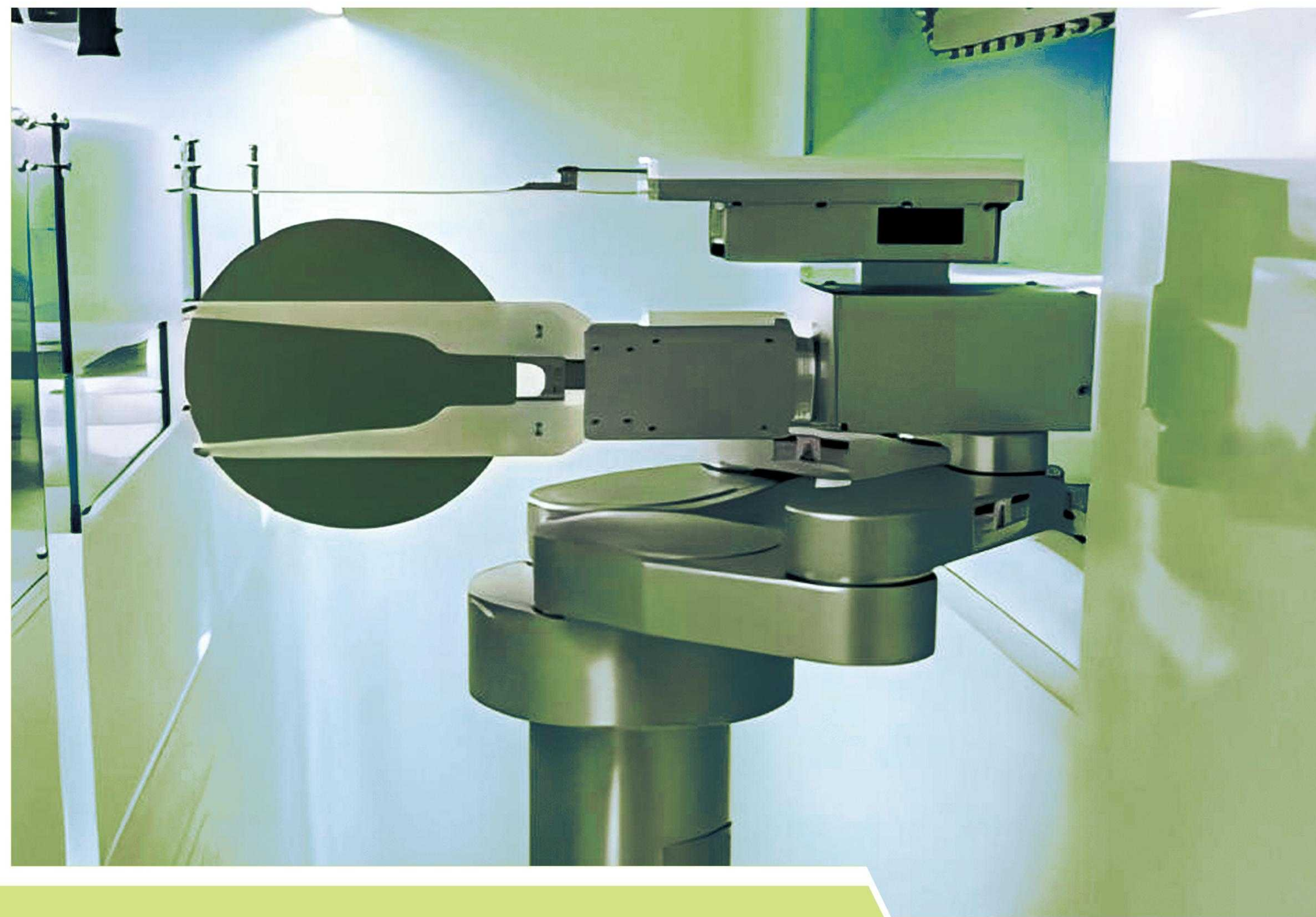




- ◆ 晶圆搬运手指
Wafer Handling Finger
- ◆ 多孔吸盘
Porous Suction Cup
- ◆ 泛半导体零件
Solution of Application



联系我们

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东莞市夏阳新材料有限公司
DONGGUAN XY NEW MATERIAL CO.,LTD

生产基地 PRODUCTION BASE



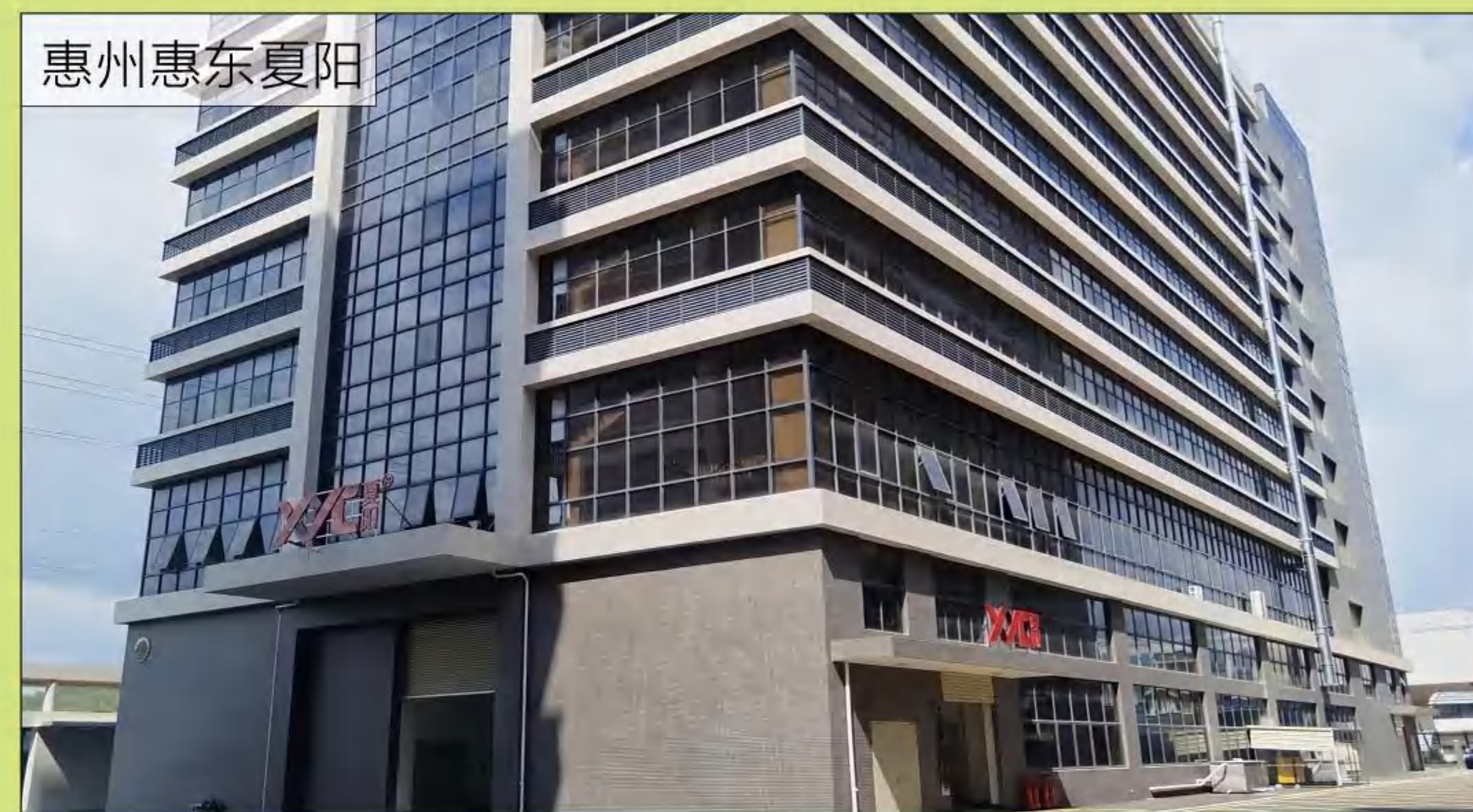
东莞常平夏阳



东莞桥头夏阳



安徽滁州夏阳



惠州惠东夏阳

夏阳四大生产基地

XY FOUR MAJOR PRODUCTION BASES

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- ★ **惠州市夏阳新材料有限公司**
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Huizhou XY New Material Co., Ltd
Address: Building 2, Jileishun Technology Park, Baisha Buxia Village, Daling Street, Huidong County
- ★ **安徽夏阳新材料科技有限公司**
地址：安徽省滁州市中新苏滁高新技术产业开发区大王街道泉州路100号苏滁现代产业坊四期12号
Anhui XY New Material Technology Co., Ltd
Address: No. 12, Phase 4, Suchu Modern Industrial Park, 100 Quanzhou Road, Dawang Street, Chuzhou City, Anhui Province



COMPANY 公司介绍

INTRODUCTION

东莞市夏阳新材料有限公司是一家专注于先进陶瓷材料及精密部件研发和制造的高科技企业，也是拥有多年全套超硬材料应用经验的方案供应商。致力于为全球客户提供高性能材料解决方案。我们的产品广泛应用于半导体设备、液晶显示、食品医疗、汽车新能源、石油化工、航空航天等高端领域。

我们的发展历程

夏阳公司创始人自2001年起投身精密加工领域，积累了20多年的行业经验。公司正式成立于2009年，并自2012年起专注于先进陶瓷材料的自主研发与制造。作为国内少有的从粉体成型，烧结，精密制造，应用方案提供的全产业链公司，我们在氧化锆、氧化铝、氮化硅、碳化硅及氧化镁锆等材料的研究、生产和应用方面持续创新，为客户提供高品质的材料和定制化解决方案。

我们的核心优势

国际品质：严格执行ISO国际标准，确保产品质量达到全球领先水平。

技术创新：与清华大学、长沙理工大学等知名科研机构深度合作，并建立了自有研发实验室，从微观结构、力学性能到电学特性进行全面材料分析。

定制化解决方案：基于客户需求，开发专用陶瓷材料，助力各行业突破技术瓶颈。

全球化布局：我们的产品远销多个国家和地区，并在德国设立合作办事处，为欧洲及国际市场提供更优质的支持与服务。

我们的团队与愿景

夏阳汇聚了一支专业且经验丰富的团队，包括大学教授、博士研究生、专业技术人员，以及拥有十年以上经验的资深技工和富有创造力的年轻工程师。我们始终秉承“精益求精、开拓创新、锐意进取，不断超越”的企业精神，推动行业发展。

未来，夏阳将继续加大研发投入，拓展全球市场，致力于成为全球先进陶瓷陶瓷著名品牌，为各行业提供更高效率、可靠、可持续的材料解决方案。

About Dongguan XY New Material Co., Ltd.

DONGGUAN XY NEW MATERIAL CO.,LTD is a high-tech company focusing on the research, development and manufacturing of advanced ceramic materials and precision components, and also a solution provider with many years of experience in the application of a full set of superhard materials. It is committed to providing high-performance material solutions for global customers. Our products are widely used in high-end fields such as semiconductor equipment, liquid crystal display, food and medical care, automotive new energy, petrochemical industry, and aerospace.

Our Development Journey

XY's founder has been engaged in precision machining since 2001, accumulating over 20 years of industry experience. The company was officially established in 2009 and has focused on the independent R&D and manufacturing of advanced ceramics since 2012. As one of the few companies in China with a full industrial chain covering powder forming, sintering, precision manufacturing, and application solutions, we continuously innovate in the research, production, and application of zirconia (ZrO₂), alumina (Al₂O₃), silicon nitride (Si₃N₄), silicon carbide (SiC), and magnesia-stabilized zirconia (MgO-ZrO₂) to deliver high-quality materials and customized solutions.

Our Core Strengths

·International Quality: Strictly implement ISO international standards to ensure that product quality reaches the world's leading level.

·Technological Innovation: We have in-depth cooperation with well-known scientific research institutions such as Tsinghua University and Changsha University of Science & Technology, and have established our own R & D laboratory to conduct comprehensive material analysis from microstructures, mechanical properties to electrical characteristics.

·Customized Solutions: Based on customer needs, we develop special ceramic materials to help various industries break through technical bottlenecks.

·Global Layout: Our products are sold to many countries and regions, and we have set up a cooperative office in Germany to provide better services and support for the European and international markets.

Our Team & Vision

XY has gathered a professional and experienced team, including university professors, doctoral researchers, professional technicians, as well as senior technicians with more than ten years of experience and creative young engineers. We have always adhered to the enterprise spirit of "pursuit of excellence,innovation, determined advancement, and continuous breakthroughs" to promote the development of the industry.

In the future, XY will continue to increase R & D investment, expand the global market, and strive to become a world-renowned brand of advanced ceramics, providing more efficient, reliable and sustainable material solutions for various industries.

先进精密制造

ADVANCED PRECISION MANUFACTURING

夏阳拥有20多年精加工经验!

我们配备了大量加工设备, 涵盖国内外各类高精度加工设备, 能够应对各种复杂工件的加工。

XY boasts over 20 years of precision machining experience and a vast array of high-precision machines from home and abroad, capable of handling all complex workpieces.



原材料制备

RAW MATERIAL PREPARATION

夏阳拥有自主材料研发产线, 可依据不同材料与尺寸进行生产烧结!

XY has its own material R&D production line and can conduct production and sintering according to different materials and sizes!



精密检测

PRECISION INSPECTION

公司设有IQC、IPQC、OQC部门, 并且拥有多台进口高精度检测设备, 可满足各种行业标准检测要求, 如蔡司三次元、CCD、SEM等。

XY has IQC, IPQC, and OQC departments, and possesses multiple imported high-precision testing equipment, such as Zeiss Coordinate Measuring Machine (CMM), CCD, SEM, etc., which can meet various industry standard testing requirements.



我司优势

OUR COMPANY'S ADVANTAGES

01 科研实力

公司拥有陶瓷材料行业知名的教授与博士, 专业人员三十余名, 还获得科研院所及校企的强大研发力量支持。

XY has renowned professors and Ph.D. holders in the ceramic materials industry, more than 30 professional staff, and strong R&D support from research institutes, colleges, and enterprises.

04 精加工实力

积累二十余年精密加工经验, 各工序加工设备齐全, 可深度按照客户要求定制方案。

With more than 20 years of precision machining experience and complete processing equipment for various procedures, we can deeply customize solutions according to customers' requirements.

02 粉体配方

拥有多名材料博士和丰富的应用案例经验, 能根据客户需求研制配方满足客户需要。

With multiple Ph.D. holders in materials science and extensive experience in application cases, we are capable of developing formulations tailored to meet customer needs.

05 高质量保障

公司设有IQC、IPQC、OQC部门, 并且拥有多台高精度检测设备, 严格控制质量, 可满足各种行业标准检测要求。

XY has IQC, IPQC, and OQC departments, and possesses multiple pieces of high-precision testing equipment to strictly control quality and meet various industry-standard testing requirements.

03 成型烧结

拥有多种成型烧结设备, 可根据不同的材料要求进行对应的成型和烧结。

Equipped with various molding and sintering equipment, we can perform corresponding molding and sintering according to different material requirements.

06 完整产业链

公司拥有完整的闭环产业链, 从配方→成型→烧结→精密制造→高洁净表面处理→方案测试均由我司完成。

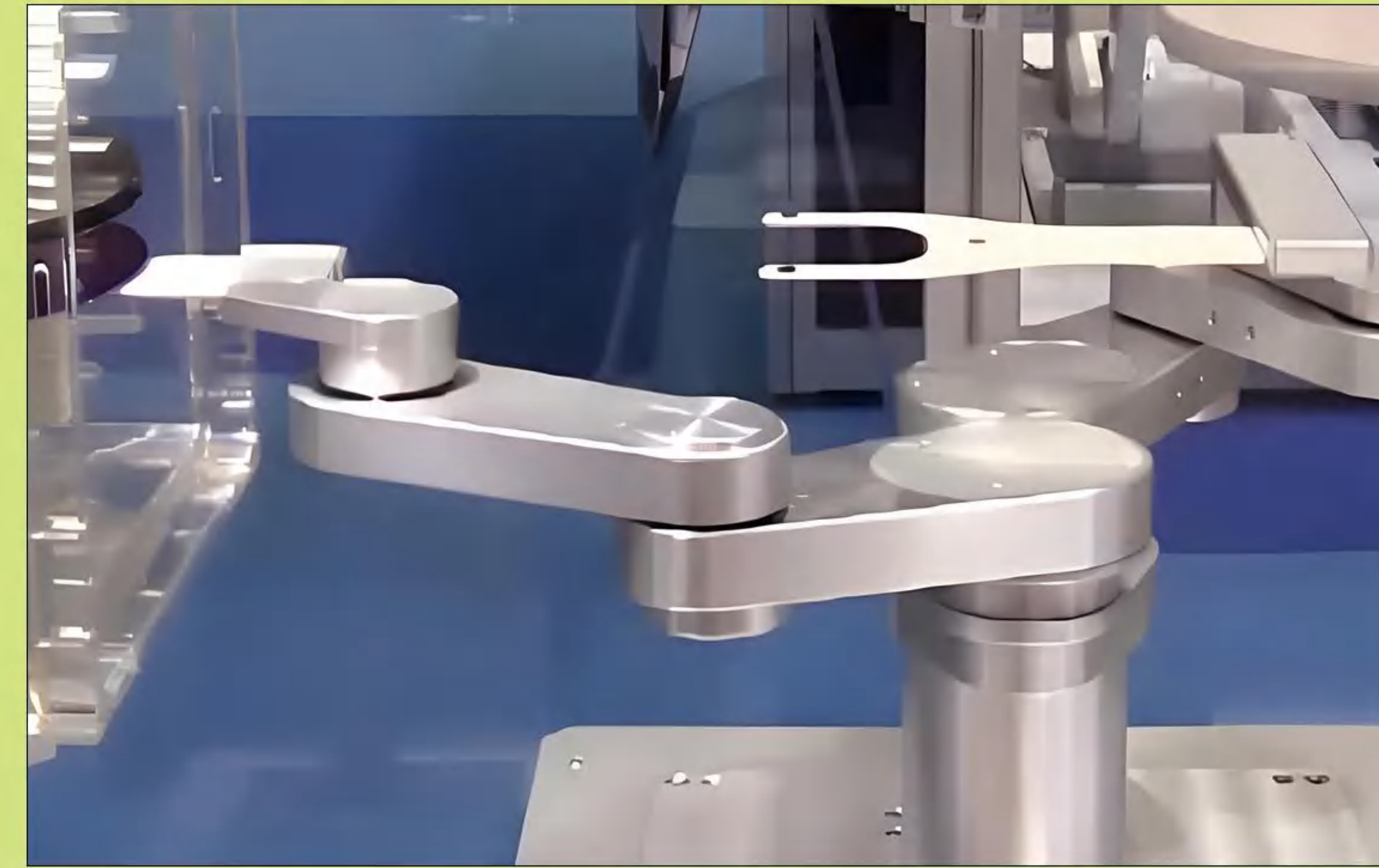
XY boasts a complete closed-loop industrial chain, where all processes from formula development, molding, sintering, precision manufacturing, high-cleanliness surface treatment, to solution testing are completed in-house.

晶圆搬运手指

WAFER HANDLING FINGER

产品特点/PRODUCT FEATURES:

- ▲ 气密性高
High airtightness
- ▲ 耐腐蚀、耐磨损、耐高温
Resistant to corrosion, wear, and high temperatures
- ▲ 绝缘/防静电
Insulation/anti-static
- ▲ 加工精度高
High machining precision



氧化铝陶瓷材料 Aluminum oxide ceramic material														
材料编号	材料性能		物理特性 (Physical Properties)			力学特性 (Mechanical properties)		热力特性 (Thermal Characteristics)				电气特性 (Electrical Characteristics)		
	XY Grade (编号)	Material (材料)	Density (密度)	Hardness HRA (洛氏硬度)	Flexural Strength (抗弯强度)	Compressive Strength (抗压强度)	Thermal Expansion Coefficient (热膨胀系数)	Thermal Conductivity (导热系数)	Thermal Shock Resistance (热震稳定性)	Maximum Use Temperature (最高使用温度) in Oxidizing Atmosphere	Volume Resistivity at 20°C (20°C 体积电阻)	Dielectric Strength (介电强度)	Dielectric Constant (介电常数) (室温)	
Alumina (氧化铝)	\	\	g/cm ³	HRA	Mpa	Mpa	10 ⁻⁶ K ⁻¹	W/mk	ΔT.(°C)	°C	Ω	kV/mm	\	
	A-100	(Al ₂ O ₃) 97%	3.75	88	280	2250	7.5	20	200	1200	10 ¹⁴	16	11.5	
	A-200	(Al ₂ O ₃) 99.5%	3.9	89	320	2300	8	28	220	1400	10 ¹⁴	20	11	
	A-300	(Al ₂ O ₃) 99.7%	3.92	89.5	370	2450	8	32	220	1600	10 ¹⁴	22	10	
	AZ-100	(Al ₂ O ₃) -ZrO ₂	4.25	91	600	2700	9.2	8	470	1000	10 ¹⁴	16.5	11	
anti-static (防静电陶瓷)	\	Black Color 黑色	5.6	1200HV	500	\	10	12	\	800	10 ⁶⁻⁹	\	\	
anti-static (导电陶瓷)	\	Gray-Black 灰黑	4.8	\	400	\	\	\	\	800	<10 ⁵	\	\	

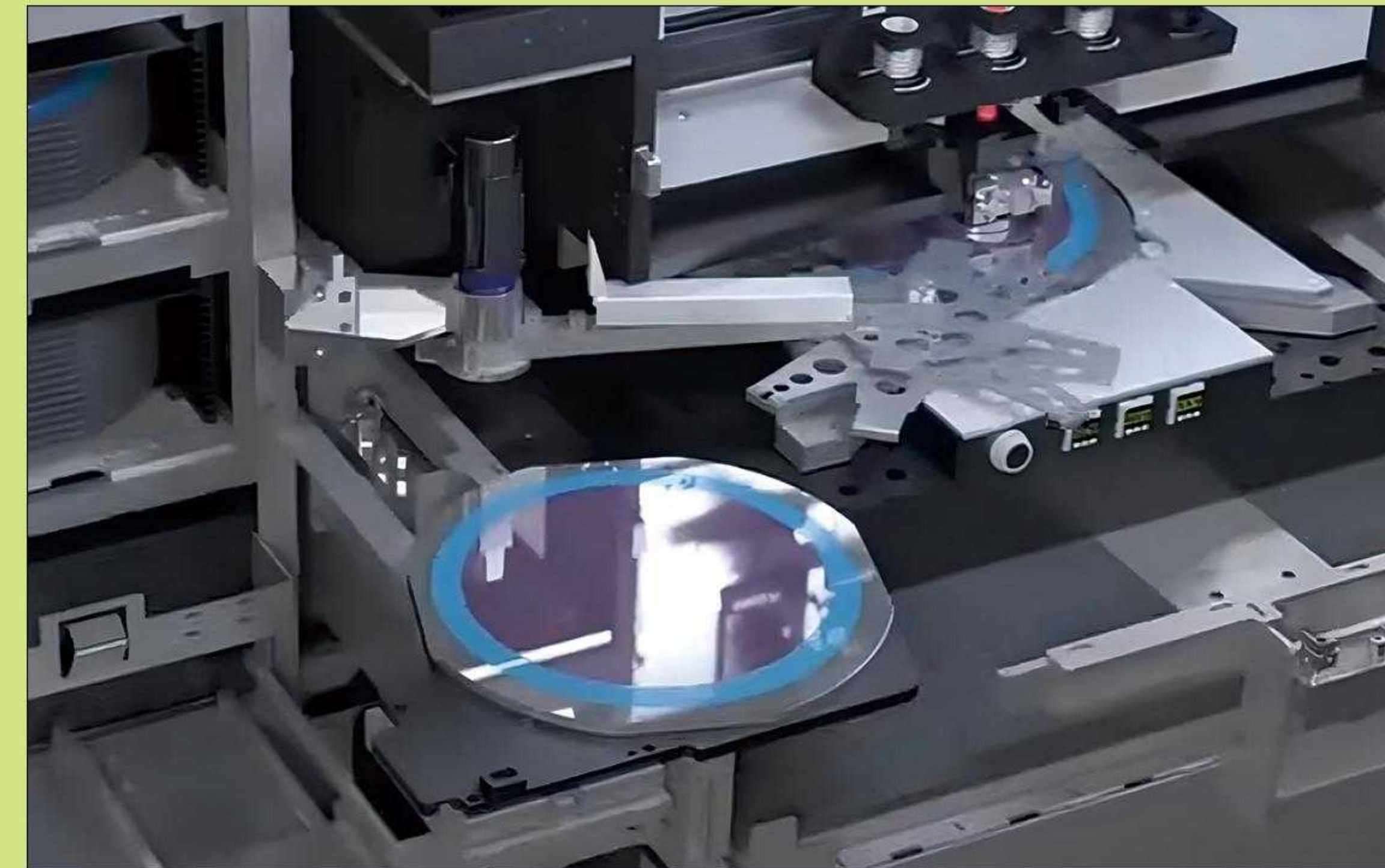
型号 Model No	图片 Image	应用领域 Application Field	产品材料 Product Materials	技术优势 Technical Advantage
真空吸附 晶圆手指 不锈钢密封 Vacuum Adsorption Wafer Finger - Stainless Steel Seal		前端设备 晶圆搬运 Front end equipment wafer handling	99.7%氧化铝陶瓷 主体+304不锈钢贴片 99.7% alumina ceramic body+304 stainless steel patch	1.吸附凸台面平面度0.008mm以内; 2.光洁度0.3-0.4; 3.气道密封不漏气; 4.粘接胶水可长时间耐温200°C, 短时间可用于300°C; 5.洁净度 ISO14644-1标准 Class1. 1. The flatness of the adsorption boss is within 0.008mm; 2. Surface finish: Ra 0.3 - 0.4; 3. Air channel sealed without air leakage; 4. The adhesive can withstand a temperature of 200°C for a long time and can be used at 300°C for a short time; 5. Cleanliness meets ISO14644-1 Standard Class 1.
真空吸附 晶圆手指 Vacuum Adsorption Wafer Finger		前端设备 晶圆搬运 Front end equipment wafer handling	99.7%氧化铝陶瓷 主体+陶瓷贴片 99.7% alumina ceramic body+ceramic patch	1.吸附凸台面平面度0.008mm以内; 2.光洁度0.3~0.4; 3.气道密封不漏气; 4.粘接胶水可长时间耐温200°C, 短时间可用于300°C; 5.洁净度 ISO14644-1标准 Class1. 6.静电黑色特氟龙涂层, ESD:10 ⁶ -10 ⁹ Ω 1. The flatness of the adsorption boss surface is within 0.008mm; 2. Surface finish: 0.3 - 0.4; 3. Air channel sealed with no air leakage; 4. The adhesive can withstand a temperature of 200 °C for a long time and can be used at 300 °C for a short time; 5. Cleanliness meets to ISO14644-1 Standard Class 1; 6. Electrostatic black PTFE coating; ESD: 10 ⁶ - 10 ⁹ Ω
一体式手指 Integrated Finger		前端设备 晶圆搬运 Front end equipment wafer handling	99.7%氧化铝 (一体成型) 99.7% alumina (integrally formed)	1.一体成型陶瓷手指, 采用中空一体成型技术, 可不用粘剂, 可靠性更高、使用寿命更长; 长时间耐温可达800°C; 2. 吸附凸台面平面度0.008mm以内; 3. 光洁度0.3~0.4; 4. 洁净度 ISO14644-1标准 Class 1 1. Integrated ceramic fingers adopt hollow integrated molding technology, can be used without adhesive, with higher reliability and longer service life; It can withstand a high temperature of 800 °C for a long time; 2. The flatness of the adsorption convex surface is within 0.008mm; 3. Smooth finish: Ra0.3 - 0.4; 4. Cleanliness meets ISO14644-1 standard Class 1.
防静电手指 Anti - static Finger		后端设备 晶圆搬运 Backend equipment wafer handling	99.7%氧化铝陶瓷 主体+陶瓷贴片 99.7% alumina ceramic body+ceramic patch	1.吸附凸台面平面度0.008mm以内; 2.光洁度0.3~0.4; 3.气道密封不漏气; 4.粘接胶水可长时间耐温200°C, 短时间可用于300°C; 5.洁净度 ISO14644-1标准 Class1. 6.静电黑色特氟龙涂层, ESD:10 ⁶ -10 ⁹ Ω 1. The flatness of the adsorption boss surface is within 0.008mm; 2. Surface finish: 0.3 - 0.4; 3. Air channel sealed with no air leakage; 4. The adhesive can withstand a temperature of 200 °C for a long time and can be used at 300 °C for a short time; 5. Cleanliness meets to ISO14644-1 Standard Class 1; 6. Electrostatic black PTFE coating; ESD: 10 ⁶ - 10 ⁹ Ω
四吸盘手指 Four - chuck Finger		后端设备 晶圆搬运 Backend equipment wafer handling	99.7%氧化铝陶瓷 主体+陶瓷贴片+PI吸嘴 (聚酰亚胺) 99.7% alumina ceramic body+ceramic patch+PI nozzle (polyimide)	1.吸附凸台面平面度0.008mm以内; 2.光洁度0.3~0.4; 3.气道密封不漏气; 4.粘接胶水可长时间耐温200°C, 短时间可用于270°C; 5.洁净度 ISO14644-1标准 Class1. 6.防静电黑色特氟龙涂层, ESD:10 ⁶ -10 ⁹ Ω; 吸嘴可根据需求搭配不同材质及规格 (peek、陶瓷、橡胶等) 1. The flatness of the adsorption boss surface is within 0.007 mm; 2. Surface finish: Ra0.3 - 0.4; 3. Airway sealed without air leakage; 4. The adhesive can withstand a temperature of 200 °C for a long time and can be used at 270 °C for a short time; 5. Cleanliness meets ISO14644-1 Standard Class 1; 6. Anti - static black PTFE coating, ESD: 10 ⁶ - 10 ⁹ Ω; The suction nozzle can be matched with different materials and specifications (such as peek, ceramic, rubber, etc.) according to requirements.

多孔吸盘

POROUS SUCTION CUP

产品特点/PRODUCT FEATURES:

- ▲ 气密性高
High airtightness
- ▲ 耐腐蚀、耐磨损、耐高温
Resistant to corrosion, wear, and high temperatures
- ▲ 绝缘/防静电
Insulation/anti-static
- ▲ 加工精度高
High processing accuracy



产品精度Product Accuracy				
分类Classification	规格Specifications	平面度Flatness	平行度Parallelism	使用温度Operating Temperature
不锈钢+多孔 Stainless Steel+Porous	6寸	0.005	0.013	-40°C-80°C
	8寸	0.007	0.015	
	12寸	0.009	0.015	
陶瓷+多孔 Ceramic+Porous	6寸	0.001	0.003	-40°C-80°C
	8寸	0.001	0.003	
	12寸	0.0015	0.005	

以上数据为氧化铝和碳化硅两种材料的多孔吸盘性能参数，以及多孔材料与不同底座材料相结合的加工精度。
The above data are the performance parameters of porous suction cups for alumina and silicon carbide materials, as well as the processing accuracy of porous materials combined with different base materials.

多孔性能参数表Porous Performance Parameter Table							
分类Classification	材料Material	孔径um Pore Size um	孔隙率 Porosity	压差bar Pressure Difference bar	吸附值bar Adsorption Value bar	电阻率 Electrical Resistivity	颜色 Color
多孔 Porous	氧化铝 AL ₂ O ₃	1-5	15-30%	10	35	> 1×10 ¹⁰	白色/浅蓝色 White/Light Blue
		50-100	15-40%	8	40	> 1×10 ¹⁰	白色/土黄色/深棕色/灰黑色/黑色 White/earthy yellow/dark brown /gray black/black
	碳化硅 SiC	10-50	15-45%	8	40	> 1×10 ⁸	青黑色 lividity

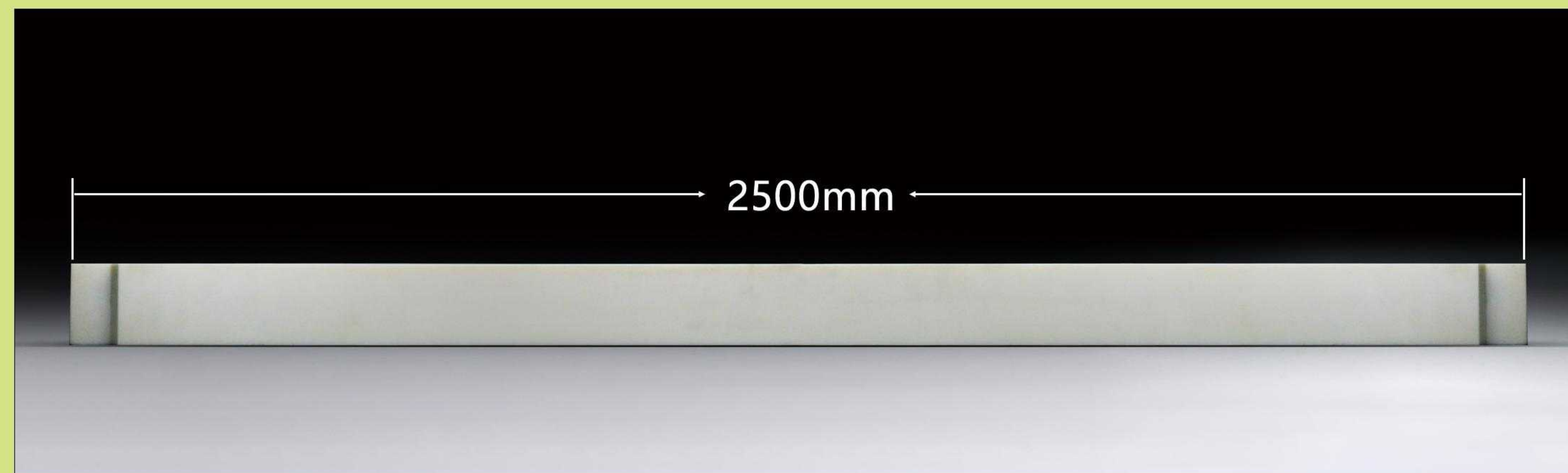
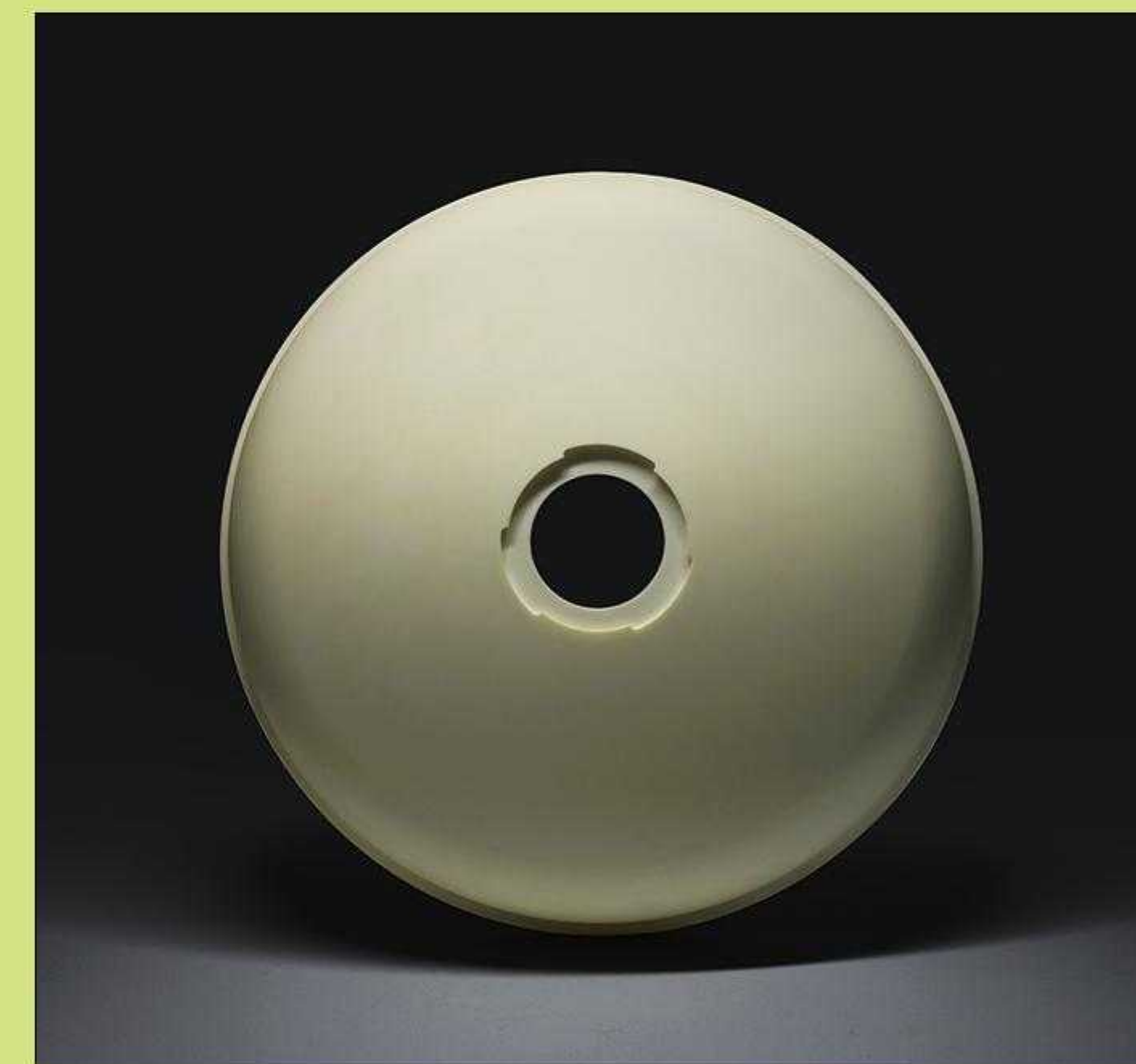
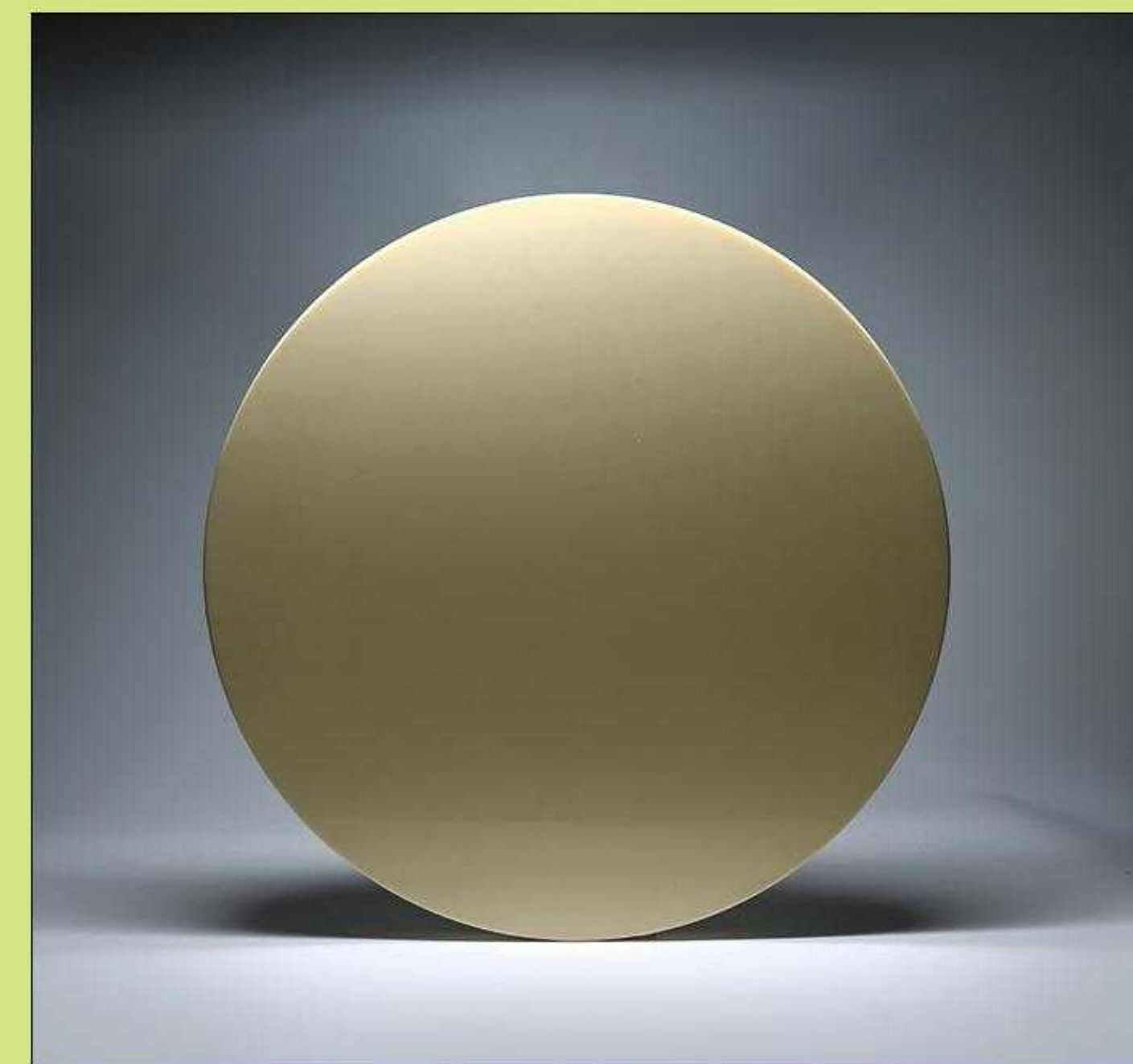
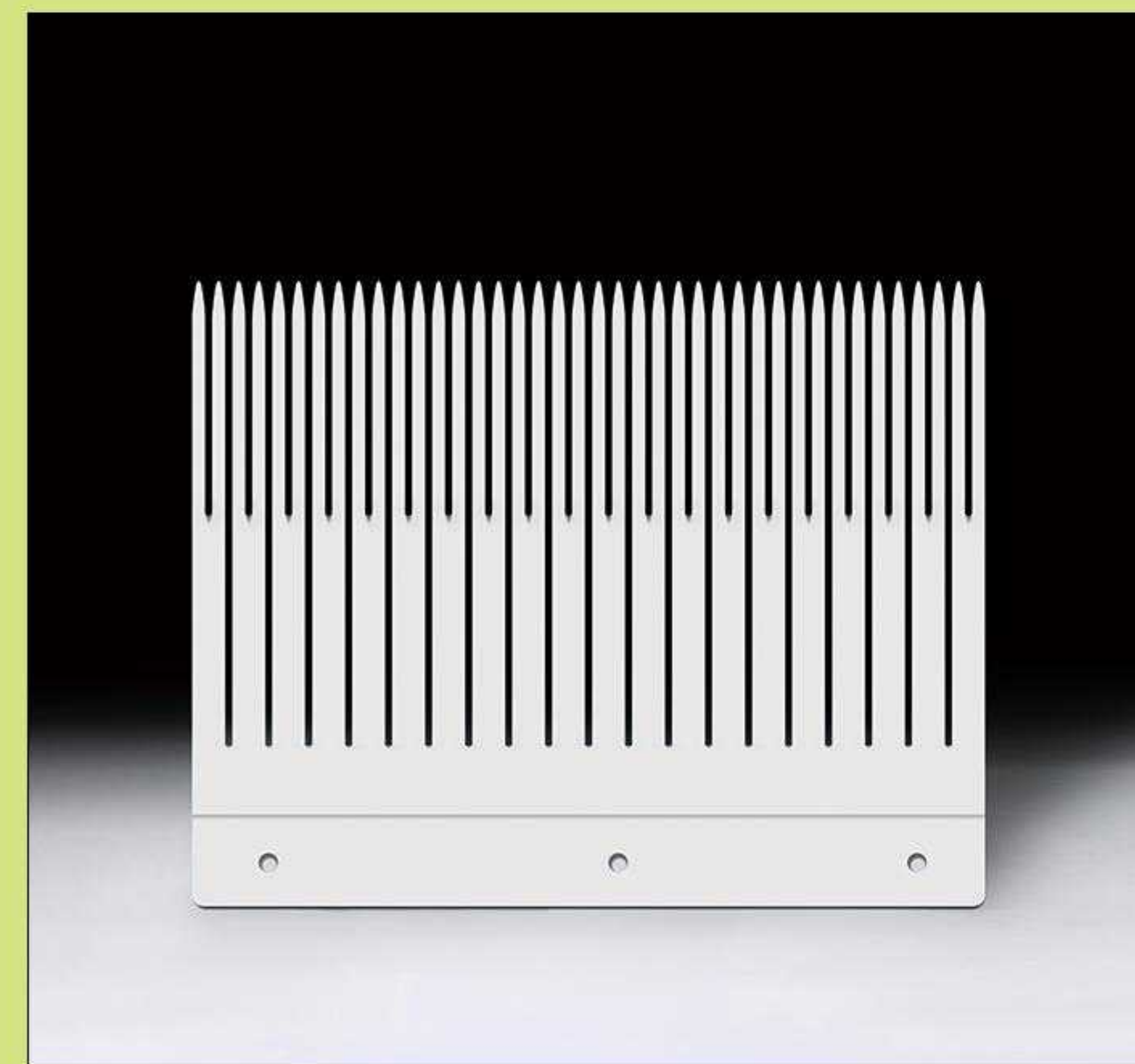
型号 Model	图片 Image	应用领域 Application Field	尺寸要求 Size Requirements	精度要求 Accuracy Requirements	材料 Material	技术优势 Technical Advantage	耐温 Heat-Resistant
Dicing Chuck Table		Wafer Dicing 切割过程中晶圆的吸附和固定 Adsorption and fixation of wafers during wafer Dicing cutting process	4寸, 6寸 8寸, 12寸 4 inches 6 inches 8 inches 12 inches	平面度 4寸-小于2μm 6寸-小于2μm 8寸-小于3μm 12寸-小于4微米 flatness 4 inches - less than 2μm 6 inches - less than 2μm 8 inches - less than 3μm 12 inches - less than 4microns	土黄色 氧化铝陶瓷 吸盘+不锈 钢底座 Soil yellow alumina ce- ramic suc- tion cup+stain- less steel base	产品尺寸φ250×30 本产品精度平面度在 0.001内, 平行度在 0.0027以内 The product size is φ 250 × 30. The precision flatness of this product is within 0.001, and the parallelism is within 0.0027	-40°C—80°C
Spinning Chuck Table		Dicing, Back- lap 切割过程中 晶圆的吸附和固 Adsorption and fixation of wafers during Dicing and Backlap cut- ting processes	4寸, 6寸 8寸, 12寸 4 inches 6 inches 8 inches 12 inches	平面度 4寸-小于2μm 6寸-小于2μm 8寸-小于3μm 12寸-小于4微米 flatness 4 inches - less than 2μm 6 inches - less than 2μm 8 inches - less than 3μm 12 inches - less than 4microns	土黄色 氧化铝陶瓷 吸盘+不锈 钢底座 Grey black alumina ce- ramic suc- tion cup+yellow alumina ce- ramic base	产品尺寸φ318×18, 本产品精度平面度在 0.0013内, 平行度在 0.0047以内 The product size is φ 318 × 18. The precision flatness of this product is within 0.0013, and the parallelism is within 0.0047	
Wafer Dicing		Wafer Dicing 切割过程中晶圆的 吸附和固定 Adsorption and fixation of wafers during wafer Dicing cutting pro- cess	4寸, 6寸 8寸, 12寸 4 inches 6 inches 8 inches 12 inches	平面度 4寸-小于2μm 6寸-小于2μm 8寸-小于3μm 12寸-小于4微米 flatness 4 inches - less than 2μm 6 inches - less than 2μm 8 inches - less than 3μm 12 inches - less than 4microns	灰黑色氧化 铝陶瓷吸盘 +不锈 钢 SUS630底座 Grey black alumina ce- ramic suc- tion cup+stain- less steel SUS630 base	产品尺寸φ 330×15.66, 本产品 精度平面度在0.014内 , 平行度在0.03以内 The product size is φ 330 × 15.66. The preci- sion flatness of this product is within 0.014, and the parallelism is within 0.03	
BACK GRINDING CHUCK TABLE		Back grinding 晶圆背面研磨 Back grinding of wafer backside	4寸, 6寸 8寸, 12寸 4 inches 6 inches 8 inches 12 inches	平面度 4寸-小于2μm 6寸-小于2μm 8寸-小于3μm 12寸-小于4微米 flatness 4 inches - less than 2μm 6 inches - less than 2μm 8 inches - less than 3μm 12 inches - less than 4microns	蓝色氧化铝 陶瓷吸盘+ 黄色氧化铝 陶瓷底座 Blue alumina ceramic suc- tion cup+yel- low alumina ceramic base	产品尺寸φ250×30 本产品精度平面度 在0.002内, 平行度在 0.005以内 The product size is φ 250 × 30. The precision flat- ness of this product is within 0.002, and the par- allelism is within 0.005	

泛半导体产品

PAN-SEMICONDUCTOR PRODUCTS

产品特点/PRODUCT FEATURES:

- ▲ 气密性高
High airtightness
- ▲ 耐腐蚀、耐磨损、耐高温
Resistant to corrosion, wear, and high temperatures
- ▲ 绝缘/防静电
Insulation/anti-static
- ▲ 加工精度高
High machining accuracy



夏阳先进陶瓷材料性能表

XY Ceramic Property

Type(类型)	Unit 单位	Alumina (氧化铝)				Zirconia (氧化锆)					Silicon Carbide (碳化硅)	Silicon Nitride (氮化硅)			Aluminum nitride (氮化铝)
XY Grade(编号)	\	A-100	A-200	A-300	AZ-100	Z-100	Z-200	Z-300	ZM-100	ZB-100	SC-200	SN-200	SN-300	SN-1000	ALN
Material(材料)	\	(Al ₂ O ₃) 97%	(Al ₂ O ₃) 99.5%	(Al ₂ O ₃) 99.7%	(Al ₂ O ₃)-ZrO ₂	ZrO ₂ -Y ₂ O ₃	ZrO ₂ -Y ₂ O ₃	ZrO ₂ -Y ₂ O ₃	ZrO ₂ -MgO	ZrO ₂ -Y ₂ O ₃	(SiC)	(Si ₃ N ₄)	(Si ₃ N ₄)	(Si ₃ N ₄)	AlN
colour(颜色)	\	White, ivory	White	Ivory, White	White	White	White	White	Yellow	Blue	Black	Gray, Black	Gray, Black	Yellow	White, gray
Density(密度)	g/cm ³	3.75	3.9	3.92	4.25	6	6.03	6.04	5.62	6.03	3.14	3.2	3.2	3.2	3.3
Flexural Strength (抗弯强度)	Mpa	280	320	370	600	700	850	1000	600	1000	400	680	850	750	320
Compressive Strength (抗压强度)	Mpa	2250	2300	2450	2700	2100	2200	2300	1600	2300	2000	3000	3000	3000	/
Modules of Elasticity(young) (弹性模量)	Gpa	330	370	380	350	200	210	220	210	220	430	290	300	300	220
Fracture Toughness (断裂韧性)	MPam ^{1/2}	3	4	4.5	5.5	7	7.5	7.5	5.5	7	3	6	7	7.5	/
Poisson's Ratio (维泊尔系数)	\	0.23	0.22	0.22	0.24	0.3	0.3	0.3	0.3	0.3	0.16	0.28	0.28	0.28	/
Hardness HRA	HRA	88	89	89.5	91	89	90	90	88	90	93	91.5	92	92	/
Vickers Hardness (维氏硬度)	HV1	1300	1400	1450	1600	1250	1450	1450	1100	1450	2100	1500	1600	1650	1200
Thermal Expansion Coefficient (热膨胀系数)	10 ⁻⁶ K ⁻¹	7.5	8	8	9.2	11	10	10	10	10	4.5	3.2	3.2	3.2	4.5
Thermal Conductivity (导热系数)	W/mk	20	28	32	8	3	3	3	3	3	130	26	40	70	180
Thermal Shock Resistance (热震稳定性)	ΔT.°C	200	220	220	470	400	400	400	\	400	400	600	800	800	/
Maximum Use Temperature (最高使用温度) in Oxidizing Atmosphere	°C	1200	1400	1600	1000	1000	1000	1000	850	1000	1200	1000	1300	1300	1300
Max Use Temperature (最高使用温度) in Reducing or Inert Atmosphere	°C	1200	1400	1600	1000	1000	1000	1000	850	1000	1600	1200	1400	1400	2200
Volume Resistivity at 20°C (20°C体积电阻)	Ωcm	10 ¹⁴	10 ¹⁵	10 ¹⁵	10 ¹⁴	10 ¹³	10 ¹²	10 ¹²	5X10 ¹³	10 ¹²	10 ⁵	10 ¹⁴	10 ¹⁴	10 ¹⁴	10 ¹⁴
Dielectric Strength (介电强度)	kV/mm	16	20	22	16.5	19	15	17	19	17	0	10	12	16	14
Dielectric Constant (1MHZ)(介电常数)	\	10	10	10	14	28	30	30	27	30	\	12	11	10	8
Dielectric Loss Angle at 20°C, 1MHz (20°C, 1MHz介电损耗角)	tan δ	3x10 ⁻⁴	1x10 ⁻³	1x10 ⁻³	2x10 ⁻² (9GHz)	2x10 ⁻³	2x10 ⁻³	2x10 ⁻³	2x10 ⁻³ (1GHz)	2x10 ⁻³	\	4x10 ⁻³ (1GHz)	5x10 ⁻³ (1GHz)	3x10 ⁻³ (1GHz)	1x10 ⁻⁴

本公司保留以上参数变更权利
Our company reserves the right to change the above parameters