湖南稀土金属材料研究院有限责任公司

Hunan Rare Earth Metal Materials Research Institute Co., Ltd.

立于稀土研究前沿

引领稀土材料应用

Standing At The Forefront Of Rare Earth Research

Lead The Application Of Rare Earth Materials

营销中心

Marketing Dept.

了解更多请访问: hnxty.com

Learn more please visit: rare-earths.net

HNRE

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企业简介 Company Profile

湖南稀土金属材料研究院有限责任公司（以下简称湖南稀土院）前身为湖南冶金研究所，创建于1958年，是国内南北两家最早从事稀土冶炼分离和稀土材料应用研究的机构之一。自创立以来，湖南稀土院因在“两弹一星”工程、运载火箭发射及通讯卫星研制中所作贡献，先后三次受到中共中央、国务院、中央军委通电表彰。成功研制“探测器用稀土金属箔材”，填补国内空白；抗破碎储氢材料项目获得国家技术发明二等奖。

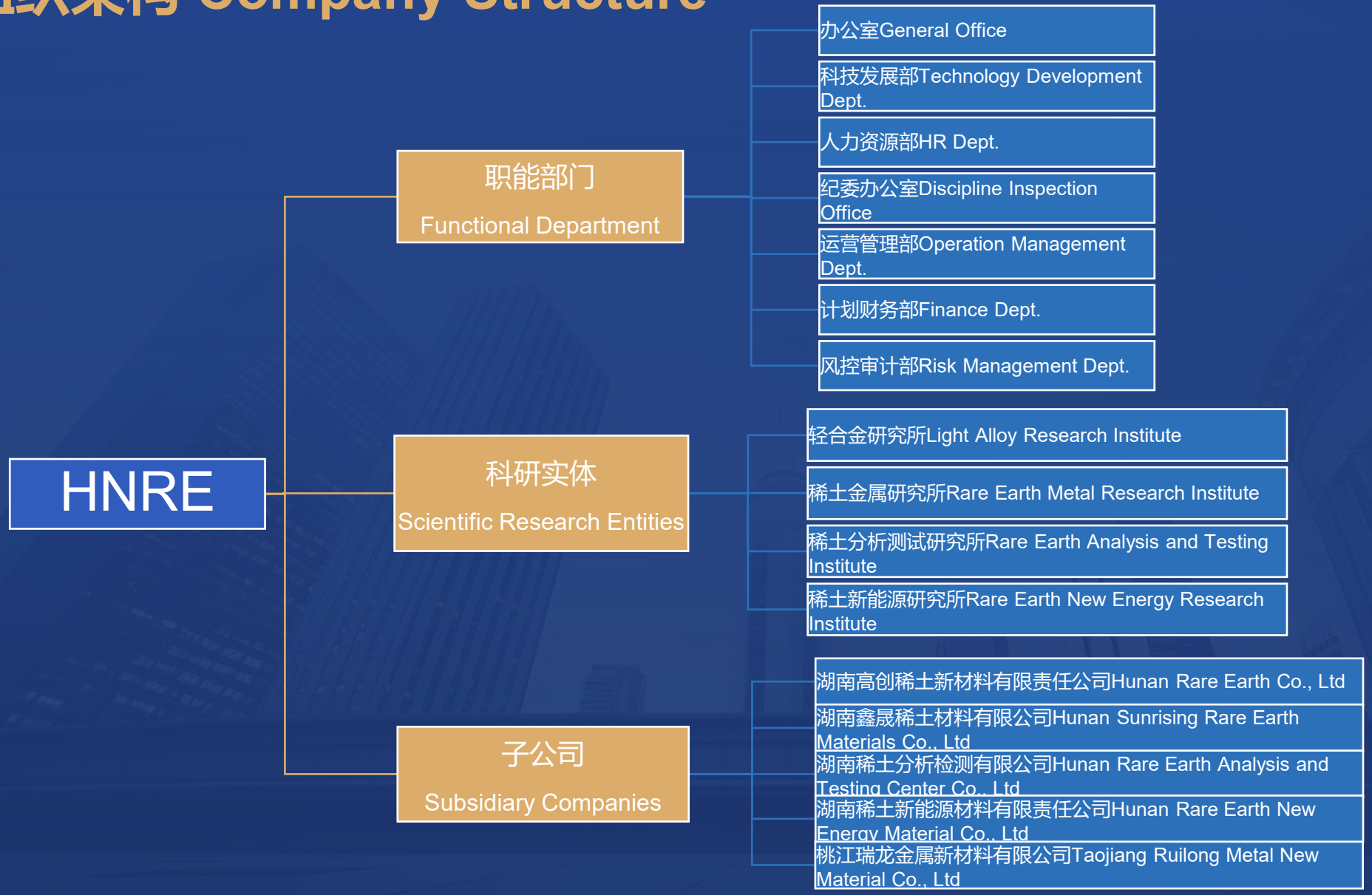
Hunan Rare Earth Metal Materials Research Institute Co., Ltd. (hereinafter referred to as HNRE), formerly known as Hunan Metallurgical Research Institute, founded in 1958, is one of the first two institutions in China engaged in rare earth smelting, separation and application research of rare earth materials. Since its establishment, HNRE has been commended by the CPC Central Committee, The State Council and the Central Military Commission three times for its contributions in the "Two bombs and one star" project, carrier rocket launch and communication satellite development. Successfully developed "rare earth metal foil for detector" to fill the domestic gap; The anti-crushing hydrogen storage material project won the second prize of national technology invention.

企业简介 Company Profile

多年来，湖南稀土院围绕高纯稀土金属及靶材、高性能稀土镁合金、高纯稀土化合物、稀土硼化物和稀土永磁材料等5个方向开展深入研究和产业布局。高纯稀土金属提纯及应用技术处于世界领先水平；高纯稀土硼化物材料制备技术打破国外技术封锁；建有国内品种最齐全的中子活化探测材料研制生产线；成功研制出16种高纯稀土氧化物(6N级)及高纯锆产品(4N级)，高纯锆制备技术填补国内空白，解决“卡脖子”问题，实现进口替代。

For many years, HNRE has carried out in-depth research and industrial layout in five directions: high-purity rare earth metals and targets, high-performance rare earth magnesium alloys, high-purity rare earth compounds, rare earth boride and rare earth permanent magnet materials. The purification and application technology of high purity rare earth metals is in the leading level in the world; The preparation technology of high purity rare earth boride material breaks the foreign technical blockade; It has the most complete production line of neutron activation detection materials in China; 16 kinds of high purity rare earth oxides (6N grade) and high purity zirconium products (4N grade) have been successfully developed, and the preparation technology of high purity zirconium fills the domestic blank, solves the problem of "neck jam" and realizes import substitution.

组织架构 Company Structure



愿景与价值观 Visions and Values

01 企业愿景 Visions

建成国内最具影响力的“专精特新”
稀土应用高科技企业
To become the most influential rare earth application high-tech enterprise in China

02 核心价值Values

立于稀土研究前沿
引领稀土材料应用
Standing at the forefront of rare earth research
Lead the application of rare earth materials

03 企业特质Characteristics

永不止步的创新精神 Never stop innovating
脚踏实地的实干精神 Down-to-earth working
敢闯敢干的担当精神 Dare to do the responsibility
精益求精的认真精神 Serious spirit of excellence

04 长远目标Goals

稀土应用的佼佼者
专精特新的小巨人
Be the leader in rare earth applications
Be the litte giant specializing in rare earth

核心竞争力Core Competence

平台资质 Platform Qualification

技术实力 Technical Strength

人才队伍 Talent Team

平台资质 Platform Qualification

国家级创新平台
National innovation platforms

工业（稀土冶炼与加工品）产品质量控制和技术评价湖南实验室、国家技术创新示范企业

Industrial (Rare Earth Smelting and Processing Products) Product Quality Control and Technical Evaluation Hunan Laboratory National Technology Innovation Demonstration Enterprise

省部级以上创新平台
Provincial & ministerial level innovation platforms

稀土功能材料湖南省重点实验室、湖南省稀土材料工程技术研究中心、稀土能源材料湖南省工程研究中心、湖南省企业技术中心、稀土金属与合金工程技术研究中心

Hunan Key Laboratory of Rare Earth Functional Materials, Hunan Rare Earth Materials Engineering Technology Research Center, Hunan Rare Earth Energy Materials Engineering Research Center, Hunan Enterprise Technology Center, Rare Earth Metal and Alloy Engineering Technology Research Center

资质
Qualifications

军工三证一备案、中国合格评定国家认可委员会实验室认可（CNAS）资格、CMA等

Military industry certificates, China National Accreditation Service for Conformity Assessment Laboratory Accreditation (CNAS) qualification, CMA,etc

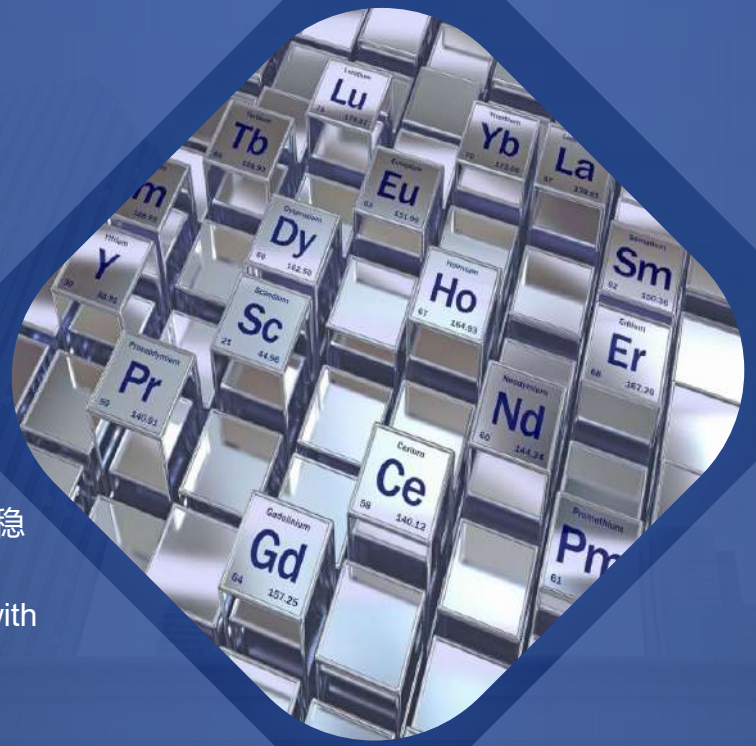
技术实力 Technical Strength

高纯稀土金属
High purity rare earth metals

在高纯稀土金属的提取、提纯和应用材料研制领域处于世界领先水平。享有“世界钪王”美誉。
HNRE is at the world‘s leading level in the extraction, purification, and application material development of high-purity rare earth metals. Enjoying the reputation of “King of scandium in the world ”.

稀土合金
Rare earth alloys

成功研制了国内第一颗打火石，稀土镁、铝合金稳定供货于航空航天企业。
Successfully developed the first domestic flint, with stable supply of rare earth magnesium and aluminum alloys to aerospace enterprises.



储氢材料
Hydrogen storage materials

建有我国唯一的抗破碎储氢材料独子线，抗破碎储氢材料研制处于国际领先水平。
HNRE has established the only production line of anti crushing hydrogen storage materials in China, and the technology is at the international leading level.

稀土化合物
Rare earth compounds

率先研制出16种光谱纯稀土氧化物。突破6N级超高纯稀土化合物制备技术，应用于激光光纤。
Pioneered the development of 16 spectral pure rare earth oxides. Breaking through the 6N level ultra-high purity rare earth compound preparation technology and applying it to laser fibers.

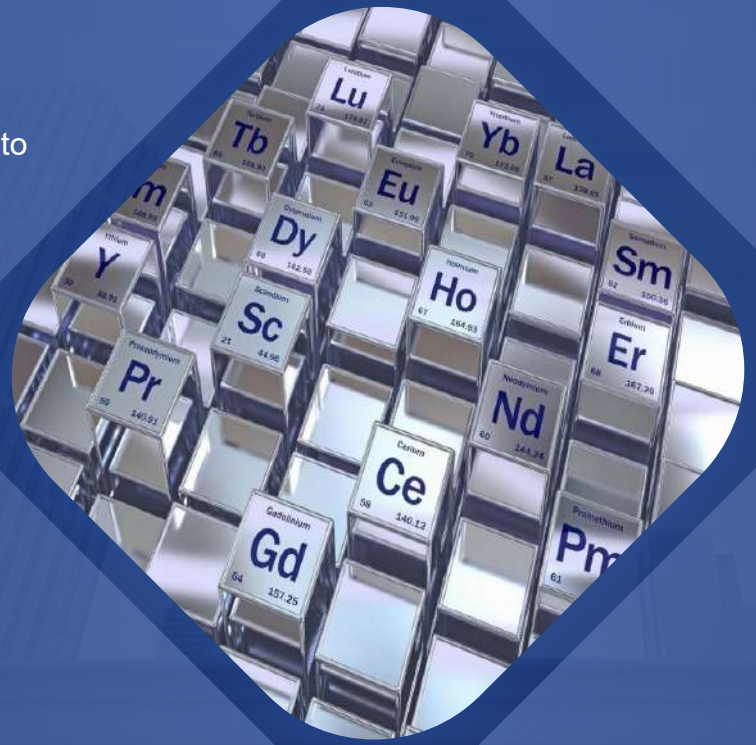
技术实力 Technical Strength

稀土硼化物
Rare earth borides

相关技术打破国外技术封锁，产品应用于航天领域电推进系统核心部件。
The relevant technology breaks the foreign technology blockade and the product is applied to the core components of electric propulsion systems in aerospace field.

稀土型材
Rare earth profiles

建有国内唯一的中子活化探测材料研制生产线。
HNRE has the only production line for the development of neutron activation detection materials in China.



高纯锆
High purity zirconium

研制出4N级高纯锆产品，填补国内空白，满足核工业特殊需求。
Developed 4N grade high-purity zirconium products to fill the domestic gap and meet the special needs of nuclear industry.

稀土靶材
Rare earth targets

高纯稀土金属及合金靶材生产技术水平国内领先、国际一流。
The production technology of high purity rare earth metals and alloy targets is leading in China and first-class in the world.

技术实力 Technical Strength

科研成果 Scientific research achievements

取得科研成果400余项，获得省部级以上科技成果奖励300多项。
More than 400 scientific research achievements have been achieved, and more than 300 scientific and technological achievements have been awarded at the provincial and ministerial level or above.

专利Patents

共获国家授权发明专利80余件。
More than 80 national authorized invention patents have been obtained.

承担项目Committed projects

承担了国家863计划、工业强基工程等多项国家及省部级课题。
HNRE has undertaken a number of national, provincial and ministerial projects such as the National 863 Program and industrial foundation projects.

标准Standards

牵头或参与制定并颁布实施国家/行业标准80余项。
Lead or participate in the formulation and implementation of more than 80 national / industry standards.

人才队伍 Talent Team

1 博士学历 5人
5 PhDs

2 硕士学历 47人
47 graduate students

3 科研学术团队 7个
7 scientific research academic teams

4 高级职称5 人
5 senior professional titles

5 副高级职称 30人
5 deputy senior professional titles

6 中级职称45 人
45 intermediate professional titles

公司员工245人
245 Employees

人才队伍 Talent Team

学术团队Academic teams

01

高纯金属团队
High purity metal team

团队负责人：贾帅广
Team leader: Jia Shuaiguang

02

稀土型材团队
Rare earth profile team

团队负责人：彭卓玮
Team leader: Pen Zhuowei

03

粉体材料团队
Powder material team

团队负责人：马小波
Team leader: Ma xiaobo

04

轻合金团队
Light alloy team

团队负责人：姚茂海
Team leader: Yao Maohai

05

高纯化合物团队
High purity compound team

团队负责人：刘荣丽
Team leader: Liu Rongli

06

稀土靶材团队
Rare earth target team

团队负责人：刘华
Team leader: Liu Hua

07

稀土永磁团队
Rare earth permanent magnet team

团队负责人：陈云志
Team leader: Chen Yunzhi

产品与服务
Products and Services

稀土金属 Rare earth metals

稀土靶材 Rare earth targets

稀土合金 Rare earth alloys

稀土型材 Rare earth profiles

稀土粉末 Rare earth powders

稀土硼化物 Rare earth borides

稀土化合物 Rare earth compounds

分析检测 Analysis & testing

技术咨询 Technical consulting

产品与服务
Products and Services

稀土金属 Rare earth metals

我院拥有除钷(Pm)外包含钪(Sc)、钇(Y)、镧(La)、铈(Ce)等在内的全部16种稀土金属及其相关产品。

HNRE produces all 16 rare earth metals and their related products including scandium (Sc), yttrium (Y), lanthanum (La), cerium (Ce), etc., except promethium (Pm).

我院的超高纯稀土金属钪(Sc) 、钬(Ho)、铒(Er)、镱(Yb)、铕(Eu)等可达到相对纯度5N，绝对纯度3N。

Our ultra-high purity rare earth metals scandium (Sc), holmium (Ho), erbium (Er), ytterbium (Yb) and europium (Eu) can reach a relative purity of 5N and an absolute purity of 3N.

Sc/TREM≥99.999%

Ho/TREM≥99.999%

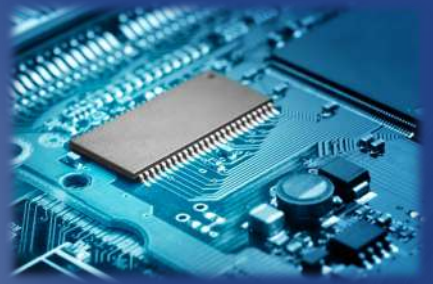
Er/TREM≥99.999%

Yb/TREM≥99.999%

产品与服务
Products and Services

稀土金属 Rare earth metals

稀土金属产品 Rare Earth Metal Products			
产品 Product	规格Specification	产品 Product	规格Specification
Sc	3N、4N、5N	Y	3N、4N、5N
La	2N5、3N	Tb	3N、4N
Ce	2N、3N	Dy	3N、4N、5N
Pr	2N5	Ho	3N、4N、5N
Nd	2N5	Er	3N、4N、5N
Sm	3N、4N	Tm	3N、4N、5N
Eu	4N、5N	Yb	3N、4N、5N
Gd	3N	Lu	3N



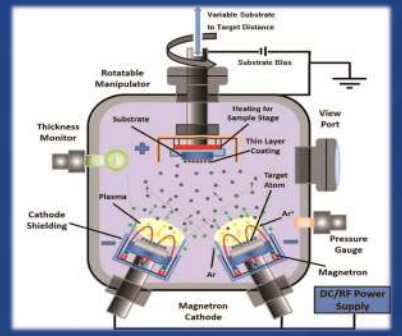
稀土金属是各种靶材、丝材、片箔材、金属粉末及合金的重要原材料，广泛用于通讯技术、计算机、航空航天、医药卫生、感光材料、光电材料、能源材料和催化剂材料等领域。

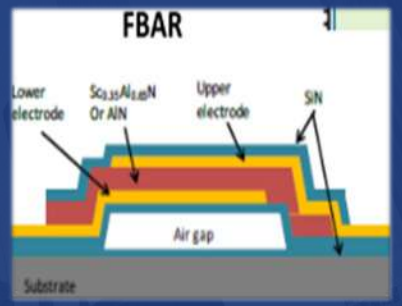
Rare earth metals are important raw materials for various targets, wires, foils, powders and alloys. They are widely used in modern communication technology, computers, aerospace, medicine and health, photosensitive materials, optoelectronic materials, energy materials, and catalyst materials.

产品与服务
Products and Services

稀土靶材 Rare earth targets

稀土靶材主要作为磁控溅射镀膜材料，稀土Ce、Gd、Dy、Tb靶材主要用于信息储存产业。稀土Y、Nd、Yb靶材主要用于液晶显示、半导体行业，是制备电致发光薄膜绝缘层的主要靶材。Sc、AlSc合金靶是制造固体激光器镀膜 、高性能氮化铝钪(ScAlN) 压电薄膜的关键溅射材料。 ScAlN 用于制备薄膜声波滤波器(FBAR)等射频器件，以及新型微机电系统(MEMS)器件和指纹识别传感器，广泛应用于5G通信、汽车芯片、生物医学等民用领域以及卫星通讯、雷达探测等军工领域。

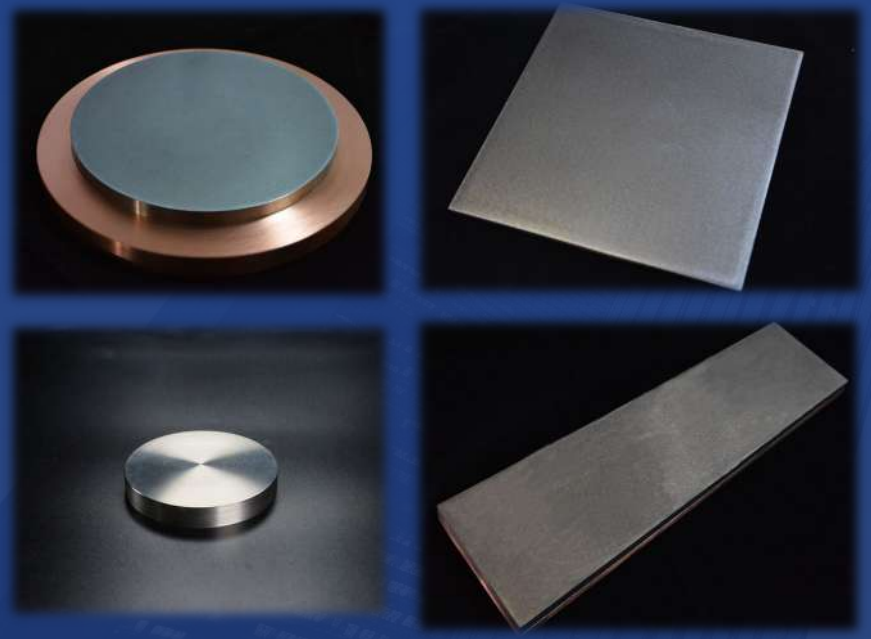




Rare earth targets are mainly used as magnetron sputtering coating materials, Ce, Gd, Dy and Tb targets are mainly used in information storage industry. Y, Nd and Yb targets are mainly used in liquid crystal display and semiconductor industry, and are the main targets for preparing electroluminescent thin film insulators. Sc and AlSc alloy targets are key sputtering materials for solid-state laser coating and high-performance aluminum scandium nitride (ScAlN) piezoelectric films. ScAlN is used to fabricate RF devices such as thin film acoustic filter (FBAR), as well as new micro-electromechanical system (MEMS) devices and fingerprint identification sensors. it is widely used in 5G communications, automotive chips, biomedical and other civil fields, as well as satellite communications, radar detection and other military fields.

HNRE

稀土靶材 Rare earth targets



稀土靶材主要技术指标
Technical parameters of rare earth target materials

产品分类 Product Series	靶材Targets	备注Remarks
单一稀土系列 Single rare earth seires	Sc、Y、La、Sm、Yb、Gd、Tb, etc	稀土系列纯度TREM≥99.95%，具体规格和杂质含量可以根据客户要求定制，对于Sc、Sm等难加工元素靶材尺寸规格可协商。Rare earth series purity TREM ≥ 99.95%, specifications and impurity content can be customized according to customer requirements. The target size specification of difficult-to-machining elements such as Sc and Sm can be negotiated.
稀土合金系列 Rare earth alloy series	Al-RE、Ni-RE,etc	
有色金属基系列 Nonferrous metal based series	Ni、Zr、Cr-Si-Al,etc	

产品与服务
Products and Services

稀土合金 Rare earth alloys

添加稀土元素可细化合金的晶粒、提高性能。通过中间合金形态加入，可以使稀土分布更均匀，烧损更少。稀土中间合金可以根据客户需求的成分和尺寸进行订制。

The addition of rare earth elements can refine the grains and improve the properties of the alloy. Through the addition of master alloy, the distribution of rare earths can be more uniform and the burning loss can be reduced. Rare earth master alloys can be customized according to the composition and size of customer requirements.

1. 铝稀土合金 Al-RE alloys
2. 镁稀土合金 Mg-RE alloys
3. 铜稀土合金 Cu-RE alloys

4. 镍稀土合金 Ni-RE alloys
5. 稀土牌号合金 RE grade alloys
6. 稀土改性合金 RE modified alloy

产品与服务
Products and Services

HNRE

铝稀土中间合金 Aluminum rare earth master alloys

铝稀土中间合金Aluminum based rare earth master alloys			
产品名称 Product Name	成分 Composition	产品名称 Product Name	成分 Composition
Al-Sc	2%、根据客户要求Customized	Al-Ho	根据客户要求Customized
Al-La	10%、根据客户要求Customized	Al-Er	10%、根据客户要求Customized
Al-Y	5-50%、根据客户要求Customized	Al-Tm	根据客户要求Customized
Al-Ce	10%、根据客户要求Customized	Al-Yb	根据客户要求Customized
Al-Pr	根据客户要求Customized	Al-Lu	根据客户要求Customized
Al-Nd	根据客户要求Customized	Al-Mo	根据客户要求Customized
Al-Sm	根据客户要求Customized	Al-Ti	根据客户要求Customized
Al-Gd	根据客户要求Customized	Al-Nb	根据客户要求Customized
Al-Tb	根据客户要求Customized	Al-Hf	根据客户要求Customized
Al-Dy	根据客户要求Customized	Al-Ta	根据客户要求Customized

产品与服务
Products and Services

HNRE

镁稀土中间合金 Magnesium rare earth master alloys

镁稀土中间合金Magnesium based rare earth master alloys			
产品名称 Product Name	成分 Composition	产品名称 Product Name	成分 Composition
Mg-Sc	2-30%、根据客户要求Customized	Mg-Ho	根据客户要求Customized
Mg-Y	30%、根据客户要求Customized	Mg-Er	30%、根据客户要求Customized
Mg-La	5-65%、根据客户要求Customized	Mg-Tm	根据客户要求Customized
Mg-Ce	20%、根据客户要求Customized	Mg-Yb	根据客户要求Customized
Mg-Pr	根据客户要求Customized	Mg-Lu	根据客户要求Customized
Mg-Nd	25%、根据客户要求Customized	Mg-Zr	30%、根据客户要求Customized
Mg-Sm	30%、根据客户要求Customized	Mg-Ni	根据客户要求Customized
Mg-Gd	30%、根据客户要求Customized	Mg-Ag	根据客户要求Customized
Mg-Tb	根据客户要求Customized	Mg-Cu	根据客户要求Customized
Mg-Dy	根据客户要求Customized	Mg-Li	根据客户要求Customized

HNRE

铜稀土中间合金 Copper rare earth master alloys

铜稀土中间合金Copper based rare earth master alloys			
产品名称 Product Name	成分 Composition	产品名称 Product Name	成分 Composition
Cu-La	5%、根据客户要求Customized	Cu-Zr	根据客户要求Customized
Cu-Ce	根据客户要求	Cu-Co	根据客户要求Customized
Cu-Y	15%、根据客户要求	Cu-Mg	根据客户要求Customized
Cu-Nd	根据客户要求	Cu-Ni	根据客户要求Customized
Cu-Ho	根据客户要求	Cu-La-Ce	根据客户要求Customized

产品与服务
Products and Services

HNRE

镍稀土中间合金 Nickel rare earth master alloys

镍稀土中间合金Nickel based rare earth master alloys			
产品名称 Product Name	成分 Composition	产品名称 Product Name	成分 Composition
Ni-Sc	根据客户要求Customized	Ni-Y	根据客户要求Customized
Ni-La	根据客户要求Customized	Ni-Dy	根据客户要求Customized
Ni-Ce	根据客户要求Customized	Ni-Ho	根据客户要求Customized
Ni-Pr	根据客户要求Customized	Ni-Er	根据客户要求Customized
Ni-Nd	根据客户要求Customized	Ni-Tm	根据客户要求Customized
Ni-Sm	根据客户要求Customized	Ni-Yb	根据客户要求Customized
Ni-Gd	根据客户要求Customized	Ni-Lu	根据客户要求Customized
Ni-Tb	根据客户要求Customized		

稀土牌号合金 Rare earth grade alloys

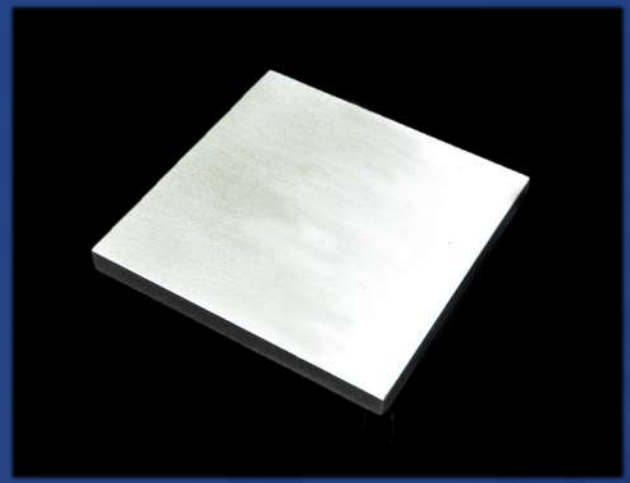
我院生产ZM系、 WE系高强耐热稀土镁合金。长期供货中国航发、中国航天科技、中国航天科工，配套应用于不同型号航空器。批产稳定，成分均匀；性能优于国标，杂质含量低，夹渣少。

HNRE produces ZM and WE series high-strength and heat-resistant rare earth magnesium alloys. We provide long-term supply to AECC，CASC, CASIC, etc, supporting applications in different types of airfcrats. Our alloys have stable batch production and uniform composition; Alloy performance is superior to national standards, with low impurity content and less slag inclusion.

产品与服务
Products and Services

稀土牌号合金 Rare earth grade alloys

产品牌号 Product	规格Spec.	执行标准Standard
ZM6	Nd：2.0-2.8%	GB 1177-91
WE43	Nd：2.0-2.5%； Gd、Dy、Er、Yb≤1.9%； Y：3.7-4.3%	GB/T 5153-2016
GW103K	Gd：9-11%；Y：2.5-3.5%	



WE43

ZM6

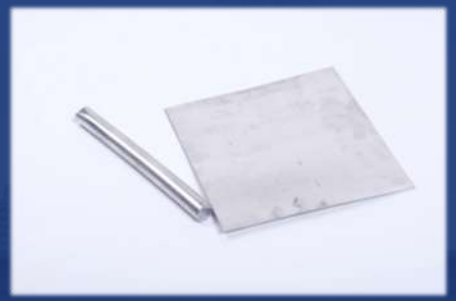
产品与服务
Products and Services

稀土改性合金 Rare earth modified alloys

我院利用自身稀土研究领域的技术优势，通过对现有高强Al合金、Ti合金、Cu合金以及Mg合金进行稀土改性与工艺调整，研制出超强可焊接稀土改性铝合金、高强耐高温稀土改性钛合金、高强高导高韧稀土改性铜合金以及高强耐高温稀土改性镁合金。

HNRE has developed ultra strong weldable rare earth modified aluminum alloys, high temperature resistant rare earth modified titanium alloys, high conductivity and toughness rare earth modified copper alloys, and high temperature resistant rare earth modified magnesium alloys through rare earth modification and process adjustment of high-strength Al alloys, Ti alloys, Cu alloys, and Mg alloys.

高导高强稀土改性铜合金
RE modified copper alloys



超强可焊接铝合金
RE modified aluminum alloys

稀土改性高强铝合金铆钉
RE modified aluminum alloy rivet

HNRE

稀土改性铜合金 Rare earth modified Cu alloys

比较项目 Compared Items	GB/T 7673.1-2008 标准Standard	TUN 901158 标准Standard	我院产品 HNRE Product
屈服强度 Yield Strength/MPa	220≤Rp0.2≤260	220（-0/+20%）	220
伸长率Elongation Rate/%	15	---	24
20℃时电阻率Resistivity at 20 ℃/(Ω·mm²/m)	≤0.01754	≤0.01754	0.01715
导电率Electric Conductivity/%IACS	98.27	98.27	100.53

HNRE

稀土改性铝合金 Rare earth modified Al alloys

抗拉强度 Tensile Strength(Rm)	屈服强度 Yield Strength(Rp0.2)	延伸率 Elongation Rate(A5)	应变断裂韧度 Strain fracture toughness(KIC)	耐应力腐蚀 Stress Corrosion Resistance	焊接性能 Welding Performance
≥700MPa	≥660MPa	≥8%	≥27MPa·m1/2	浸泡在3.5%NaCl溶液中断裂时间大于100h；Immersion in a 3.5% NaCl solution for a fracture time greater than 100 hours;	氩弧焊焊接系数为不小于0.8 The welding coefficient of argon arc welding is not less than 0.8

产品与服务
Products and Services

HNRE

稀土改性钛合金 Rare earth modified Ti alloys

环境/指标Parameter	抗拉强度 Tensile Strength(Rm)	屈服强度 Yield Strength(Rp0.2)	延伸率 Elongation Rate(A5)
常温 Normal temp.	≥1150Mpa	≥1050 MPa	≥12%
650℃	≥500 MPa	≥450 MPa	≥20%

稀土改性镁合金 Rare earth modified Mg alloys

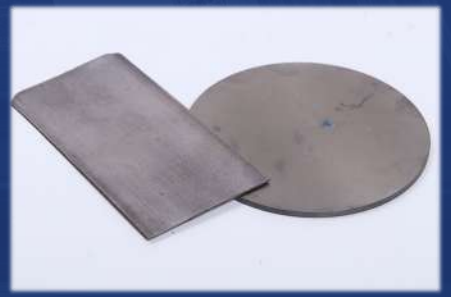
环境/指标Parameter	抗拉强度 Tensile Strength(Rm)	屈服强度 Yield Strength(Rp0.2)	延伸率 Elongation Rate(A5)
常温 Normal temp.	280-290MPa	140-295MPa	6-10%

稀土型材 Rare earth profiles

我院生产包括各类单一稀土、稀土合金、有色金属及合金型材（片、箔、棒、丝），作为全国唯一稀土型材生产基地，可以按照客户要求定制各类稀土及其合金型材。产品纯度≥99.99%，最小厚度可达20微米，最高加工精度达2微米；
HNRE produces various types of single rare earths, rare earth alloys, non-ferrous metals and alloy profiles (sheets, foils, rods, wires). As the only rare earth profile production base in China, we can customize various rare earth and alloy profiles according to customer requirements. Product purity ≥ 99.99%, minimum thickness up to 20 microns, maximum processing accuracy up to 2 microns;

稀土钆、镝、钐、铒、铥、铕等具有大的中子吸收俘获截面，稀土片、箔产品主要作为中子活化探测材料，用于核反应堆构建的材料辐射模拟场物理参数测量，是测量中子能谱和中子注量率的关键材料。
Rare earth elements such as gadolinium, dysprosium, samarium, erbium, thulium, europium, etc. have large neutron absorption and capture cross-sections. Rare earth sheets and foils are mainly used as neutron activation detection materials for material radiation simulation field physical parameter measurement in nuclear reactor construction. They are key materials for measuring neutron spectra and neutron flux rates.



产品与服务
Products and Services

稀土片、箔材 Rare earth sheet and foils

产品分类 Product Series	片（箔）材Rare earth sheet/foils				备注Remarks
	厚度Thickness（mm）	精度Accuracy（mm）	宽度Width（mm）	精度Accuracy（mm）	
单一稀土系列 Single rare earth	0.05～15	0.01	5～400	1.0	稀土系列纯度TREM≥99.95%，具体尺寸和杂质含量可以根据客户要求定制，对于Sc、Sm等难加工元素箔材尺寸规格可协商。Rare earth series purity TREM ≥ 99.95%, specifications and impurity content can be customized according to customer requirements. The foil size specification of difficult-to-machining elements such as Sc and Sm can be negotiated.
稀土合金系列 Rare earth alloy	0.08～15	0.01	5～400	1.0	
有色金属系列 Nonferrous metal based	0.05～15	0.01	5～450	1.0	

产品与服务
Products and Services

稀土丝、棒材 Rare earth wire and rods

产品分类 Product Series	丝（棒）材 Rare earth wire/rod		备注Remarks
	直径Dia. min（mm）	精度Accuracy（mm）	
单一稀土系列 Single rare earth	0.5	0.05	稀土系列纯度TREM≥99.95%，具体尺寸和杂质含量可以根据客户要求定制，对于Sc、Sm等难加工元素丝材尺寸规格可协商。 Rare earth series purity TREM ≥ 99.95%, specifications and impurity content can be customized according to customer requirements. The wire size specification of difficult-to-machining elements such as Sc and Sm can be negotiated.
稀土合金系列 Rare earth alloy	0.5	0.05	
有色金属系列 Nonferrous metal based	0.1	0.01	

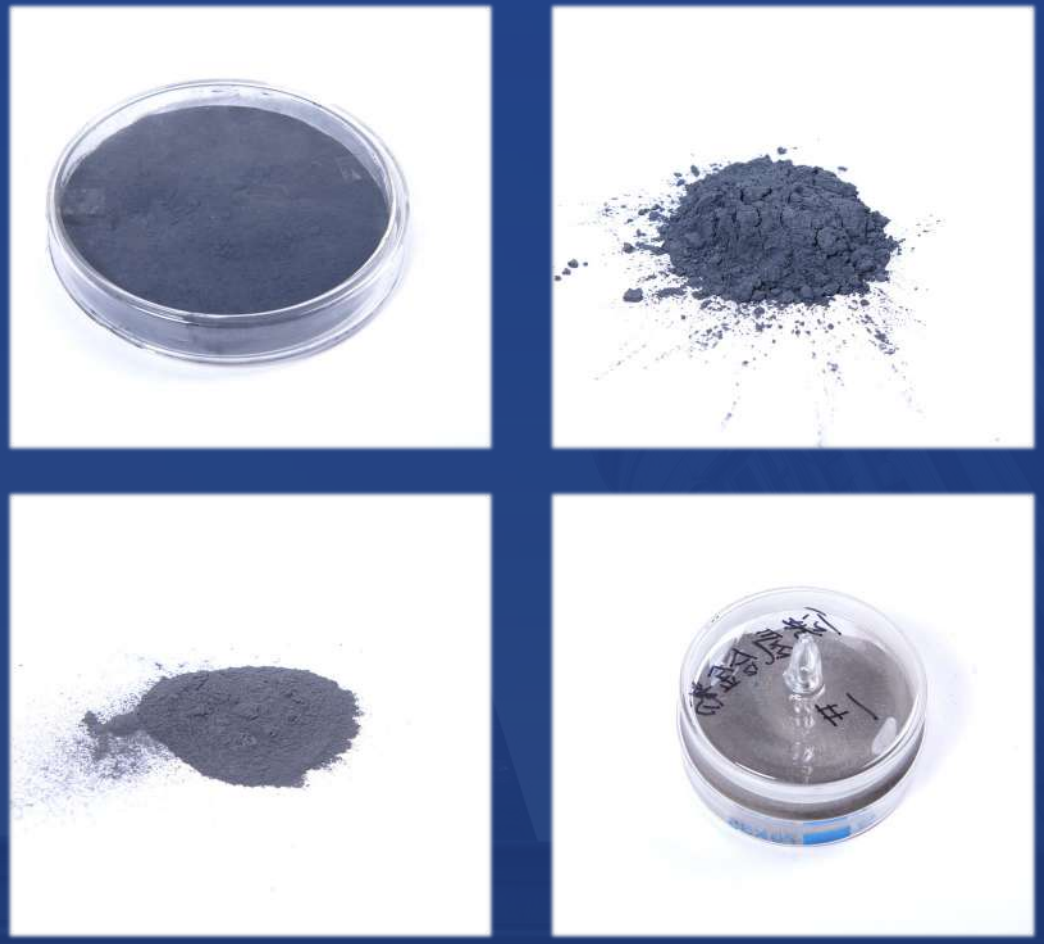



产品与服务
Products and Services

稀土粉末 Rare earth powders

我院生产除铕（Eu）以外的所有稀土金属粉末、稀土氢化物粉末和稀土氮化物粉末。广泛应用于原子能工业、电子工业、特种材料以及作为粉末冶金添加剂。

HNRE produces all rare earth metal powder, rare earth hydride powder and rare earth nitride powder except europium (Eu). They are widely used in atomic energy industry, electronic industry, special materials and as powder metallurgy additives.



HNRE

稀土金属粉末 Rare earth metal powders

稀土金属粉末Rare earth metal powders					
产品名称 Product Name	规格Spec.	目数Mesh	产品名称 Product Name	规格Spec.	目数Mesh
Sc	3N	-100、-200	Y	3N	-100、-200
La	2N5	-100、-200	Dy	3N	-100、-200
Ce	2N5	-100、-200	Ho	3N	-100、-200
Pr	2N5	-100、-200	Er	3N	-100、-200
Nd	2N5	-100、-200	Tm	3N	-100、-200
Sm	3N	-100、-200	Yb	3N	-100、-200
Gd	3N	-100、-200	Lu	3N	-100、-200
Tb	3N	-100、-200			

HNRE

稀土氢化物粉末 Rare earth hydride powders

稀土氢化物粉末Rare earth hydride powders					
产品名称 Product Name	规格Spec.	目数Mesh	产品名称 Product Name	规格Spec.	目数Mesh
ScH3	3N	-100、-200	YH3	3N	-100、-200
LaH3	2N5	-100、-200	DyH3	3N	-100、-200
CeH3	2N5	-100、-200	HoH3	3N	-100、-200
PrH3	2N5	-100、-200	ErH3	3N	-100、-200
NdH3	2N5	-100、-200	TmH3	3N	-100、-200
SmH3	3N	-100、-200	YbH3	3N	-100、-200
GdH3	3N	-100、-200	LuH3	3N	-100、-200
TbH3	3N	-100、-200			

HNRE

稀土氮化物粉末 Rare earth nitride powders

稀土氮化物粉末Rare earth nitride powders					
产品名称 Product Name	规格Spec.	目数Mesh	产品名称 Product Name	规格Spec.	目数Mesh
ScN	3N	-100、-200	YN	3N	-100、-200
LaN	2N5	-100、-200	DyN	3N	-100、-200
CeN	2N5	-100、-200	HoN	3N	-100、-200
PrN	2N5	-100、-200	ErN	3N	-100、-200
NdN	2N5	-100、-200	TmN	3N	-100、-200
SmN	3N	-100、-200	YbN	3N	-100、-200
GdN	3N	-100、-200	LuN	3N	-100、-200
TbN	3N	-100、-200			

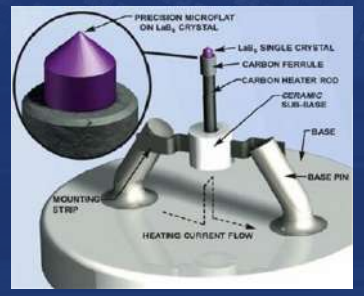
产品与服务
Products and Services

稀土硼化物 Rear earth borides

稀土硼化物包括各类稀土硼化物，主要有硼化镧、硼化铈、硼化钇、硼化钐及SmEuBaB6、GdCeB6等多元稀土硼化物等。
Rare earth borides include various rare earth borides, mainly including lanthanum boride, cerium boride, yttrium boride, samarium boride and multielement rare earth borides such as SmEuBaB6, GdCeB6, etc.

稀土硼化物具有逸出功低、发射电流密度大、抗中毒能力强等优点，多晶体及单晶体可加工成性能优异的阴极体，应用于航空航天、电子扫描、电焊等行业领域；纳米级稀土硼化物加入玻璃可吸收阻挡大部分紫外线，节能环保效果明显。
Rare earth borides have advantages such as low escape work, high emission current density, and strong anti poisoning ability. Polycrystalline and single crystals can be processed into high-performance cathode bodies, which are used in industries such as aerospace, electronic scanning, and welding; The addition of nanoscale rare earth borides to glass can absorb and block most of the ultraviolet rays, resulting in significant energy-saving and environmental protection effects.

我院提供的阴极材料有阴极粉末和阴极靶材，主要是LaB6等稀土硼化物，我院生产的LaB6等多晶体，相对密度可达到95%。
The cathode materials provided by HNRE include cathode powder and cathode target, mainly rare earth boride such as LaB6. The relative density of LaB6 and other polycrystals produced by HNRE can reach 95%.



产品与服务
Products and Services

HNRE

稀土硼化物 Rare earth borides

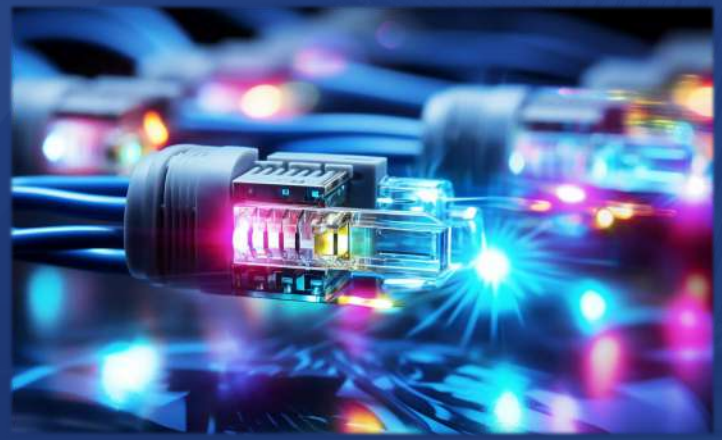
稀土硼化物 Rare earth borides							
产品名称 Product	规格 Spec.	粉末 Powder	型材 Profile	产品名称 Product	规格 Spec.	粉末 Powder	型材 Profile
LaB_6	3N	-20~500	片材、棒材 Sheet/Rod	DyB_6	3N	-20~500	片材、棒材 Sheet/Rod
CeB_6	3N	-20~500	片材、棒材 Sheet/Rod	TbB_6	3N	-20~500	片材、棒材 Sheet/Rod
PrB_6	3N	-20~500	片材、棒材 Sheet/Rod	YbB_6	3N	-20~500	片材、棒材 Sheet/Rod
NdB_6	3N	-20~500	片材、棒材 Sheet/Rod	YB_6	3N	-20~500	片材、棒材 Sheet/Rod
SmB_6	3N	-20~500	片材、棒材 Sheet/Rod	$(LaBa)B_6$	3N	-20~500	片材、棒材 Sheet/Rod
GdB_6	3N	-20~500	片材、棒材 Sheet/Rod	$(LaEu)B_6$	3N	-20~500	片材、棒材 Sheet/Rod
ScB2	2N	-20~500	片材、棒材 Sheet/Rod	YB_4	2N	-20~500	片材、棒材 Sheet/Rod

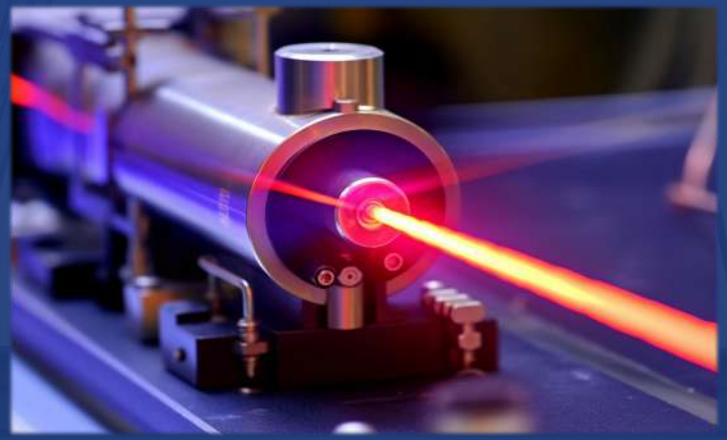
产品与服务
Products and Services

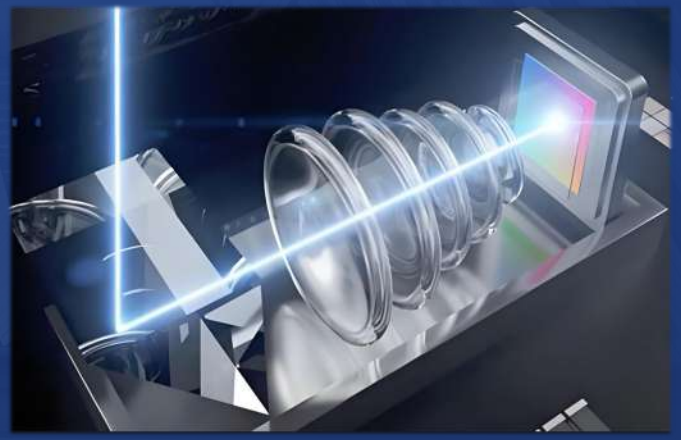
超高纯稀土化合物 Ultra-high purity rare earth compounds

超高纯稀土化合物是高功率激光光纤、激光晶体、光学镀膜等高新技术材料的关键基础原材料，在信息、医疗、国防等领域应用广泛。我院研制的超纯氯化稀土和超高纯稀土螯合物产品，相对纯度大于6N，非稀土杂质小于0.1ppm，技术水平国内领先，已实现国产替代进口。

Ultra-high purity rare earth compounds are the key raw materials of high-power laser optical fiber, laser crystal, optical coating and other high-tech materials, which are widely used in information, medical, national defense and other fields. The ultra-pure rare earth chloride and ultra-high purity rare earth chelate products developed by HNRE have a relative purity of more than 6N and non-rare earth impurities less than 0.1ppm.







产品与服务
Products and Services

高纯稀土氧化物 High purity rare earth oxides

5N-6N的氧化稀土主要应用于实验室的稀土标准物质，同时还应用于军事、国防、能源等领域。我院提供全系列La2O3、Y2O3 、Sc2O3 等相对纯度6N及以上的超纯稀土氧化物。还可根据客户需求定制7N及以上的超纯稀土氧化物。
5N-6N rare earth oxides are mainly used as a rare earth standard substance in laboratories, as well as in military, national defense, energy and other fields. HNRE provides a full range of ultra pure rare earth oxides with relative purity of 6N or above, such as La2O3, Y2O3, Sc2O3, etc. We can also customize 7N and above ultra pure rare earth oxides according to customer needs.

产品相对纯度 Product purity	≥99.9999%	总稀土杂质 Total RE impurities	≤1.0 μg/g
Fe	≤0.01 μg/g	Co	≤0.001 μg/g
Ni	≤0.01 μg/g	Cr	≤0.01 μg/g
Ca	≤0.05 μg/g	V	≤0.01 μg/g
Mg	≤0.01 μg/g	Zn	≤0.01 μg/g
Cu	≤0.01 μg/g	Mn	≤0.01 μg/g

产品与服务
Products and Services

高纯稀土氯化物 High purity rare earth chlorides

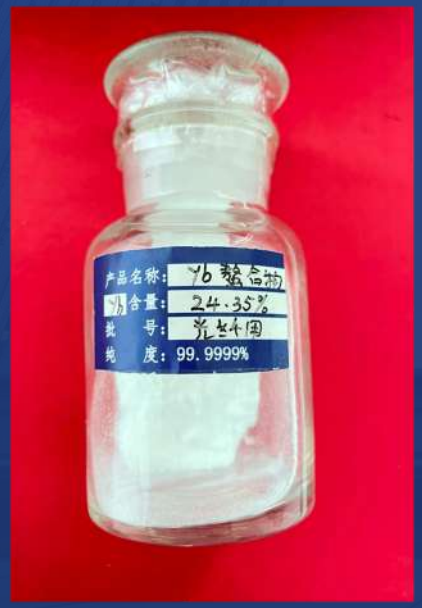
我院可提供定制全系列La-Y、Sc等相对纯度6N的超纯稀土氯化物（含结晶水或无水晶体），具体技术指标可按客户要求定制。
HNRE provides customized full series La-Y, Sc and other ultra-pure rare earth chlorides with relative purity of 6N (including crystal water or anhydrous crystal). The specific technical specifications can be customized according to customer requirements.

产品相对纯度 Product purity	≥99.9999%	总稀土杂质 Total RE impurity	≤0.5 μg/g
Fe	≤0.01 μg/g	Co	≤0.001 μg/g
Ni	≤0.01 μg/g	Cr	≤0.01 μg/g
Ca	≤0.10 μg/g	V	≤0.01 μg/g
Mg	≤0.01 μg/g	Zn	≤0.01 μg/g
Cu	≤0.01 μg/g	Mn	≤0.01 μg/g

产品与服务
Products and Services

高纯稀土螯合物 High purity rare earth chelates

定制全系列La-Y等6N超纯稀土螯合物产品，可按客户指标要求定制相关产品。
Customize a full range of La-Y and other 6N ultra pure rare earth chelate products, and relevant products can be customized according to customer requirements.



产品相对纯度 Product purity	≥99.9999%	总稀土杂质 Total RE impurity	≤0.3 μg/g
Fe	≤0.01 μg/g	Co	≤0.001 μg/g
Ni	≤0.01 μg/g	Cr	≤0.01 μg/g
Ca	≤0. 03 μg/g	V	≤0.01 μg/g
Mg	≤0.01 μg/g	Zn	≤0.01 μg/g
Cu	≤0.01 μg/g	Mn	≤0.01 μg/g

产品与服务
Products and Services

稀土氟化物Rare earth fluorides

我院生产包括钪 (Sc)、铒(Er)、镝(Dy)、铽(Tb)、钕(Nd) 等各种稀土金属的氟化物。稀土氟化物主要用于还原制备稀土金属，高纯稀土氟化物可加工成靶材，用于光学镀膜材料、晶体材料、光纤材料、荧光粉等，应用在半导体、电子、显示、通讯、玻璃、新材料等行业。

HNRE produces fluorides of various rare earth metals, including scandium (Sc), erbium (Er), dysprosium (Dy), terbium (Tb), neodymium (Nd), etc. Rare earth fluorides are mainly used for reducing and preparing rare earth metals. High purity rare earth fluorides can be processed into target materials, used in optical coating materials, crystal materials, optical fiber materials, fluorescent powders, etc. They are applied in industries such as semiconductors, electronics, displays, communications, glass, and new materials.

稀土氟化物Rare earth fluorides			
产品名称 Product	规格Spec.	产品名称 Product	规格Spec.
ScF_3	3N、4N、5N	YF_3	5N
LaF_3	5N	TbF_3	4N
CeF_3	4N	DyF_3	3N
PrF_3	2N5	HoF_3	2N5、3N
NdF_3	2N5	ErF_3	3N、5N
GdF_3	4N		

HNRE

超纯氯化铝晶体 Ultra-pure aluminum chloride crystal

定制绝对纯度6N氯化铝（带结晶水及无水晶体）产品。
Customize absolute purity 6N aluminum chloride (with crystal water and anhydrous crystal) products.

AlCl3	≥ 99.9999%	Mn	≤0.01 μg/g
Fe	≤0.01 μg/g	Cd	≤0.01 μg/g
Ca	≤0.05 μg/g	Ti	≤0.01 μg/g
Mg	≤0.01 μg/g	Si	≤0.05 μg/g
Cu	≤0.01 μg/g	Ga	≤0.01 μg/g
Co	≤0.01 μg/g	Ge	≤0.01 μg/g
Cr	≤0.01 μg/g	In	≤0.01 μg/g
V	≤0.01 μg/g	Sn	≤0.01 μg/g
Zn	≤0.01 μg/g	Pb	≤0.01 μg/g

产品与服务
Products and Services

分析检测 Analysis and testing

分析检测中心现有员工20人，教授级高工2人，高级工程师5人，研究生及以上学历10人，拥有经验丰富的学科带头人及专业的检测人员。实验室占地面积3000㎡，仪器设备30余台套，总价值3000余万，90%为进口尖端设备，拥有省内首台GDMS，在检测行业及技术服务方面处于国内领先水平。

HNRE testing center has 20 employees, including 2 professor level senior engineer, 5 senior engineer, and 10 individuals with a graduate degree or above. It has experienced discipline leaders and professional testing personnel. The laboratory covers an area of 3000 square meters, with more than 30 sets of instruments and equipment and 90% of them are imported cutting-edge equipment. Our lab has the first GDMS in Hunan province. We are at the leading level in the testing industry and rare earth technology services in China


检验检测机构
资质认定证书

证书编号：171821341167

名称：湖南省稀土分析检测中心有限公司

地址：长沙市芙蓉区张公岭隆平高科技园隆园二路108号/410126

经审查，你机构已具备国家有关法律、行政法规规定的基本条件和能力，现予批准，可以向社会出具具有证明作用的数据和结果，特发此证。资质认定包括检验检测机构计量认证。

你机构对外出具检验检测报告或证书的法律责任由湖南省稀土分析检测中心有限公司承担。

许可使用标志 CMA 171821341167

发证日期：2017年11月03日

有效期至：2023年11月02日

发证机关：

本证书由国家认证认可监督管理委员会监制，在中华人民共和国境内有效。

CMA


中国合格评定国家认可委员会

实验室认可证书

（注册号：CNAS L5951）

兹证明：

湖南省稀土分析检测中心有限公司

（法人：湖南省稀土分析检测中心有限公司）

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符合 ISO/IEC 17025：2017《检测和校准实验室能力的通用要求》（CNAS-CL01《检测和校准实验室能力认可准则》）的要求，具备承担本证书附件所列服务能力，予以认可。

获认可的能力范围见标有相同认可注册号的证书附件，证书附件是本证书组成部分。

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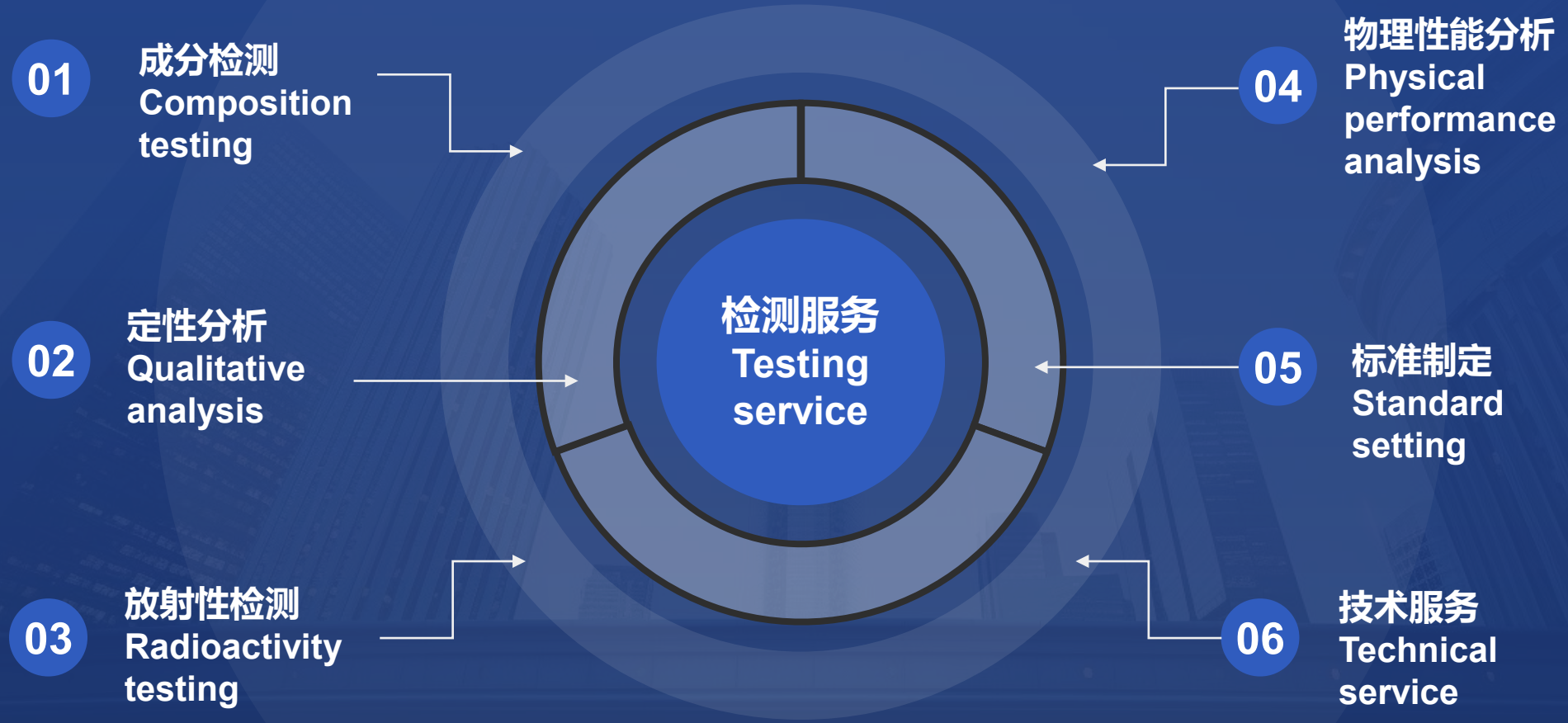
产品与服务
Products and Services

分析检测 Analysis and testing



产品与服务
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分析检测 Analysis and testing

01 成分检测 Composition testing

稀土类全元素原矿、精矿、富集物、氧化物、氯化物、氟化物、碳酸稀土、稀土金属及合金、钕铁硼、高纯稀土氧化物及各种钪产品中的稀土总量配分及非稀土杂质元素的检测；
Total distribution of rare earth elements in raw ores, concentrates, oxides, chlorides, fluoride, rare earth carbonate, rare earth metals and alloys, NdFeB, high purity rare earth oxides and various scandium products and detection of non-rare earth impurities.

ICP-MS/MS

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分析检测 Analysis and testing

02

定性检测
Qualitative analysis

各类样品的能谱（EDS）定性分析、X射线荧光光谱（XRF）定性分析、辉光放电质谱仪（GDMS）半定量分析。

Qualitative analysis of various samples using energy dispersive spectroscopy (EDS), X-ray fluorescence spectroscopy (XRF), and semi quantitative analysis using glow discharge mass spectrometry (GDMS).

GDMS

XFR

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分析检测 Analysis and testing

03 放射性检测 Radioactivity testing

稀土、土壤及矿山行业放射性检测，包括空气γ剂量率、放射性总α/β检测、238U、232Th、226Ra、40K等放射性核素检测。
Radioactivity detection of rare earth, soil and mining industry, including air γ dose rate, total radioactive α / β detection, 238U, 232Th, 226Ra, 40K radionuclide detection.

04 物理性能分析 Physical performance analysis

各类粉体材料的粒度、比表面及孔径分析、各类样品的XRD物相分析、金相分析、形貌分析、稀土磁性材料的磁性能分析。
Particle size, specific surface area and pore size analysis of all kinds of powder materials, XRD phase analysis of various samples, metallographic analysis, morphology analysis, magnetic property analysis of rare earth magnetic materials.

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05 标准制定Standard setting

承担国家标准、行业标准及地方标准的制修订任务。
Undertake the task of formulating and revising national standards, industry standards, and local standards.

06 技术服务Technical service

稀土氧化物提纯的技术服务；赤泥、废渣、废抛光粉中稀土及有价元素综合回收、各种产品提纯工艺的研发服务；分析检测人员技术培训服务、技术咨询服务。
Technical services for rare earth oxide purification; Research and development services for the comprehensive recovery of rare earth and valuable elements in red mud, waste residue, and waste polishing powder, as well as various product purification processes; Technical training and consulting services for analysis and testing personnel.

产品与服务
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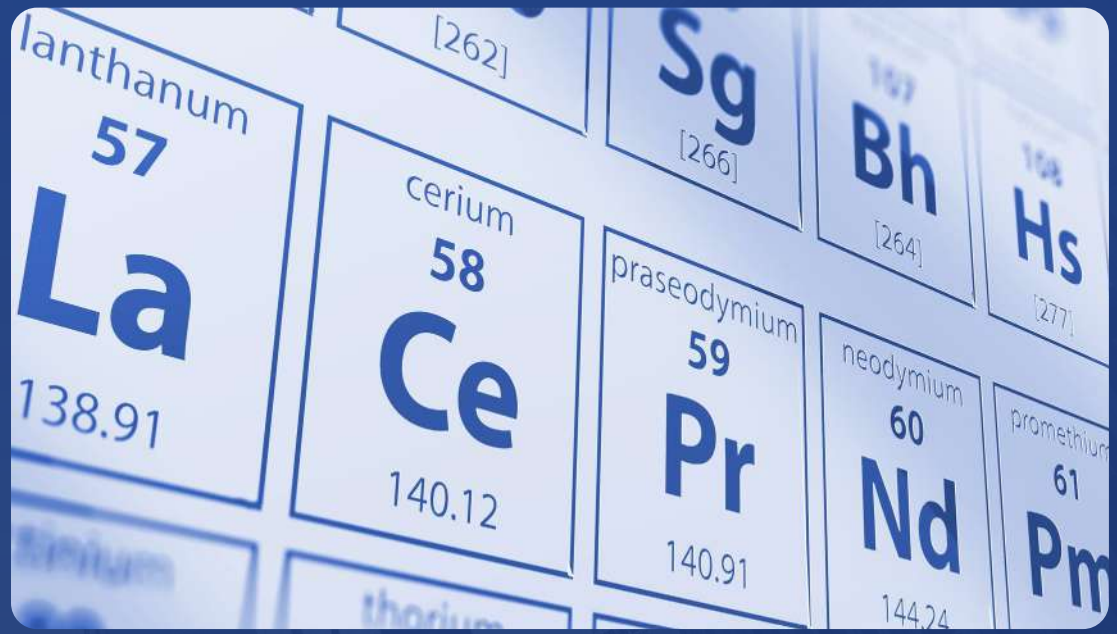
技术咨询 Technical consultation

我院拥有一流的技术装备和人才队伍，各种稀土加工技术和手段齐备，从稀土采矿、分离、冶炼到材料加工都有较强的技术贮备，可提供稀土冶炼、分离相关技术的研发及对外技术服务。

HNRE has first-class technical equipment and talent team, with various rare earth processing technologies and means in place. It has strong technical reserves in rare earth mining, separation, smelting, and material processing, and can provide research and development of rare earth smelting and separation related technologies as well as technical services.



HNRE

技术咨询 Technical consultation

我院成立60多年来，在高纯金属、稀土改性合金，稀土型材、稀土硼化物、稀土氧化物、稀土氟化物靶材方面拥有丰富的经验和深厚的技术积淀，可为企业提供技术咨询或联合申报课题。

Since its establishment more than 60 years ago, HNRE has rich experience and profound technical accumulation in high purity metals, rare earth modified alloys, rare earth profiles, rare earth borides, rare earth oxides and rare earth fluoride targets, which can provide technical advice or joint application for enterprises.

战略与目标
Strategy and Objectives

战略定位 Strategic Positioning

战略目标 Strategic Objectives

HNRE

战略定位 Strategic Positioning

聚焦稀土在中高端产业领域应用，打造军民融合创新研发平台；
走“专精特新”道路，做强做优主业，打造国家级创新研发平台和高科技型国家重点“小巨人”企业。

Focusing on the application of rare earths in high end industry, building an innovative research and development platform for military civilian integration;
Take the path of “specialization, refinement, uniqueness, and innovation”, strengthen and optimize main business, and build a national level innovation and research and development platform and a high-tech national key “little giant” enterprise.

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战略目标 Strategic Objectives

围绕先进轨道交通、工程机械、航空航天、先进储能等高端装备和新能源领域布局，构建以“高纯稀土金属及合金、稀土型材、高纯稀土化合物、稀土永磁材料”为主导的产业体系，大幅度提升高纯稀土靶材、稀土合金、高纯稀土化合物业务量业务量，稳步提升稀土金属及粉末、稀土型材产能，进一步优化稀土永磁材料产能结构。

Focusing on advanced rail transit, engineering machinery, aerospace, advanced energy storage and other high-end equipment, as well as the layout of new energy fields, build an industrial system led by "high-purity rare earth metals and alloys, rare earth profiles, high-purity rare earth compounds, and rare earth permanent magnet materials", significantly increase the business volume of high-purity rare earth targets, rare earth alloys, and high-purity rare earth compounds, steadily increase the production capacity of rare earth metals, powders, and rare earth profiles, and further optimize the production capacity structure of rare earth permanent magnet materials.

お問い合わせはOSTECHへ
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