



MATERIALS TECHNOLOGY COMPANY

VITAL MATERIALS CO., LIMITED



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Innovative Material Technology for a Better Future

Respect Collaboration Dedication Innovation

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COMPANY PROFILE

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 hi-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.



Core Competence

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.



Global Networks: 49



Countries: 20



Employees: 10,000+

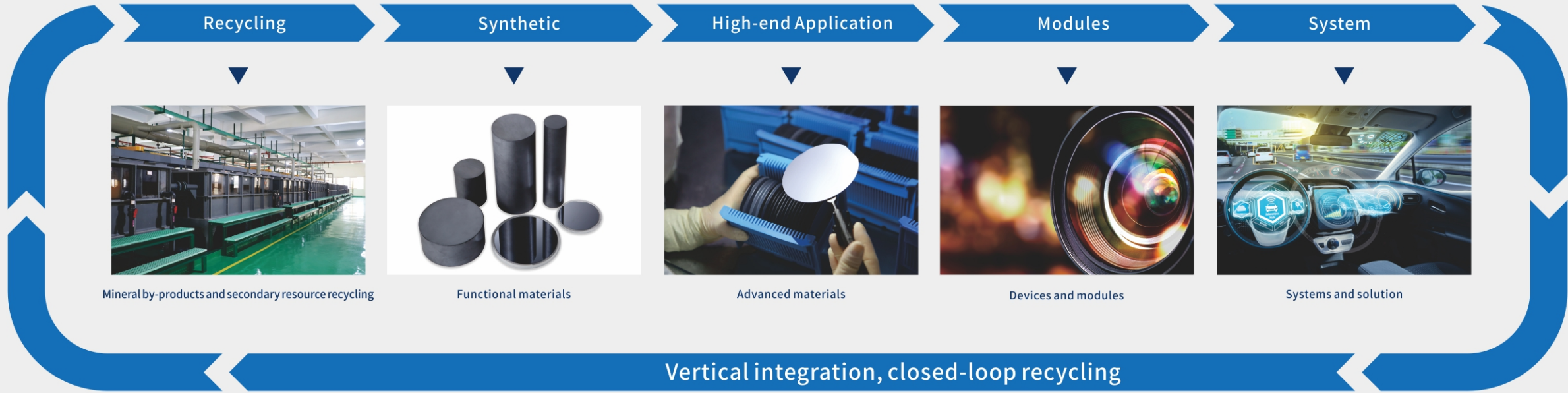
Vital Materials implements a unique vertical integration strategy. We are dedicated to developing advanced materials and technologies for fast growing, high-tech companies in the semiconductor, healthcare, microelectronics, 5G, optical communication, photovoltaics, LED, infrared optics, display, radiation detectors, pharmaceutical, animal nutrition, and other industries.

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



INDUSTRIAL CHAIN



COMPANY VISION



Be the Global
Leader in Materials
and Technologies

COMPANY STRATEGY

- Global Presence
- Vertical Integration
- Focus on Rare Metals
- Be the Preferred Recycling Partner
- Develop Innovative Solutions for Applications Involving Rare Metals
- Focus on High-Tech Industries Including Semiconductor, Healthcare, Scientific Instruments, PV, LED, Infrared, Laser, 5G, Optical Communication, Display, Microelectronics, and much more

CERTIFICATES



THIN FILM TECHNOLOGY BUSINESS UNIT

The Thin Film 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 display, photovoltaic, semiconductor, 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.

Product & Application

Sputter Targets

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).

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.

Ceramic Targets

Al ₂ O ₃	AZO	CdS	CdSe	IGZO
In ₂ S ₃	In ₂ Se ₃	ITO	Ln-IZO	NbOx
SnO ₂	TiO _x	VTTO		

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

Evaporation Materials

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.



Vacuum Coating Equipment

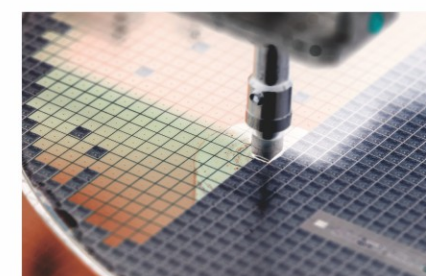
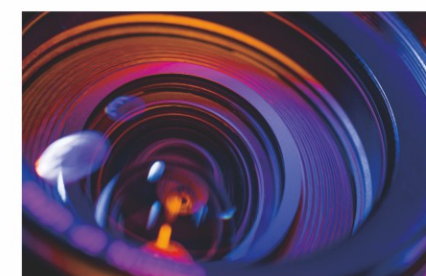
We are committed to the research and development of thin film technology, vacuum-process equipment, sputtering-target manufacturing and related services including job coating and layer stack development. Its primary business is design and assembly of thin film deposition equipment that is widely used 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.

FHR. Star-series FHR. Boxx-series FHR. Line-series FHR. Roll-series

Customer Service

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.



INFRARED & LASER BUSINESS UNIT

The Infrared Laser 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 various fields, including outdoor applications, energy and metallurgy, new energy, public safety, security and surveillance, intelligent manufacturing, and smart buildings.



Product & Application

Infrared Materials

As China's leading supplier of infrared materials, we are one of few global supplier 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

Infrared Lenses

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.

Athermalized Lenses	Manual Lenses
Motorized Lenses	Continuous Zoom Lenses

*The Focal Length is Optional

Infrared Detectors

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.

Thermal Modules

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 industry.

Thermal Infrared Systems

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.

Laser Optical Components & Systems

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.

Aluminum Alloy Material

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 BUSINESS UNIT

The Semiconductor 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 lighting, Mini/Micro LED, 3D sensing, facial recognition, self-driving, AR/VR, 5G, optical communication, power RF, and photovoltaics.

Product & Application

High Purity Materials

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.

High Purity Metal

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

MBE Source

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

MO Sources

TMA	TMG	TEG
TMI	CP ₂ Mg	GaCl ₃

Electronic gases

AsH ₃	Ph ₃	GeH ₄	H ₂ Se
B ₂ H ₆	SiH ₄	Nf ₃	Bcl ₃

(PBN)

High-purity (>99.995%) ceramic crucible

Precursor

MoO ₂ Cl ₂	HfCl ₄	BDEAS
TEMAH	TEMAZ	TEOS

Substrates And EPI

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 2, 3, 4, 6 and 8 inch	InP 2, 3, 4 and 6 inch	Ge 2, 4, 6 and 8 inch	Sapphire 2, 4, 6 and 8 inch
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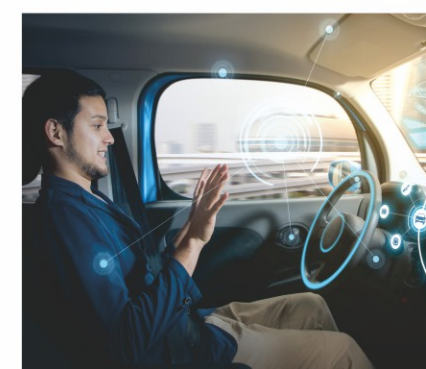
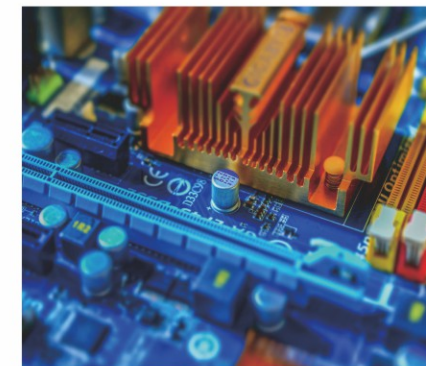
Laser/PD Chips And Modules

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

Semiconductor Components

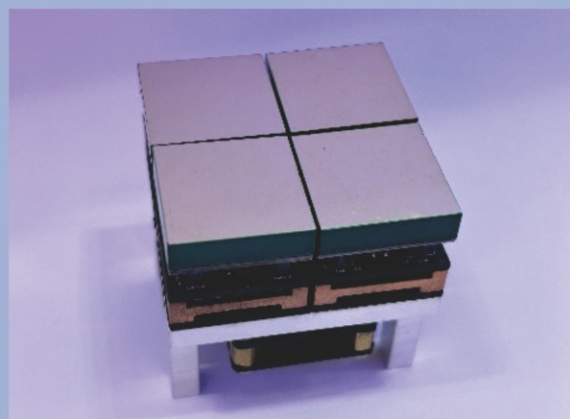
We design and manufacture key components for semiconductor equipment, including MFCs, showerheads, heaters, chambers, ESC, silicon carbide components, specialty ceramics, RF power supplies, vacuum pumps & valves, bellows, EPD-OES spectrometers, non-contact radiation pyrometers, and integrated solutions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



MEDTECH BUSINESS UNIT



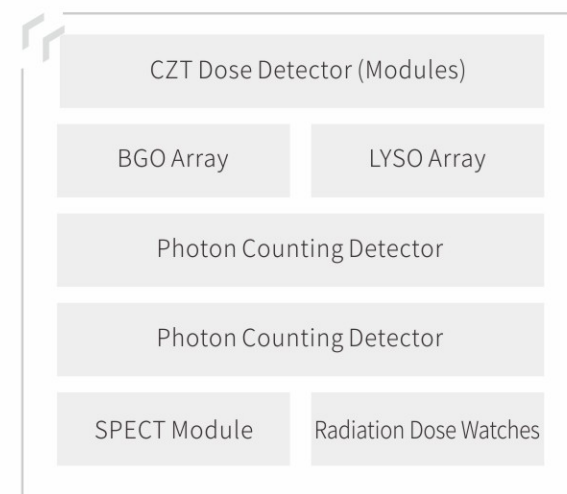
Medtech Business Unit is dedicated to the field of medical imaging, leveraging AI technology to create a full-industry chain from raw materials, components, system components, to medical equipment.



Product & Application

Medical Imaging Components

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

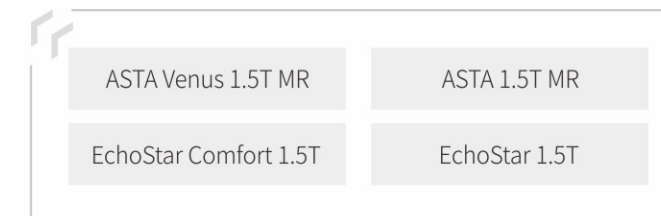


Medical Imaging Equipment



• MR

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



• DR

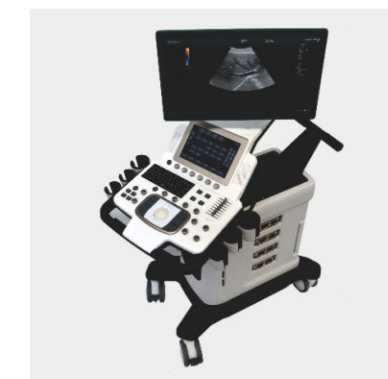
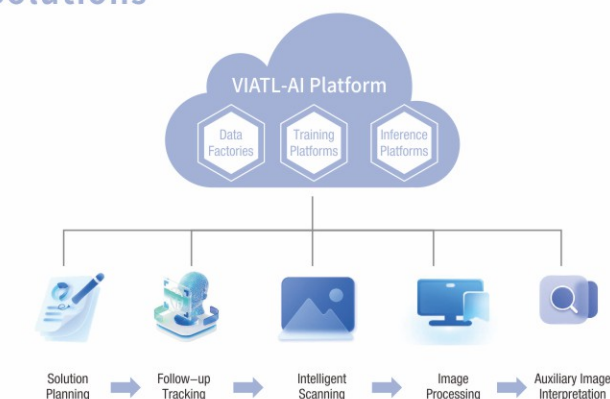
RadGlory 361

• US

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

AI-powered Medical Imaging Intelligent Solutions

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.



FUNCTIONAL MATERIALS & RECYCLING BUSINESS UNIT

The Functional Materials & Recycling Business Unit supplies rare metals, alloys, noble metal catalysts and compounds and provides closed-loop metal recovery and recycling services for global customers.

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



Products and Services

Chemical Products

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.



Recycling Service

The Functional Materials & Recycling 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.

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 of 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.



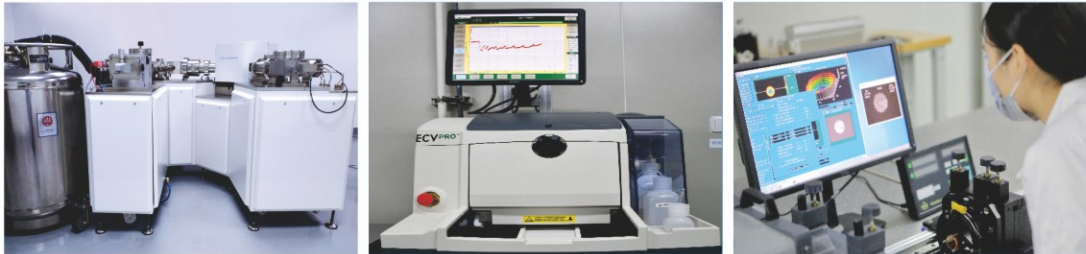
R&D CAPABILITIES

HIGH PURITY TECHNOLOGIES	<ul style="list-style-type: none">• High purity metal purification• High purity electronic gas purification• High purity reagent purification• High purity compound synthesis
CRYSTAL TECHNOLOGIES	<ul style="list-style-type: none">• High purity polycrystalline material synthesis• Crystal growth• Crystal processing• Crystal application research• Crystal growth equipment design
TARGET MATERIAL TECHNOLOGIES	<ul style="list-style-type: none">• Powder synthesis• Ultrafine powder processing and granulation• Target molding• Target sintering• Metal target casting and heat treatment• Target bonding and testing
NANOTECHNOLOGIES	<ul style="list-style-type: none">• Nano-material synthesis• Dispersion and morphology control• Surface treatment• Application research
CHIP TECHNOLOGIES	<ul style="list-style-type: none">• Epitaxial growth technology• Chip processing technology
OPTICAL TECHNOLOGIES	<ul style="list-style-type: none">• 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

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



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



Advanced Materials Plant
(Qingyuan Industrial Park)



CS Microelectronics Co., Ltd
(Gaofeng Park)



AllTech Medical Systems, LLC.



KV Materials Co., Ltd.



FHR Anlagenbau GmbH



Vital Chemicals USA, LLC

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Industrial Bases

Advanced Materials Production Plant (Qingyuan, Guangdong)
Vital Thin Film Materials Production Plant (Qingyuan, Guangdong/Hefei, Anhui/Zibo, Shandong)
Infrared Optical Plant (Harbin/Chuzhou, Anhui)
High-end equipment manufacturing Plant (Xuzhou, Jiangsu/Guangzhou)
Pigments Plant (Tianjin)
Functional Materials & Recycling Bases
(Leiyang, Hunan/ Qingyuan, Guangdong)

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Jiangsu Yangzi Catalyst Co., Ltd

Korean Subsidiary

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