / InSn)	Iron Oxide (Fe_2O_3) (Fe_3O_4)	Lanthanum Oxide (La_2O_3)
Lanthanum Cobaltite (LaCoO_3)	Lithium Niobate (LiNbO_3)	Magnesium Oxide (MgO)
Molybdenum Oxide (MoO_3)	Niobium Oxide (Nb_2O_5)	Lead Titanate (PbTiO_3)
Lead Zirconate Titanate (PbZrTiO_3)	Rare Earth Oxides	Silicon Dioxide (SiO_2)
Strontium Aluminium Niobates (SrAlNb Oxides)	Strontium Titanate (SrTiO_3)	Strontium Zirconate (SrZrO_3)
Tantalum Oxide (Ta_2O_5)	Titanium Dioxide (TiO_2)	Tungsten Oxide (WO_3)
Yttrium Barium Copper Oxide (YBaCuO)		Yttrium Oxide (Y_2O_3)
Yttria Stabilised Zirconia (YSZ)	Zinc Oxide (ZnO)	Zirconium Dioxide (ZrO_2)

SERVICES

Bonding

We offer a target bonding service using Indium, Elastomer and Epoxy bonding agents. Our targets can be bonded to standard backing plates or backing plates produced to custom technical drawings provided by the customer.



Precious Metal Reclaim

We provide a complete Precious Metal Reclaim Service offering both economic and environmental benefits such as;

- Fast and efficient refining process for high metal return
- Prompt settlement time for improved cash flow
- Reclaim credit which can be used towards your next purchase

HIGH PURITY EVAPORATIVE COATING PELLETS



We offer a wide range of evaporation materials in pellet, granule and wire form. Below are our most requested lines, however we welcome any enquiry for other specifications such as Alloys, Oxides, Fluorides, Sulphides, Silicides, Carbides, Nitrides.

Precious Metals

Metal	Formula	Typical Available Purities
Gold	Au	99.99+%
Silver	Ag	99.9+, 99.99+%
Platinum	Pt	99.99+%
Palladium	Pd	99.99+%

Related Precious Metal Alloys are also available upon request

Base Metals

Metal	Formula	Typical Available Purities
Aluminium	Al	99.99%, 99.999%
Chromium	Cr	99.95%, 99.998%
Cobalt	Co	99.95%
Copper	Cu	99.99%, 99.995%, 99.999%
Hafnium	Hf	99.9% ex Zr
Indium	In	99.99%
Iron	Fe	99.5%, 99.95+%
Lead	Pb	99.99%, 99.999%
Magnesium	Mg	99.95%
Molybdenum	Mo	99.95%
Nickel	Ni	99.98%, 99.995%
Nichrome	Ni:Cr 80:20	99.95%
Niobium	Nb	99.9+% ex Ta
Permalloy	Ni:Fe 80:20	99.99%
Tantalum	Ta	99.95%
Tin	Sn	99.9%, 99.99%, 99.999%
Titanium	Ti	99.97%, 99.99+%
Tungsten	W	99.95%
Vanadium	V	99.7%
Zinc	Zn	99.99%
Zirconium	Zr	99.9% ex Hf, 99.95+%

OPTICAL COATINGS

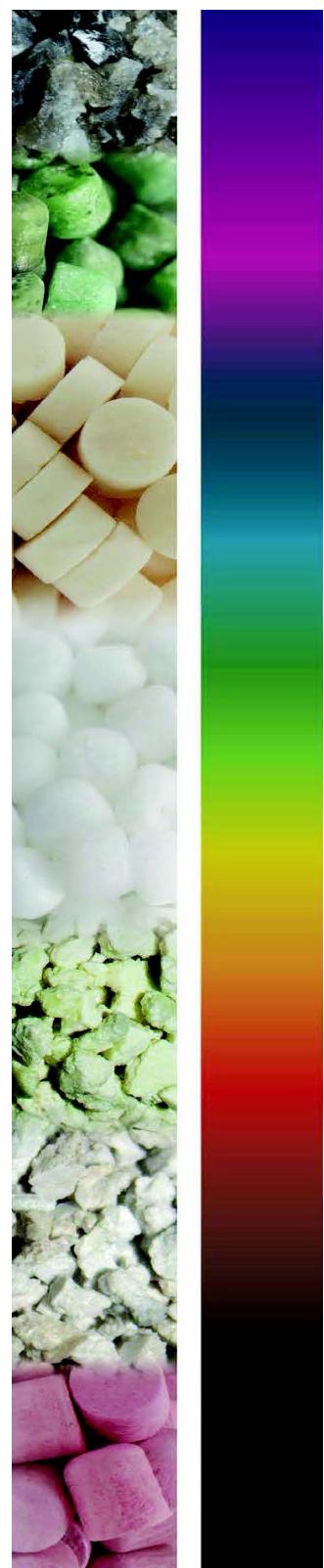
We supply a large selection of optical coating materials.
We welcome any enquiry for other specifications.

Fluorides

UV/DUV Fluorides	Formula
Lanthanum Fluoride	LaF_3
Aluminium Fluoride	AlF_3
Gadolinium Fluoride	GdF_3
Cryolite	Na_3AlF_6
Neodymium Magnesium Fluoride	NdMgF_4



High Index Mid-Range Durable Coatings	Formula
Scandium Fluoride	ScF_3
Lithium Fluoride	LiF
Enhanced Holmium Neodymium Fluoride	HoNdF_4
Lithium Scandium Fluoride	LiScF_4



Mid NIR High Index Fluorides	Formula
Yttrium Fluoride	YF_3
Ytterbium Fluoride	YbF_3
Cerium Fluoride	CeF_3
Dysprosium Fluoride	DyF_3

Thorium Fluoride Replacement Solutions	
YBC-375	-
YBC-905	-
YBC-907	-

Transparent Conductive Oxides

TCOs	Formula
Indium Tin Oxide	ITO
Indium Zinc Oxide	IZO
Aluminum Zinc Oxide	AZO
Indium Tin Zirconium Oxide	ITZO
Indium Gallium Oxide	IGO
Indium Gallium Zinc Oxide	IGZO
Tin Oxide	SnO
Zinc Tin Oxide	ZTO

PHOTOVOLTAIC CHEMICALS

We offer a wide range of chemicals for photovoltaic research in target, granule and crucible form.

Below are our most requested lines, however we welcome any enquiry for other specifications.



Photoactive Materials & Transparent Conducting Oxides (TCOs)

Chemical Name	Formula
OXIDES	
Gallium Zinc Oxide	$\text{Ga}_2\text{O}_3:\text{ZnO}$
Indium Tin Zinc Oxide	$\text{In}_2\text{O}_3:\text{SnO}_2:\text{ZnO}$
Indium Zinc Oxide	$\text{In}_2\text{O}_3:\text{ZnO}$
Indium Gallium Tin Oxide	$\text{In}_2\text{O}_3:\text{Ga}_2\text{O}_3:\text{SnO}_2$
Indium Gallium Manganese Oxide	$\text{In}_2\text{O}_3:\text{Ga}_2\text{O}_3:\text{MnO}_3$
Indium Gallium Zinc Oxide	$\text{In}_2\text{O}_3:\text{Ga}_2\text{O}_3:\text{ZnO}$
Zinc Tin Oxide	$\text{ZnO}:\text{SnO}_2$
Zinc Oxide	ZnO
Zinc Aluminium Oxide	$\text{ZnO}:\text{Al}_2\text{O}_3$
SELENIDES	
Copper Indium Gallium Selenide	CuInGaSe
Copper Selenide	Cu_2Se
Copper Indium Selenide	CuInSe_2
SULPHIDES	
Cadmium Sulphide	CdS
Copper Sulphide	Cu_2S
Copper Indium Sulphide	CuInS_2
Copper Gallium Sulphide	Cu_2GaS_3
TELLURIDES	
Cadmium Telluride	CdTe

Alloy Targets

Chemical Name	Formula
Indium Tin	$\text{In}_x:\text{Sn}_y$
Indium Antimony	$\text{In}_x:\text{Sb}_y$
Zinc Aluminium	$\text{Zn}_x:\text{Al}_y$

(Targets sourced ex-stock and as custom made to specification)

Conventional & Custom Selenides, Tellurides & Other Salts

Chemical Name	Formula
ARSENIDES	
Cadmium Arsenide	Cd_3As_2
Gallium Arsenide	GaAs
OXIDES	
Cadmium Oxide	CdO
Cadmium Oxide/Tin Oxide	CdO/SnO_2
Cadmium Tungsten Oxide	CdWO_4
PHOSPHIDES	
Indium Phosphide	InP
SELENIDES	
Cadmium Selenide	CdSe
Copper Indium Gallium Selenide	$\text{CuInGaSe}_2 / \text{CuIn}_{0.7}\text{Ga}_{0.3}\text{Se}_2$ (CIGS)
Copper Indium Selenide	CuInSe_2 (CIS)
Copper Zinc Tin Selenide	CuZnSnSe
STANNATES	
Cadmium Stannate	Cd_2SnO_4
SULPHIDES	
Cadmium Sulphide	CdS
Copper Zinc Tin Sulphide	CuZnSnS
TELLURIDES	
Cadmium Telluride	CdTe
Cadmium Zinc Telluride	CdZnTe (CZT)

Evaporation Granules

Chemical Name	Formula
Copper Germanium	CuGe
Copper Germanium Selenium	CuGeSe



Standard Metals & Non-Metals

Standard base metals and non-metals are available upon request.

SPIN + DIP COATERS

We supply a range of spin and dip coaters for electronic and photonic research.

Below are our most requested lines, however we welcome any enquiry for other specifications and your custom chuck needs.



Spin Coaters

Spin Coater Options	Specifications
Bowl Size	6", 8", 10", 12" & 15" Bowl Diameters
Control	Programmable
Dispensers	Manual, & Automatic options
Chucks	Standard Sizes & Custom Designs



Dip Coaters:

Dip Coater Options	Specifications
Substrate Size	Up to 60cm x 45cm
Control	Manual & Programmable options



OVENS + HOT PLATES

We offer a wide range of Ovens & Hot Plates.

Below are our most requested lines, however we welcome any enquiry for other specifications and accessories:



Options	Specifications
Vacuum & Forced Air Convection models	Available in desktop & free standing options up to 500°C
Digital Controlled Hot Plates	Available with stirrer options & sample mounting plates

IONIC CONTAMINATION TEST EQUIPMENT



We offer two series of Ionic Contamination Test Equipment:

- **SCS Ionograph® BT (Bench Top) Series test systems** offer efficient and accurate testing, designed to sit conveniently on a bench top, with three test cell sizes available.
- **SCS Ionograph SMD V** is a floor unit used for large part, high throughput circuit board testing with heated test fluid option.

SCS Ionograph Specifications

Characteristic	SMD V Module	BT Series: Small Parts	BT Series: Medium Parts	BT Series: Large Parts
Test Cell Size (W x H x D)	45.7 x 50.8 x 12.7cm* 66 x 50.8 x 12.7cm* 76.2 x 66 x 12.7cm* 96.5 x 66 x 8.9cm	15.2 x 15.2 x 2.9cm	35.6 x 30.5 x 6.4cm	35.6 x 50.8 x 6.4cm
Estimated Solution Capacity	6.5 - 15g / 24.6 - 56.8L	0.4g / 1.5L	2.6g / 10L	4g / 15L
Dimensions (W x H x D)	110.5 x 99.3 x 67.8cm	27.9 x 52.7 x 38.1cm	38.7 x 50.2 x 38.1cm	38.7 x 68.6 x 41.3cm
Weight	173kg	20.9kg	29kg	35.4kg
Power Requirements	120 VAC, 60 Hz, 10 A / 230 VAC, 50 Hz, 5 A	120 VAC, 60 Hz, 1 A / 230 VAC, 50 Hz, 0.5 A	120 VAC, 60 Hz, 1 A / 230 VAC, 50 Hz, 0.5 A	120 VAC, 60 Hz, 1 A / 230 VAC, 50 Hz, 0.5 A
Maximum Operating Temperature **	45°C	N/A	N/A	N/A

*Test cell tapers from 12.7cm at top to 7.9cm at bottom

**Only applicable with optional heater

To maintain peak performance of your Ionograph®, it is important to keep a regular supply of consumables, which we hold in stock for immediate despatch:

Ionograph Consumables

No. 3 Standardising Solution

Deionisation (D.I) Columns

Test Fluid IPA 75%

Top-up Fluid IPA 99%

Thermometer

Hydrometer

5ml Pipette

Safety Bulb / Pipette Filler



We also offer a range of consumables for the SCS Omegameter. Please contact us for more information.

RELATED LABORATORY EQUIPMENT



We offer a wide range of laboratory equipment.

Below are our most requested lines, however we welcome any enquiry for other requirements:

Product	Description
	Laboratory Furnaces (up to 2000°C) 1 - 11" dia. Vacuum Tube Furnace (single or multi-zone), 3-100L Muffle Furnaces, Crucible Furnaces & Hydrogen Furnaces, plus Vacuum Pumps & Gas Delivery Systems.
	Desk Top Cutting & Polishing Machines Digital Low Speed Saw, CNC Dicing Saw, Diamond Wire Saw & various Polishing Machines from 3" - 15". Consumables & accessories also available.
	Desk Top Sample Analysis Equipment Mini-XRD, Compact X-ray Orientation, Digital Microscopes, Computerised Battery Analyser & others.
	Glove Boxes Glove Boxes for vacuum or inert atmosphere work in desktop & free-standing options.
	Laboratory Mill & Dry Press Desk Top Ball/Vibration Mills and Pressing Machine for preparation of custom chemicals. Crucibles, balls, pestle & mortars are also available.

Below are our most requested lines, however we welcome any enquiry for other requirements:

Advanced Materials

Sputtering Targets, Ceramics, Single Crystal & Substrates, Wafers (including Silicon & Glass), Quartz & Sapphire Components, Rare Earth Oxide Powders, Li-ion & Na-ion Battery Powders & Electrodes, Supercapacitor Chemicals, Precious Metals, Graphene, High Temperature Adhesives, Optical Coatings, High Purity Evaporative Coating Pellets, Photovoltaic Chemicals, Nano Powders

Equipment

Chemical Processing and Handling: (Grinding & Polishing Machines, Diamond Blade & Wire Saws)

Thin Film Coating: (Spin Coaters, Dip Coaters, Tape Casting, Sputtering Machines, Spray Coaters)

Li-ion Battery Research Equipment: (Vacuum Mixers, Electrode Coating Machines, Cell Production, Testing & Analysing Machines)

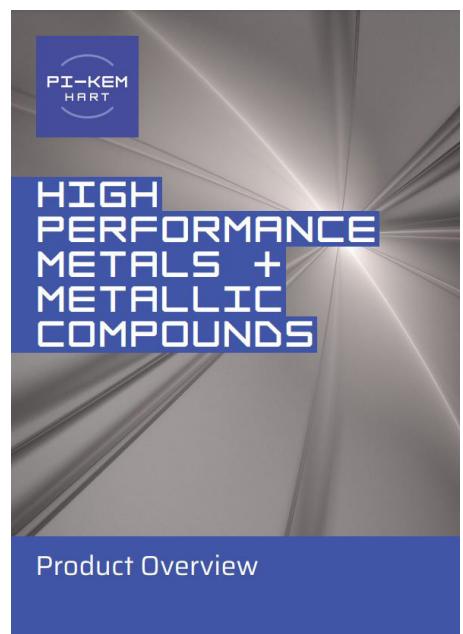
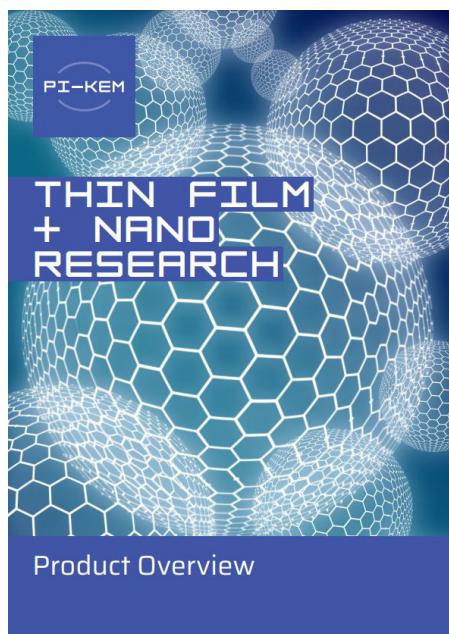
Furnaces: (Tube, Muffle, RTP & CVD Furnaces, Single or Multi Zone)

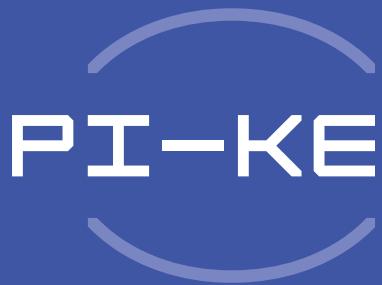
Ionic Contamination Test Equipment: (Ionographs)

Storage: (Substrate & Wafer Storage, Glove Boxes, Membrane Boxes, Vacuum Desiccators)

Services: (Precious Metals Reclaim Services & Target Bonding)

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