VITAL

MATERIALS TECHNOLOGY COMPANY

先导科技集团有限公司
VITAL MATERIALS CO., LIMITED

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VITAL MATERIALS CO., LIMITED

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电子科技赋能世界
成就美好生活

Empower the World with Photonics for a Better Life

尊重 协作 坚韧 创新

Respect Collaboration Dedication Innovation

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COMPANY PROFILE
公司简介

先导科技集团于1995年开始涉足稀散金属行业，2003年在清远正式成立（先导稀材），是一家全球领先的专业从事稀散金属及其高端材料、器件、模组、系统的研发、生产、销售和回收服务的高新技术企业，拥有国家稀散金属工程技术研究中心、国家认定企业技术中心、博士后科研工作站、设有独立的先导中央研究院。

Founded in 1995, Vital Materials is a high-tech enterprise and a global leader in R & D, production, sales, and recycling of rare metals and high-tech materials, devices, modules, and systems. It has established the China National Rare Metals Engineering Research Center, China National Enterprise Technology Center, Post-Doctoral R & D Center, and Vital Technology Group Central Research Institute.

行业地位
Core Competence

全球稀散金属市场的重要生产企业，是首个实现国产化大尺寸ITO旋转靶的供应商（G11），全球三大红外材料供应商之一，化合物半导体衬底产品的核心供应商，也是全球知名太阳能生产商的战略合作伙伴，持续为全球客户提供业内领先的一体化解决方案。

Vital Materials is the world's leading producer of rare metals as well as the first Chinese manufacturer to deliver G11 rotary ITO targets. Vital is also one of the world's leading suppliers of infrared materials, a key supplier of compound semiconductor substrates, and a strategic partner of the global PV enterprise, continuing to provide industry-leading integrated solutions to global customers.

54

全球网点：54
Global Networks: 54

20

国家：20个
Countries: 20

15,000+

全球员工：15,000+
Employees: 15,000+

先导科技集团实践垂直一体化发展战略，聚焦战略性新兴产业，在稀散金属、先进材料和资源回收业务的基础上，重点布局下游器件、模组、系统等领域，产品广泛应用于半导体、微电子、人工智能、5G、光通讯、低空经济、量子技术、新能源、新型显示、医疗健康、汽车电子、航空航天、消费电子、精密光学等高成长行业。

Vital Materials implements a unique vertical integration strategy. We are dedicated to developing advanced materials and technologies for fast growing, high-tech companies in the semiconductors, microelectronics, artificial intelligence, 5G, optical communications, low-altitude economy, quantum technology, new energy, new-type displays, healthcare, automotive electronics, aerospace, consumer electronics, precision optics, and other industries.

先导科技集团凭借优秀的技术研发平台来拓展产品组合和回收服务范围，为客户提供有价值的解决方案。不断发展的清洁技术是我们具有环境责任感的体现。这些优势驱使我们持续成长和发展，成为一个有社会责任感的材料科技企业。

Vital Materials' first class technical R&D platform continuously expands our portfolio of products and recycling services as a valued solution provider for our customers. Our ongoing development of clean technologies reflects our position as a leader in environmental responsibility. Both of these initiatives enable us to grow and evolve sustainably as a responsible materials technology firm.

COMPANY HISTORY
发展历程

1995-2010

- 在广州开发区设立工厂
  The Beginning of Vital Materials
- 正式成立广东先导稀材股份有限公司
  Established Vital Materials Co., Ltd.
- 成立高新材料基地
  Established High-tech Material Base

2011-2017

- 禾云云龙厂区建立（稀散金属深加工）
  Established Yunlong Industrial Park (Comprehensive Processing of Rare Metals)
- 成立广东先导先进材料股份有限公司
  Established Vital Advanced Materials Co., Ltd.
- 收购卡佩勒颜料（天津）有限公司-环保颜料业务
  Acquisition of Environmental Pigment Business From Cappelle Pigments (Tianjin) Ltd.
- 与优美科在清远合资成立ITO工厂
  JV With Umicore to Build ITO Plant in Qingyuan
- 全资收购优美科ITO业务
  Bought Out Umicore's Share in ITO Plant

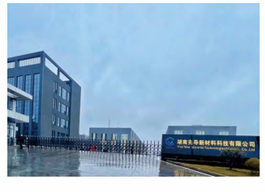
2018-2019

- 成立威科赛乐微电子股份有限公司
  Established CS Microelectronic Co., Ltd.
- 收购贺利氏（新加坡）磁存储靶材工厂-磁存储靶材业务
  Acquisition of Magnetic Storage Business from Heraeus Singapore Facilities
- 收购湖南诚元有色金属有限公司-稀有金属的循环综合回收业务
  Acquisition of Comprehensive Recycling Business of Rare Metals from Hunan Chengyuan Non-ferrous Metal Co., Ltd.
- 收购西班牙Orrion Chemicals Bischem, S. L.-原料药业务
  Acquisition of Bismuth Chemical Production Business from Orrion Chemicals Bischem, S. L.
- 收购韩国LANXESS公司-MO源业务
  Acquisition of MO Sources Business From Lanxess

2020-2021

- 收购德国FHR公司-真空镀膜设备业务
  Acquisition of Vacuum Coating Equipment Business From FHR Anlagenbau GmbH
- 收购三星康宁先进玻璃有限公司-陶瓷靶材业务
  Acquisition of Ceramic Target Business From Samsung Corning Advanced Glass, LLC.
- 收购PPM公司-复杂材料的加工回收业务
  Acquisition of Processing and Recycling Business of Various Complex Materials From PPM Pure Metals GmbH
- 成立东莞先导先进科技有限公司
  Established Dongguan Vital-Pioneer Technology Co., Ltd.
- 成立江苏先导微电子科技有限公司
  Established Jiangsu Vital Micro-electronics Technology Co., Ltd.

2022-2023

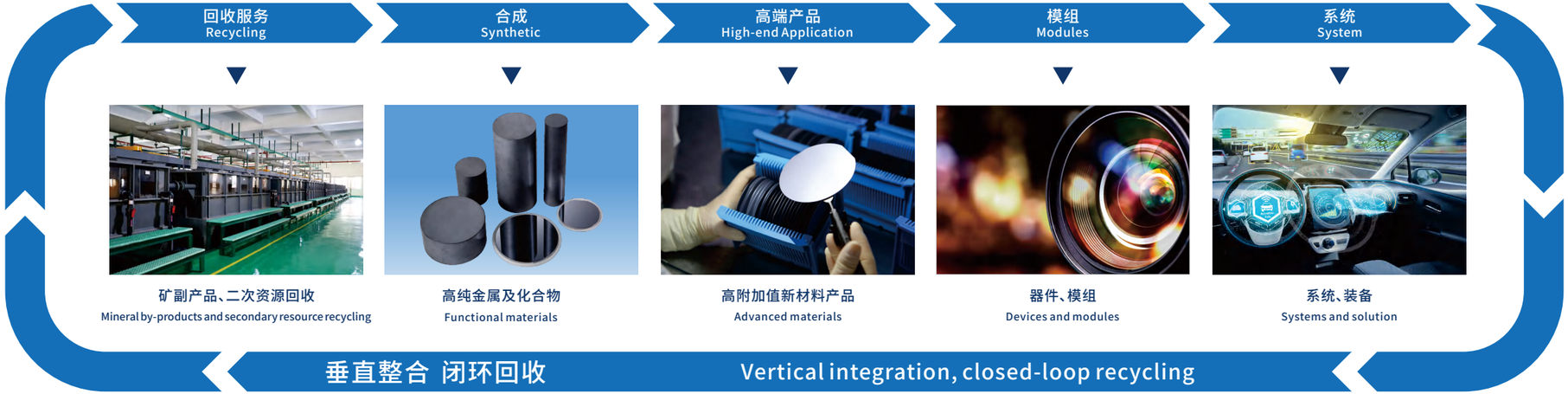


- 先导薄膜完成A轮、B轮融资
  Series A and B Founding Rounds Completed by Vital Thin Film Materials Co., Ltd.
- 湖南先导新材料科技有限公司正式投产
  Hunan Vital New Material Technology Co., Ltd. Officially Being in Production
- 收购5Nplus比利时工厂-回收及提纯业务
  Acquisition of Recycling and Refinery Business From 5N PLUS INC.
- 成立Vital & FHR North America LLC.
  Establishment of Vital & FHR North America LLC.
- 收购江苏扬子催化剂有限公司
  Acquisition of Jiangsu Yangzi Catalyst Co., Ltd.
- 收购奥泰医疗系统有限责任公司
  Acquisition of AllTech Medical Systems, LLC.
- 成立先导新能源科技（珠海）有限公司
  Established Vital New Energy Technology (Zhuhai) Co., Ltd.
- 成立先导赛翡（重庆）半导体有限公司
  Established Vital Sofine Semiconductor Co., Ltd.
- 江苏先导微电子科技有限公司正式投产
  Vital Micro-electronics Technology Co., Ltd. Officially Being in Production

2024-2025

- 浙江先导微电子科技有限公司正式投产
  Vital Micro-electronics Technology (Zhejiang) Co., Ltd. Officially Being in Production
- 成立先导超声（成都）科技有限公司
  Established Vital Ultrasound (Chengdu) Technology Co., Ltd.
- 成立海南先导光电子科技有限公司
  Established Hainan Vital Optoelectronic Technology Co., Ltd.
- 控股上海万业企业（现更名为先导基电）
  Being the holding company of Wanye Enterprises Co., Ltd. (Now renamed as Vital Deeptech)
- 成立安徽先导极星科技有限公司
  Established Anhui Vital PoleStar Xtreme Hemt Technology Co., Ltd.
- 湖北先导新材料科技有限公司正式投产
  Vital (Hubei) New Materials Technologies Co., Ltd. Officially Being in Production
- 山东先导智感电子科技有限公司正式投产
  Vital Intelligent Electronic Technology (Shandong) Co., Ltd Officially Being in Production

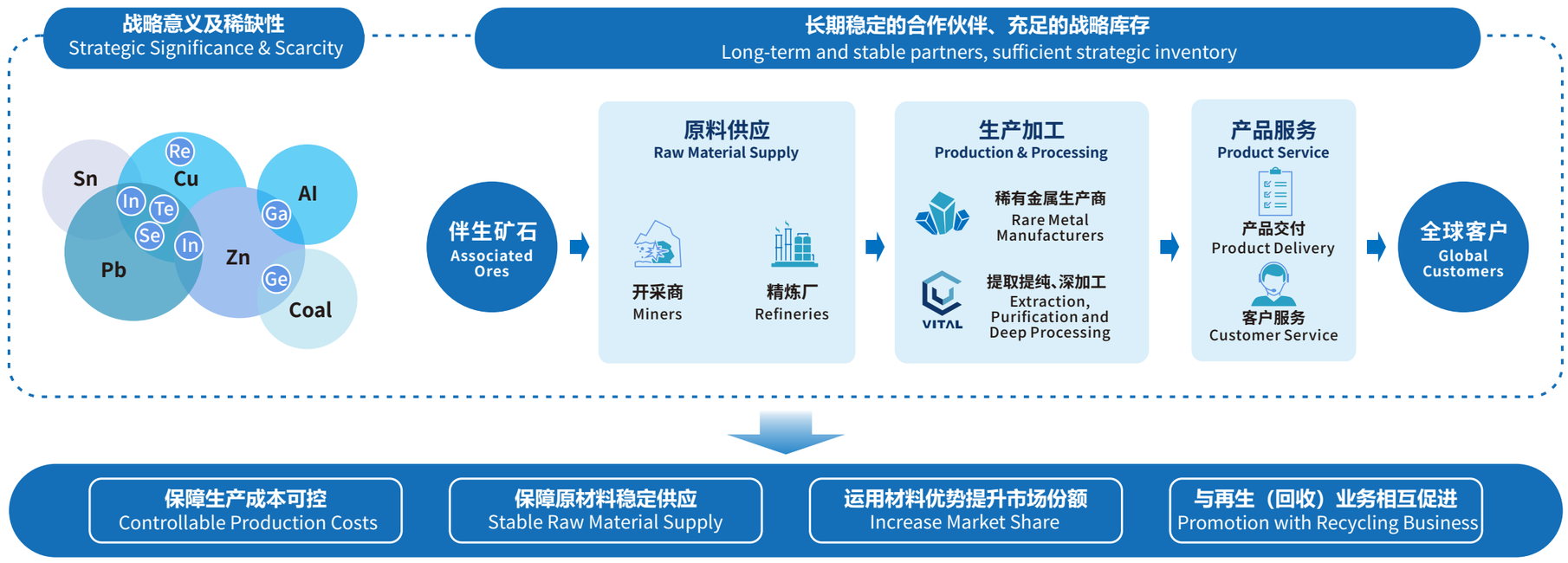
INDUSTRIAL CHAIN
产业链



SUPPLY CHAIN
供应链

- 先导科技集团拥有全球独一无二的稀散金属“**移动矿山**”
  Vital Materials possesses a unique global "Mobile Mine" of rare metals.
- 先导科技集团具备材料上的优势，全球化布局帮助先导构建了高韧性的产业链体系，与几乎所有的开采商、精炼厂以及稀有金属生产商保持着长期的合作关系

  With material advantages and global presence, Vital Materials has built a stable industrial chain system, maintaining long-term cooperative relationships with almost all miners, refineries and rare metal producers.



COMPANY VISION
企业愿景

成为光电子科技
全球引领者

To Be a Global Leader in Photonics Innovation

COMPANY STRATEGY
公司战略

- 全球布局
- 垂直一体化
- 聚焦稀散金属，提供专业解决方案
- 成为首选的闭环回收服务商
- 专注于半导体、医疗、科学仪器、光伏、LED、红外、激光、5G、光通讯、显示、微电子等领域

- Global Presence
- Vertical Integration
- Specialize in Rare Metals, Providing Comprehensive Solutions
- Be the Preferred Recycling Partner
- Focus on High-Tech Industries Including Semiconductor, Healthcare, Scientific Instruments, PV, LED, Infrared, Laser, 5G, Optical Communication, Display, Microelectronics, and Much More

CERTIFICATES
资质认证

- ISO9001质量管理体系
- ISO 9001 Quality Management Systems

- ISO14001环境管理体系
- ISO 14001 Environmental Management Systems

- ISO22000食物链安全管理体系
- ISO 22000 Food Safety Management Systems

- ISO45001职业健康与安全管理体系
- ISO 45001 Occupational Health and Safety Management Systems

- 欧盟饲料添加剂FAMI-QS体系
- FAMI-QS Quality and Feed Safety Management System

- 犹太洁食认证
- Kosher Certification

- IATF16949汽车质量管理体系
- IATF16949 Automobile Quality Management Systems

ELECTRONIC TECHNOLOGY BUSINESS UNIT
电子科技事业部

电子科技事业部致力于真空镀膜材料和真空镀膜设备的研发、生产、销售和回收。材料产品系列包括高纯金属、合金、贵金属及陶瓷材料所制成的靶材、锭、颗粒及粉末，被广泛应用于新型显示、光伏、半导体、汽车电子、精密光学、数据存储、玻璃等领域。我们在广东清远、安徽合肥、江苏徐州、山东淄博、云南昆明、韩国、美国、德国、新加坡等地均有研发制造基地。

Electronic Technology Business Unit devotes to R&D, producing, sales, and recycling of sputtering targets and evaporation materials for physical vapor deposition (PVD), as well as vacuum coating equipment. Depending on the materials, a wide variety of products in different forms and shapes are available. Our materials products include high-purity metals, alloys, precious metals, and ceramic materials, are widely used in the new-type displays, photovoltaics, semiconductors, automotive electronics, precision optics, data storage, glass, and other industries. We also have R & D and manufacturing bases in China, South Korea, the United States, Germany, and Singapore.

产品&应用
Product & Application

溅射靶材
Sputter Targets

溅射靶材主要用于真空镀膜设备中，通过物理气相沉积（PVD）在基片上涂覆薄膜层，以增加新的功能或创建微小的连接，如薄膜晶体管（TFT）。

Sputter Targets are mainly used in Vacuum Coating Equipment to coat thin films by Physical Vapor Deposition (PVD) on a substrate to add new functions or create micro-electronic connections and functions as Thin Film Transistors (TFT).

我们为各行业客户提供不同材料所制成的平面靶材和旋转靶材，我们的制备技术先进，保证产品达到最佳的使用性能。

We manufacture planar and rotary Sputter Targets in a wide range of materials using all available and most advanced technologies to guarantee the best performance.

陶瓷靶材 Ceramic Targets

Al_2O_3	AZO	CdS	CdSe	IGZO
In_2S_3	In_2Se_3	ITO	Ln-IZO	NbOx
SnO_2	TiO_x	VTTO		

金属靶材 Metal Targets

Ag	Al	Au	Cr	Cu	Ge
In	Mo	Nb	Ni	Pt	Ru
Si	Sn	Ta	Ti	V	AlSc
BeCu	CdTe	CdZnTe	C-GST	CIG	CIGS
CoTaZr	CrCo	CuGa	CuAl	CuMn	GeSbTe
InSn	NiPt	SIAl	WTi	ZnTe	ZrY

蒸发材料
Evaporation Materials

我们为各行业客户提供各种材料所制成的高品质蒸发材料，同时根据客户的具体应用为客户提供最佳的解决方案。
我们的产品具有高纯度、高熔炼性能、在预熔和加工过程中喷溅率低等优点，能有效避免镀膜缺陷，提高镀膜良率。我们的产品范围包括贵金属、高纯金属、金属合金、氟化物、氧化物和硫化物等，可根据需要制成颗粒、圆片、球状等形状。

We provide a wide range of high-quality evaporation materials offering the best solution for any individual application. High-purity, optimized melting properties as well as low spitting during pre-melt and processing allows coating complex layer stacks with low defects and high yield.
Our products range includes precious metals, high-purity metals, metal alloys, fluorides, oxides and sulphides in a wide variety of shapes and geometries of granules, tablets, shots or disks.

真空镀膜设备
Vacuum Coating Equipment

我们致力于薄膜技术开发、真空工艺设备研发、溅射靶材制造和相关服务，包括镀膜打样、膜系开发等。主要的业务为设计和组装薄膜沉积设备，应用于薄膜太阳能电池、新型显示、汽车、MEMS传感器、光学、滤波器和装饰等领域。
我们可以为您的真空镀膜设备提供技术支持、技术培训、预防性维护、备件/磨损件、资格认证、技术评估，例如帮您判断现有系统的运作状况。我们还可以为您的机器（甚至是第三方系统）提供搬迁、升级和现代化（改造）服务。

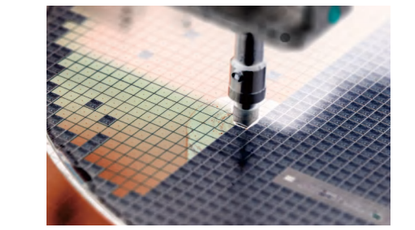
We are committed to the research and development of thin film technology, vacuum-process equipment, sputtering-target manufacturing and related services including job coating and layer stack development. Its primary business is design and assembly of thin film deposition equipment that is widely used by internationally renowned customers e.g. for thin film solar cells, displays, in automotive, MEMS, optics, BAW/SAW, and decoration.
We are your trusted partner for technical support, technical training, preventive maintenance, spare/wear parts, qualification, technical audits e.g. to judge on the condition of your existing systems. We'll serve you for machine relocation, upgrades and modernizations (retrofits)even for third-party systems in the long term and most importantly, on a global scale.

枚叶式设备 FHR. Star-series	鼓式镀膜设备 FHR. Boxx-series	高镀膜效率的连续式镀膜设备 FHR. Line-series	大型的创新式卷对卷镀膜设备 FHR. Roll-series

客户服务
Customer Service

我们可以为您提供售前和售后工艺调试及技术支持、金属全产业链闭环服务、靶材高利用率解决方案、电池转换效率提升的解决方案和专业的真空腔体部件清洁及残渣回收服务。

We provide you with pre-sales and after-sales process debugging and technical support, metal whole industry chain closed-loop service, target material utilization solutions, solar cell conversion efficiency improvement solutions, and professional vacuum chamber components cleaning and scrap recycling services.



OPTO-ELECTRONICS TECHNOLOGY BUSINESS UNIT
光电子科技事业部

光电子科技事业部主要聚焦红外材料、红外镜头、红外探测器、红外机芯和组件、红外整机及系统、激光器件与系统、高性能铝合金材料的研发、生产和销售等业务，具备从“材料生长、芯片设计、器件制备到系统集成”的全产业链规模化生产能力，可提供优质的光电产品和解决方案。事业部的各类产品和方案被广泛应用于医疗健康、航空航天、低空经济、汽车电子、能源冶金、新能源、公共民生、安全防控、工业制造、智能楼宇等领域。

Opto-electronics Technology Business Unit is dedicated to the R&D, production, and sales of infrared materials, lenses, detectors, modules for infrared thermal imagers, infrared systems, laser devices and systems, and high-performance aluminum alloy materials. With our comprehensive capabilities spanning "material growth, chip design, device fabrication, and system integration," We deliver high-quality optoelectronic products and solutions.Our products are widely used in medical health, aerospace, low-altitude economy, automotive electronics, energy and metallurgy, new energy, public welfare, security and prevention, industrial manufacturing, intelligent buildings, and other industries.

产品&应用
Product & Application

红外材料
Infrared Materials

我们是国内领先的红外材料供应商，并且是全球少数可以生产和批量供应硒化锌（ZnSe）材料的供应商，具有自主知识产权的13N超高纯锗填补了国内空白。

As China's leading supplier of infrared materials, we are one of the few global suppliers capable of producing and supplying zinc selenide (ZnSe) materials in bulk. Our Ultra-high purity germanium can reach a purity of 13N.

Ge	ZnSe	ZnS	Chalcogenide glass		
GaAs	GaSb	InSb	Si	MgF_2	CaF_2

红外镜头
Infrared Lenses

我们已完成200多款红外镜头创新设计开发，可提供面向红外领域所需要的各类光学镜头和定制化研发设计与生产服务。

With over 200 innovative infrared lens designs and developments, we offer a comprehensive range of optical lenses for the infrared field, and customized R&D production services.

消热差镜头 Athermalized Lens Assemblies	电动调焦镜头 Electric Focus Lens Assemblies
手动调焦镜头 Manual Focus Lens Assemblies	连续变焦镜头 Continuous Zoom Lens Assemblies

*全系列焦距可选 Full Range Optional Focal Length

红外探测器
Infrared Detectors

我们可提供多种品类的制冷和非制冷红外探测器，已建设8英寸硅基MEMS红外探测器芯片生产线和中波MCT、InSb和长波T2SL红外制冷探测器芯片生产线，掌握了MEMS芯片设计和制造工艺技术，金属、陶瓷和晶圆级封装技术。

We supply a diverse range of cooled and uncooled infrared detectors. With our established 8-inch silicon-based MEMS infrared detector chip production line and mid-wave MCT, InSb, and long-wave T2SL infrared cooled detector chip production line, we have the expertise in MEMS chip design and manufacturing processes, as well as metal, ceramic, and wafer-level packaging technologies.

红外机芯和组件
Thermal Modules

我们可提供体积小巧、探测灵敏、超低功耗、多种接口的各类制冷或非制冷红外热成像机芯和组件，有320x256、384x288和640x512等主流分辨率可供选择，针对机器人、无人机行业开发了多种集成用红外机芯。

We offer a wide range of compact, high-sensitivity, ultra-low power consumption infrared thermal modules with various interfaces, including mainstream resolutions such as 320x256, 384x288, and 640x512. We also provide a variety of thermal modules specifically designed for robot, drone industries.

红外整机和系统
Thermal Infrared Systems

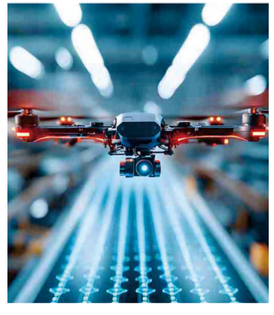
我们可为终端用户提供集成红外热成像组件、操控系统、显示系统、存储系统、云台系统等完整的解决方案，包括但不限于OEM、ODM以及整体系统交付。针对不同行业应用开发了户外、安防、工业测温、光电吊舱、气体检测等系列产品。

We provide comprehensive solutions for end-users, integrating infrared thermal imaging components, control systems, display systems, storage systems, and pan-tilt systems. Our solutions cover OEM, ODM, and complete system delivery. We have developed a range of products for various industries, including outdoor applications, security, industrial temperature measurement, airborne pods, and gas detection.

激光器件与系统
Laser Optical Components & Systems

我们致力于各类激光器及激光元器件的生产、研发和销售。包括各类半导体激光器、各种固体激光器和光纤激光器，如各种微型化激光模组、光纤耦合激光器、脉冲激光器、皮秒激光器、飞秒激光器等。产品被广泛应用于属材料加工、金刚石、碳化硅等硬脆材料加工、激光医疗等领域。

We focus on R&D and production of various laser optical components, as well as laser modules and systems, which include various types of semiconductor lasers, solid-state lasers and fiber lasers, such as miniaturized laser modules, fiber-coupled lasers, pulsed lasers, picosecond lasers, femtosecond lasers, etc. Our products are applied in metal material processing, hard and brittle material processing such as diamond and silicon carbide, and laser medicine.



高性能铝合金材料
Aluminum Alloy Materials

我们可提供多样化的铝合金材料，支持定制。我们的高性能铝合金材料在半导体领域的出货逐年上升，并且供应多家重卡和代表性传动企业。我们已经完成了新能源汽车减震器用合金管材的研制并且新增加了钛背管生产线。

We have a diverse range of aluminum alloy materials with customization options. Our high-performance aluminum alloys are supplied to multiple heavy truck and leading transmission manufacturers. We have successfully developed alloy tubes for shock absorbers in new energy vehicles and have also added a new titanium-backed tube production line.

SEMICONDUCTOR TECHNOLOGY BUSINESS UNIT
半导体科技事业部

半导体科技事业部专注于III-V化合物半导体材料及其外延片、芯片和模块、半导体零部件的研发、生产和销售等业务，产品被广泛应用于LED、Mini/Micro LED、3D传感、面部识别、无人驾驶、AR/VR、5G、光通讯、光伏、量子信息技术、航空航天、半导体制造等多个领域。

Semiconductor Technology Business Unit focuses on the research, development, production, and sales of III-V compound semiconductor materials, epitaxial wafers, chips, modules, and semiconductor components. Our products are widely used in various fields, including LED, Mini/Micro LED, 3D sensing, facial recognition, autonomous driving, AR/VR, 5G, optical communication, photovoltaics, quantum information technology, aerospace, semiconductor manufacturing.

产品&应用
Product & Application

高纯材料
High Purity Materials

高纯材料具有纯度高、性能优异、应用广泛等特点，在电子、半导体、光伏、化工、医药、航空航天等领域有着重要作用，这些高纯材料可用于晶体生长、CVD工艺、PVD工艺、MBE技术等先进工艺中。

High-purity materials have the characteristics of high purity, excellent performance, and wide applications, and are of significant importance in the fields of electronics, semiconductors, photovoltaics, chemistry, medicine, aerospace, etc. These high-purity materials can be used in advanced technologies such as crystal growth, Chemical Vapor Deposition (CVD) processes, Physical Vapor Deposition (PVD) processes, and Molecular Beam Epitaxy (MBE) technology, etc.

高纯金属 High Purity Metals

Sb	As	Ga	Cu	In	P
Se	Te	Zn	Al	B	Be
Bi	Cd	Ge	Pb	S	Sn

MBE源（6N+） MBE Sources

Al	B	Be	Sb	As	Ga
In	P	S	Te	Sn	Zn

MO源 MO Sources

TMA	TMG	TEG
TMI	CP_2Mg	$GaCl_3$

电子特气 Electronic gases

AsH_3	Ph_3	GeH_4	H_2Se
B_2H_6	SiH_4	Nf_3	Bcl_3

热解氮化硼（PBN）

高纯度 (>99.995%) 陶瓷坩埚
High-purity (>99.995%) Ceramic Crucible

前驱体 Precursors

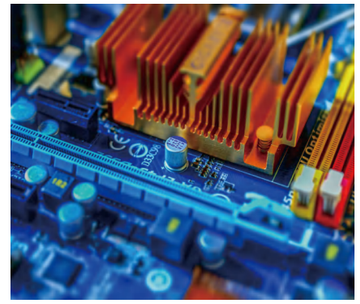
MoO_2Cl_2	$HfCl_4$	BDEAS
TEMAH	TEMAZ	TEOS

外延和衬底
Substrates And EPI

我们采用先进的高精度线切割设备和高平面度研磨抛光设备，通过CMP抛光、清洗和包装等工艺为外延生产商提供高品质的EPI-Ready衬底，这些产品在光电器件、射频器件和功率器件领域都具有广泛的应用。

VITAL utilizes advanced high-precision wire cutting equipment and high-flatness grinding and polishing equipment to provide epitaxial manufacturers with high-quality EPI-Ready substrates through processes such as CMP polishing, cleaning, and packaging. These products have extensive applications in the fields of photoelectronic devices, RF devices, and power devices.

GaAs	InP	Ge	Sapphire
2, 3, 4, 6 and 8 inch	2, 3 , 4 and 6 inch	2, 4, 6 and 8 inch	2, 4, 6 and 8 inch



Laser/PD 激光芯片和模块
Laser/PD Chips And Modules

我们可提供650-1550nm波段激光器光源和探测器外延、芯片和封装模组产品。我司可根据外延结构、芯片版型以及针对不同行业、场景应用的结构设计和性能要求，从单晶衬底开始，到外延片生长、芯片流片、测试、可靠性的全套制程，均可按客户需求的规格提供定制化代工服务。

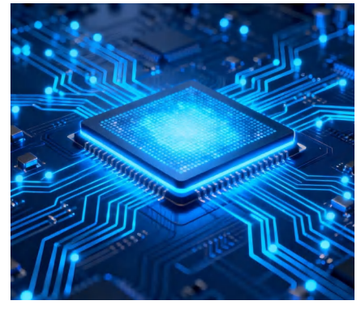
VITAL offers laser light sources and detectors epitaxy, chips, and packaged modules in the 650-1550nm wavelength range. We offer end-to-end customized OEM services that cover the entire process, starting from single crystal substrates to epitaxial growth, chip fabrication, testing, and reliability characterization. Our services are tailored to meet the specific requirements of our customers, encompassing epitaxy structure, chip design, and performance specifications for various industries and applications.

660/680/76X/780/795/808/850/905/915/940/980/1060nm Laser
850/1310/1550 PD

半导体零部件
Semiconductor Components

我们为您提供半导体设备的核心零部件，包括但不限于质量流量控制器(MFC)、喷淋头、加热器、腔体、静电卡盘、碳化硅部件、特种陶瓷制品、射频电源、真空泵和阀门、波纹管、EPD-OES光谱仪、非接触辐射高温计等，此外我们还可提供专业的气路解决方案。

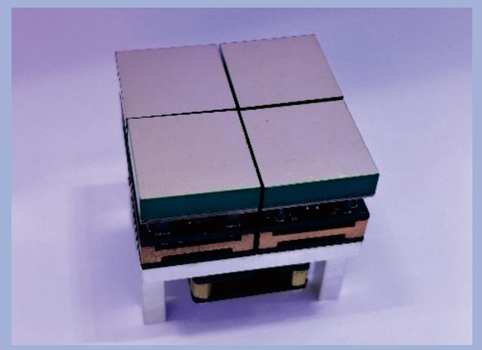
We design and manufacture key components for semiconductor equipment, including MFCs, showerheads, heaters, chambers, ESC, silicon carbide components, specialty ceramics, RF power supplies, vacuum pumps & valves, bellows, EPD-OES spectrometers, non-contact radiation pyrometers, and integrated solutions for gas delivery systems.



MEDICAL TECHNOLOGY BUSINESS UNIT
医疗科技事业部

医疗科技事业部深耕医学影像领域，以AI技术为核心，打造从原材料、元器件、系统部件到医疗装备整机的全产业链，产品被广泛应用于医疗影像、临床诊断、医学科研等领域。

Medical Technology Business Unit is dedicated to the field of medical imaging, leveraging AI technology to create a full-industry chain from raw materials, components, system components, to medical equipment. Our products are widely used in medical imaging, clinical diagnosis, medical researchs.



产品&应用
Product & Application

医疗影像元器件
Medical Imaging Components

医疗影像元器件全链自主生产，从CZT、BGO和LYSO晶体材料生长，到用于PCCT、PET和SPECT的探测器模块。

We have complete in-house production capabilities for medical imaging components, including the growth of CZT, BGO, and LYSO crystal materials, as well as detector modules for PCCT, PET, and SPECT.

- CZT剂量探测器（模块）
CZT Dose Detector (Modules)
- BGO阵列
BGO Array
- LYSO阵列
LYSO Array
- 光子计数探测器
Photon Counting Detector
- CZT面阵/线阵探测器
CZT Planar/Linear Array Detector
- SPECT模组
SPECT Module
- 剂量手表
Radiation Dose Watches

医疗影像设备
Medical Imaging Equipment

- 磁共振成像系统（MR）
- 计算机断层扫描仪（CT）
- X射线系统（DR）
- 超声系统（US）
- 分子影像（MI）

• 磁共振成像系统（MR）

除常规医用磁共振外，我们还提供高端定制的磁体、线圈和MRI磁共振成像系统，满足您的个性化需求。

In addition to conventional medical MRI, we also offer high-end customized magnets, coils, and MRI magnetic resonance imaging systems to meet your needs.

- ASTA Venus 1.5T MR
- ASTA 1.5T MR
- EchoStar Comfort 1.5T
- EchoStar 1.5T

• X射线系统（DR）

「光明」系列DR——RadGlory 361

• 超声系统（US）

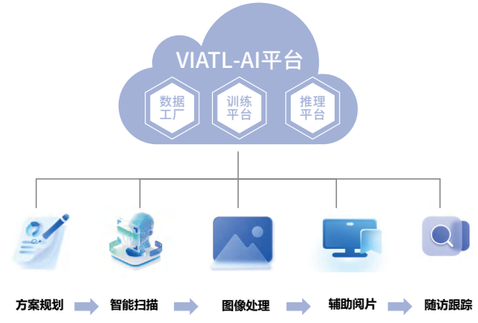
A8 | A8S | A8Exp 系列彩超为临床带来可靠准确的诊断支持

The A8 | A8S | A8Exp series color Doppler ultrasound systems provide reliable and accurate support for clinical diagnosis.

人工智能（一站式医学影像智能解决方案）
AI-powered Medical Imaging Intelligent Solutions

VITAL-AI平台集数据工厂、训练平台、推理平台于一体，功能强大，操作便捷，为您提供方案规划、随访跟踪、智能扫描、图像处理、辅助阅片等全流程服务，助力医疗影像智能化升级。

The VITAL-AI platform integrates data factories, training platforms, and inference platforms to provide powerful and easy-to-use services for the entire process, including solution planning, follow-up tracking, intelligent scanning, image processing, and auxiliary image interpretation, to help medical imaging achieve intelligent upgrades.



MATERIALS TECHNOLOGY BUSINESS UNIT
材料科技事业部

材料科技事业部一直以来秉持可持续发展理念，产品包括稀散金属、合金、贵金属催化剂与化合物，事业部产品被广泛应用于医药、电子元件、核反应堆、光伏、新能源电池、冶金、石油炼化、绿色回收、颜料、涂料、农业等领域。

Materials Technology Business Unit supplies rare metals, alloys, noble metal catalysts and compounds and provides closed-loop metal recovery and recycling services for global customers. Our products are widely used in pharmaceuticals, electronic components, nuclear reactors, photovoltaics, new energy batteries, metallurgy, petroleum refining, green recycling, pigments, coatings, agriculture, and other industries.

子公司

Vital Pure Metal Solutions GmbH (VPMS)

- 加工和回收各种复杂物料（包括有害材料）
- 为全球客户提供销售和回收解决方案

江苏扬子催化剂有限公司

- 提供铂族贵金属催化剂
- 适用于加氢、重整、异构、脱氢/氧、脱硝/硫/砷等工艺的催化剂
- 非贵金属和贵金属催化剂的再生、还原、回收

Our Subsidiary

Vital Pure Metal Solutions GmbH (VPMS)

- Process and recycle a wide range of complex materials including hazardous materials
- Sales and recycling solutions to customers worldwide

Jiangsu Yangzi Catalyst Co., Ltd.

- Great-performing platinum-group metals(PGMs) catalyst
- Adapting for hydrogenation, reforming, isomerization, dehydrogenation, deoxidation, denitrification, desulfurization, dearsenification and other processes
- Reduction, regeneration and recycling of non-metallic catalysts and noble metal catalysts

产品与服务
Products and Services

化学产品
Chemical Products

化学品业务主要包括稀散金属（硒、碲、铋、铟、镓、锗、镉、钴、贵金属等）、合金、贵金属催化剂及化合物产品，其中特殊化学品包括低熔点合金、硒钴锌类饲料添加剂、铋原料药、环保颜料，这些产品可被广泛应用于农业、医药、塑料、涂料、动力电池、焊料和石油化工等各类高新技术与战略新兴行业领域，以及提供废催化剂的再生、还原、回收服务。

Our chemicals business is mainly engaged in high-purity rare metals (Se, Te, Bi, In, Ga, Ge, Cd, Co, precious metals, and other metals), alloys, noble metal catalysts and compound products. The special chemicals include low melting point alloys, Se/Co/Zn-containing feed additives, bismuth APIs, and environment-friendly pigments, which are widely used in agriculture (feed additives), pharmaceuticals, plastics, coatings, batteries, solder, petrochemicals and other high-tech and strategic emerging industries, and provide reduction, regeneration and recycling of catalysts.

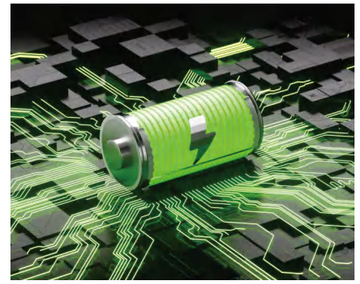
回收服务
Recycling Service

材料科技事业部拥有先进的火法和湿法冶金工艺，采用侧吹炉工艺、真空蒸馏工艺、以及溶剂萃取、离子交换、电解等先进工艺，回收和精炼各种含稀散金属固体、浆料和溶液。

Materials Technology Business Unit uses advanced pyrometallurgical and hydrometallurgical processes, including side-blowing furnace technology, vacuum distillation technology, and advanced processes such as solvent extraction, ion exchange, and electrolysis to recover and refine a wide variety of rare-metal-containing solids, slurries, and solutions.

我们已经获得对含硒、含碲及有色金属冶炼废物等《危险废物经营许可证》，可以协助上游冶炼企业提供回收含稀散金属、贵金属的富集渣，也可以协助下游材料、器件企业回收各种含稀散金属、贵金属的边角料、寿命终结的器件等二次资源的服务，可回收的金属达20种以上。

We are licensed to operate hazardous waste such as selenium-containing, tellurium-containing, and non-ferrous metal smelting waste. We can assist the upstream smelting enterprises in recycling rare-metal and precious-metal containing materials. We also assist the downstream material/device enterprises in recycling a variety of rare metals and precious metals from scraps, other secondary resources, and end-of-life devices. Vital Materials recycles almost any type of rare metal containing waste.



SCIENTIFIC INSTRUMENTS BUSINESS UNIT
科学仪器事业部

依托于集团超30年在基础材料和光电子技术领域的积累，专注于实验分析仪器、半导体桌面式量检测仪器及核心零部件的研发、生产、销售和维修等全链条业务，产品被广泛应用于科学研究、半导体制造、食品安全、生物制药、环境监测、高端制造等领域。

Leveraging Vital Group' s three-decade expertise in fundamental materials and optoelectronics, Scientific Instruments Division specializes in providing comprehensive end-to-end solutions, encompassing R&D, manufacture, sales and service for lab analytical instrumentation, bench-top semiconductor metrology / inspection equipment, in-situ products for online applications and customizations. These solutions serve critical applications across diverse industries including scientific research, semiconductor manufacturing, food safety, biopharmaceuticals, environmental monitoring, high-end manufacturing, and so on.

产品&应用
Product & Application

实验分析仪器
Laboratory Analytic Instruments

我们提供质谱、光谱及色谱等实验室分析仪器，专注于整机设备和关键零部件的国产替代和差异化竞争，产品可广泛应用于半导体、高校科研院所、政府及第三方检测实验室等场景中物质的定量和定性分析。

We specialize in laboratory analytical instrumentation including mass spectrometers, spectroscopy systems, and chromatography, focusing on localization initiatives and differentiated market positioning through systems and critical components/modules, which provide precise quantitative and qualitative analysis for semiconductor industries, academic research institutions, governmental and third-party testing laboratories to improve our customers' productivity and efficiency.

实验室量检测设备
Metrology Instruments

我们提供桌面式椭偏仪、桌面式晶圆翘曲计等量检测设备，在生产中实现6到12英寸晶圆的膜厚、折射率、翘曲等关键量测，对晶圆厂及时发现问题、改善工艺、提高良率起到至关重要的作用。

Our bench-top metrology systems, including ellipsometers, wafer curvature analyzers, enable in-line measurement of critical 6-12" wafer parameters - film thickness, refractive index, and warpage - empowering semiconductor fabs to rapidly detect process deviations, refine manufacturing workflows, and optimize yield performance.

非接触高温计
Radiation Pyrometer

高精度非接触高温计可用于精确温度测量和热场分析，适用于晶体生长、离子注入、化学沉积、外延沉积、 快速热处理等工艺，可实现半导体应用场景中精准温度测量和控制。产品也应用于传统工业场合，如钢材、石油化工、危废处理、玻璃等多个生产制造环节中的工艺温度控制。

Our high precision radiation pyrometers deliver advanced thermal measurement and thermal field analysis, serving both semiconductor manufacturing (crystal growth, ion implantation, CVD、EPI, RTP, etc.) and traditional industrial thermal process control including steel manufacturing, petrochemical refining, hazardous waste treatment, and glass production.

MOCVD原位监测系统
MOCVD In-Situ Monitoring System

MOCVD原位监测系统可用于在MOCVD外延生长过程中，对生长的各种参数和设备状况进行原位实时监测和控制，能有效实现外延生长，避免废品，提高重现性和设备效能。我们同时提供反应腔加热监控和石墨盘加热监控。

MOCVD Equipment enables real-time process control of growth parameters and reactor conditions during epitaxial deposition, optimizing layer uniformity while minimizing process deviations and scrap rates. Graphite susceptors heating and reaction chambers temperature monitoring products are also provided.

泛半导体工艺终点检测系统
Semiconductor Process Endpoint Detection System

泛半导体工艺终点检测系统可利用发射光谱信息对等离子工艺的各种特性和设备状况进行原位实时监测和控制。可应用于芯片、显示、太阳能领域干法刻蚀、ALD、PECVD、PVD、离子去胶等工艺场合。

Semiconductor process endpoint detection systems that utilize emission spectroscopy information to perform in-situ real-time monitoring and control of various plasma process characteristics and equipment status. It can be applied in dry etching, ALD, PECVD, PVD, ion stripping processes and so on, widely used in chip/display/solar cell industry.

真空腔体泄露实时检测系统
Vacuum Chamber Leakage Real-Time Detection System

我们提供面向真空工艺腔的泄露风险的实时排查与检测系统，利用发射光谱信息和AI算法模型，在线、实时判断真空腔体在生产过程中是否存在泄露风险，避免安全事故发生和成本损失。漏率检出限可达$1*10^{-8}Pa*m^3/s$。

We provide real-time leakage risk inspection and detection systems for vacuum process chambers. By leveraging emission spectroscopy information and AI algorithm models, the system enables online, real-time identification of leakage risks in vacuum chambers during production. Leakage rate detection limit could reach $1*10^{-8}Pa \cdot m^3/s$.

真空成分气体分析仪
Vacuum Composition Gas Analyzer

真空成分气体分析仪可用于CVD、PVD、MOCVD等各种真空腔室内的气体成份半定量分析以及检漏等。

Vacuum composition gas analyzer is a more sensitive online monitoring system. It could be used in gas composition analysis and leak detection in various vacuum chambers including CVD, PVD, and MOCVD equipments.

R&D CAPABILITIES
研发能力

高纯技术 HIGH PURITY TECHNOLOGIES	• 高纯金属的提纯技术 • 高纯电子气体的提纯技术 • 高纯试剂的提纯技术 • 高纯化合物的合成技术	• High purity metal purification • High purity electronic gas purification • High purity reagent purification • High purity compound synthesis
晶体技术 CRYSTAL TECHNOLOGIES	• 高纯多晶料的合成技术 • 晶体的生长技术 • 晶体的加工技术 • 晶体的应用研究 • 晶体生长设备开发	• High purity polycrystalline material synthesis • Crystal growth • Crystal processing • Crystal application research • Crystal growth equipment design
靶材技术 TARGET MATERIAL TECHNOLOGIES	• 靶材用粉末的合成技术 • 超细粉体的处理及造粒技术 • 靶材的成型技术 • 靶材的烧结技术 • 高纯金属靶材熔铸及热处理技术 • 靶材的绑定及检测技术	• Powder synthesis • Ultrafine powder processing and granulation • Target molding • Target sintering • Metal target casting and heat treatment • Target bonding and testing
纳米技术 NANOTECHNOLOGIES	• 纳米材料合成技术 • 纳米材料的分散、形貌控制技术 • 纳米材料表面处理技术 • 纳米材料的应用研究	• Nano-material synthesis • Dispersion and morphology control • Surface treatment • Application research
芯片技术 CHIP TECHNOLOGIES	• 外延生长技术 • 芯片加工技术	• Epitaxial growth technology • Chip processing technology
光学技术 OPTICAL TECHNOLOGIES	• CNC加工技术 • 光学镀膜技术 • 低噪声、高频率和大面阵读出电路设计 • 高良率、大TCR和低应力MEMS结构设计和工艺制程	• CNC technology • Optical coating technology • Low noise, high frequency, and large area array readout circuit design • High-yield, large TCR, and low-stress MEMS structure design and processing

先导科技集团不断改进生产工艺技术和开发新产品，为客户提供材料应用解决方案，我们引以为傲的资源包括:

Vital Materials pursues continuous improvement of its technology and develops new material solutions and products. We take great pride in our resources.

先导中央研究院以“支持和赋能集团业务快速发展、开发前沿新技术和平台技术、提供技术整合和提供解决方案”为战略目标，聚焦高端材料、装备制造、微电子、光电子和可再生能源等研发领域，赋能集团新质生产力以及光电、光伏、医疗、化工、新材料、新能源、半导体等方面高质量发展。

Vital Technology Group Central Research Institute, focusing on research and development in high-end materials, equipment manufacturing, microelectronics, optoelectronics, and renewable energy, contributes to VITAL group's high-quality productivity and development in optoelectronics, photovoltaics, healthcare, chemicals, advanced materials, new energy, and semiconductors.

GLOBAL PRESENCE
全球网络

先进材料基地（清远工业区）
Advanced Materials Plant
(Qingyuan Industrial Park)

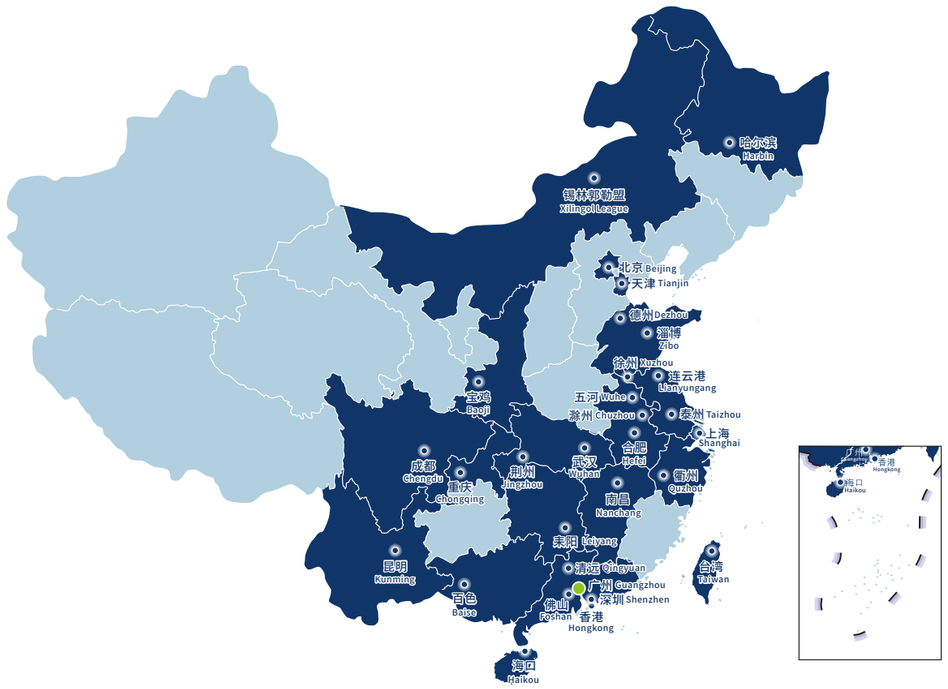
威科赛乐微电子股份有限公司（芯片基地）
CS Microelectronics Co., Ltd.
(Gaofeng Park)

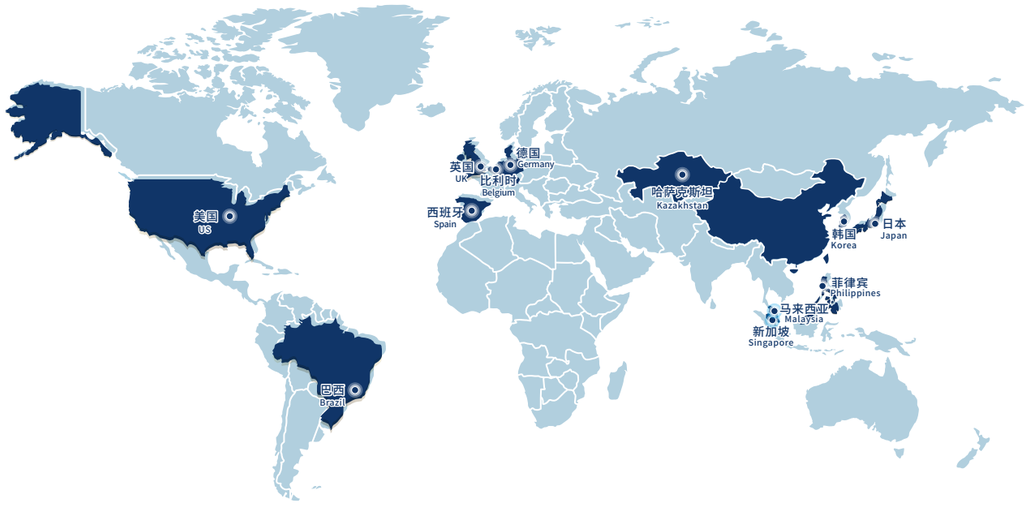
奥泰医疗系统有限责任公司
AllTech Medical Systems, LLC.

KV Materials Co., Ltd.

FHR Anlagenbau GmbH

Vital Chemicals USA, LLC.





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薄膜材料基地（广东清远、安徽合肥、山东淄博、江苏徐州、云南昆明、浙江衢州）
Vital Thin Film Materials Production Plant (Qingyuan, Guangdong / Hefei, Anhui / Zibo,Shandong / Xuzhou, Jiangsu / Kunming,Yunnan / Quzhou, Zhejiang)

红外光学基地-光智科技（黑龙江哈尔滨）、安徽光智（安徽滁州）
Infrared Optical Plant (Harbin, Heilongjiang / Chuzhou, Anhui)

高端设备制造基地（江苏徐州、江苏连云港、广东广州、山东德州）
High-end equipment manufacturing Plant (Xuzhou, Jiangsu / Lianyungang, Jiangsu / Guangzhou, Guangdong / Dezhou, Shandong)

颜料生产基地（天津）
Pigments Plant (Tianjin)

功能材料基地（湖南耒阳、广东清远）
Functional Materials & Recycling Bases
(Leiyang, Hunan / Qingyuan, Guangdong)

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