



企业使命

引领电子科技 构建国家经络
铸就安全基石 创造智慧时代

企业目标

国内卓越、世界一流

企业愿景

成为电子信息领域具有
全球影响力的科技企业集团

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北京烁科中科信电子装备有限公司
Beijing SEMICORE ZKX Electronics Equipment Co., Ltd

北京烁科中科信电子装备有限公司成立于2019年6月，以中电48所和北京中科信离子注入机业务战略整合而成，是国内集成电路高端工艺装备的领先企业。公司总部位于北京市通州区光机电一体化产业基地，在长沙设有分公司。

公司产品聚焦集成电路主要应用领域，兼顾化合物半导体、材料加工制备等领域，形成中束流、大束流、高能机、特种、化合物半导体等系列化离子注入机产品体系。CI P系列中束流离子注入机、CI C系列大束流离子注入机已有10余台进入国内最先进的极大规模集成电路生产线，12英寸晶圆量产超400万片，工艺段覆盖至28nm，特种注入机和化合物半导体注入机出货几十台。

公司离子注入机团队近300人，硕士以上学历占43%。公司已申请近395项发明专利，获得授权68项，具备高新技术企业、博士后科研工作站等资质。

北京烁科中科信电子装备有限公司是国内唯一一家产品门类齐全，集研发、制造、服务于一体的集成电路领域离子注入机供应商，公司的目标是将来成为国际一流的集成电路装备供应商和服务商。

Beijing SEMICORE ZKX Electronics Equipment Co., Ltd was established in June 2019. It is integrated on the basis of the 48th research institute of China electronics technology group corporation and Beijing ZKX Electronics Equipment Co., Ltd. And it is the leading enterprise of equipment manufacturing in the field of IC. The company's headquarters is located in Opto-mechatronics Industrial Base in Tongzhou District, Beijing. The branch office is located in Changsha.

The company's products focus on the main application field of integrated circuits, compound semiconductors, material processing and other fields. We have a series of ion implanter solutions such as medium current, high current, high energy, customized solution and SiC solution. The medium current solution CI P series and the high current solution CI C series have achieved Bulk sales(more than 10 sets) to the most advanced large-scale integrated circuit production line in Mainland China. Up to now, the solutions can apply to 28nm process and the total moves of 12" wafer more than 4 million. Besides, the customized solutions and SiC solutions have been sold close to 100 sets.

The company employs nearly 300 staff. 43% of them have master's degree or above. Nearly 400 invention patents have been applied for and 68 patents are authorized. In addition, SEMICORE has the qualifications such as high-tech enterprises and postdoctoral research workstations.

Beijing SEMICORE ZKX Electronics Equipment Co., Ltd is the only supplier of ion implanter in the field of integrated circuits integrating R&D, manufacturing and service in China. The company's goal is to become a world-class supplier and service provider of integrated circuit equipment in the future.



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Product Introduction

产品介绍



主要特点
Main Characteristics

低能透镜和低能淋浴，增强低能束流传输
The LE Lens and PFG can enhance the low energy beam transport.

离子源圈孔引出，引出系统自动调整对中，斑点束传输
Auto-align extraction system, spot beam transport.

中束流离子注入机 CI P900HP

Medium Current Solution CI P900HP

工艺能力覆盖至28nm，可用于中低剂量掺杂和精确角度与剂量控制的工艺步骤，如阈值电压调整注入，沟道阻隔注入、晕注入、袋注入等工艺，整机完全适应大生产制造，具备自优化及自适应控制功能。

The medium current solutions apply to 90-28nm process semiconductor wafer fabrication. The medium current solutions can be used for process with medium and low dose doping in accurate angle and dose control, like threshold voltage adjustment doping, channel doping, halo doping and pocket doping etc. They are suitable for high volume production with self-optimizing and self-adaption.

光路结构采用三磁铁结构，离子束纯度高
Three-bending-magnets beam line system, high purity beam.

能量范围大，剂量范围宽，自动引束时间短，生产效率高
Wide range of energy and dose. Short tuning time. High production.

双边对称扫描方式，提高束流的均匀性
The symmetric scan method in horizontal enhance the beam uniformity.

主要技术指标 Main Parameters

离子能量 Energy	2-900KeV		注入剂量均匀性 Uniformity	1σ ≤0.5%		
最大圆片直径 Max Wafer Size	12 inch		注入剂量重复性 repeatability	1σ ≤0.5%		
能量精度 Energy Accuracy	±1		剂量注入范围 Dose Range	2E11-1E16 ions/cm2		
注入倾斜角度控制 Angle Accuracy	0-45±0.15 °		机械传送效率 Mechanical Transmission Efficiency	500 pieces/h		
束平行性误差 Parallelism	±1 °		碎片率 Fragmentation	1:100000		
离子源寿命 Source Lifetime	气态源 Gas Source	固态源 Solid Source	最大束流 Max Beam Current	B+	As+	P+
	≥700h	≥50h		2600 μA	2600 μA	3000μA
产品应用 Applications	LOGIC,DRAM,3D NAND,NOR,CMOS,MOSFET,IGBT,BCD,CIS,MEMS...					

Product Introduction

产品介绍



主要特点
Main Characteristics

能量范围大，低能段表现出色
Wide range of energy, well performance in low energy region.

极低能量污染
Very low energy pollution.

大束流离子注入机 CI C60

High Current Solution CI C60

大束流注入机具有较大的能量范围，同时在低能段表现出色。在能量、颗粒、金属污染方面满足先进工艺需求，拥有高效的晶圆传输与扫描系统，保证了高的WPH。

The high current solutions have a large energy range and perform well in low energy region. They can meet the demand of advanced process in energy, particle and metal pollution. With efficient wafer transmission and scanning system, high WPH is guaranteed.

高效传输与扫描系统，WPH高
Efficient transmission and scanning system, high WPH.

工艺全覆盖
Full coverage of process.

主要技术指标 Main Parameters

离子能量 Energy	200 eV-60/80 keV	
最大圆片直径 Max Wafer Size	12 inch	
注入元素 Ion Species	B, BF ₂ ⁺ , P, As, C, N, Ge, Ar, He, Si	
剂量注入范围 Dose Range	2E12-2E17 ions/cm ²	
注入剂量均匀性 Uniformity	离子能量 > 10 keV: $1\sigma < 1.0\%$	离子能量 < 10 keV: $1\sigma < 1.5\%$
注入剂量重复性 repeatability	离子能量 > 10 keV: $1\sigma < 0.7\%$	离子能量 < 10 keV: $1\sigma < 1.0\%$
能量污染 Energy Pollution	< 0.05%	
最大束流 Max Beam Current	B+: 20mA, As+: 25mA, P+: 25mA	
产品应用 Applications	LOGIC, DRAM, 3D NAND, NOR, CMOS, MOSFET, IGBT, BCD, CIS, MEMS...	

Product Introduction

产品介绍



高能注入机 CI E3000

High Energy Solution CI E3000

设备主要用于逻辑和存储器件、成像器件、功率器件的注入工艺。设备不仅具有稳定性好、注入参数控制精度高、注入均匀性与重复性好的优点，而且工艺覆盖范围十分广泛。

The high energy solutions are used for the implantation of logic, storage device, image device and power device. They can cover a wide range of process with accurate impant parameters, well uniformity and repeatability.

主要特点

Main Characteristics

高性能、长寿命离子源

The ion source has Well performance and long lifetime.

束流能量高，单电荷离子 > 1 MeV

High beam energy. E > 1 MeV for single charge.

单圆片注入

Single wafer implantation.

能量范围大，能量纯度高

Wide range of dose. High energy purity.

束流传输效率高，注入流强大

High transmission efficiency. High beam current.

主要技术指标 Main Parameters

离子能量 Energy	20 KeV - 3 MeV
离子源寿命 Source Lifetime	≥ 200h
束流强度 Beam current	B+, 1 MeV, ≥ 1000 μA
剂量注入范围 Dose Range	1E11-5E15 ions/cm ²
均匀性与重复性 Uniformity and Repeatability.	剂量: 1E11-5E11 ions/cm ² , 1σ ≤ 1%; 剂量: 5E11-5E15 ions.cm ² , 1σ ≤ 0.5%;
产品应用 Applications	LOGIC, DRAM, 3D NAND, NOR, CMOS, MOSFET, IGBT, BCD, CIS, MEMS...

Product Introduction

产品介绍



多功能离子注入机 CI S200/400

Customized Solution CI S200/400

多功能离子注入机设备可根据需求进行定制，客户主要面向科研院所、高校以及小型半导体生产线。其离子源可以兼容气态和固态两种模式，靶室具有高（低）温注入功能。该设备广泛应用于材料改性、新材料研究和半导体制造等领域。

The Customized solutions can be designed as the customers' requirements. The target customers are institutions, universities and the specific fabrication. They are compatible with gas and solid source. The target chamber has High/low temperature options. These equipments can used for materials modification, new materials research and semiconductor fabrication.

主要特点

Main Characteristics

应用范围广

Wide application.

靶室兼容低、高温注入

High/low temperature mode.

气态固态元素注入

Compatible with gas and solid source.

专为科研院所、高校设计开发

Designed for institutions, universities and the specific fabrication.

主要技术指标 Main Parameters

离子能量 Energy	5 KeV - 200/400 KeV
注入元素 Ion Species	B+, P+, H+, Ar+, O+, He+, Ni+, Zr+, Mo+.....
圆片直径 Max Wafer Size	2 inch-6 inch
最高加热温度 Max Temperature	600℃
束流强度 Beam Current	B+ ≥ 1200 μA, P+ ≥ 1200 μA, H+ ≥ 1500 μA, Xe+ ≥ 1200 μA, Ar+ ≥ 1000 μA, Ni+ ≥ 80 μA, Zr+ ≥ 40 μA, Al+ ≥ 120 μA
产品应用 Applications	掺杂、材料改性、辐照模拟等。

Product Introduction

产品介绍



三代半导体离子注入机 CI S400SiC
SiC Solution CI S400SiC

主要用途：用于SiC电力电子器件制造。通过向SiC材料选择性注入掺杂元素如B、Al、N，形成p-n结或调控器件性能参数。

Main Applications: Used in the manufacture of SiC power electronic devices. By selectively injecting doped elements such as B, Al and N into SiC substrates, p-n junctions or device performance parameters can be formed.

主要特点
Main Characteristics

大束流、长寿命Al离子源
Large Beam and Long Life Al Ion Source

热偶晶片温度测量系统实时监控注入温度
On-line monitoring of injection temperature by thermocouple wafer temperature measurement system

高能量、等梯度静电加速器实现高能注入
High Energy Injection by High Energy and Equal Gradient Electrostatic Accelerator

在线均匀性检测与实时校正控制，保证注入剂量均匀性与准确性
On-line homogeneity detection and real-time correction control to ensure uniformity and accuracy of injection dose

主要参数 Main parameters

晶片尺寸 Wafer size	4英寸、6英寸 (4 inches, 6 inches)
能量范围 Energy range	30-400keV[单电荷] 30-400 keV [single charge]
注入元素 Injection elements	Al、B、N、P
晶片温度 Process Wafer temperature	RT-600℃
产品应用 Applications	SiC，GaN等三代半导体器件制造。

Product Introduction

产品介绍



H/He离子注入机 CI S400HB
H/He ion implanter CI S400HB

主要用途：可用于绝缘材料注入或绝缘材料剥离，如铌酸锂材料薄膜制备、金刚石薄膜制备等。具备双面淋浴功能，特别适用于对静电敏感材料的注入处理。

Main Applications: It can be used for the injection of insulating materials or the stripping of insulating materials, such as produce lithium niobate material film, diamond film, etc. With double-sided plasma shower function, it is especially suitable for the injection of electrostatic sensitive materials.

主要特点
Main Characteristics

批量注入
Batch injection

大剂量注入
High dose injection

注入能量高
High injection energy

双面淋浴
Double-sided plasma shower,

主要参数 Main parameters

晶片尺寸 Wafer size	6英寸 (6 inches)
能量范围 Energy range	30-400keV[单电荷] 30-400 keV [single charge]
注入元素 Injection elements	H、He、B、Ar
晶片温度 Process Wafer temperature	RT-200℃
产品应用 Applications	绝缘材料注入、材料剥离等。

Product Introduction

产品介绍



中能大束流离子注入机 CI C200

Medium Energy & High Current Implanter CI C200

中能大束流离子注入机兼具较高的能量和较大的流强，基于成熟的大束流离子注入机平台，兼容B/P/As/In/H/He/O等多种离子，可满足功率器件、SOI材料制备等不同工艺需求。

The Medium Energy & High Current Implanter is based on the High Current platform and have a higher energy range. With the ability to run with B/P/As/In/H/He/O, it can be used in various process such as power device, SOI and so on.

主要特点
Main Characteristics

兼具高能量和大流强
High current with higher energy

单晶圆注入模式
Single Wafer

适用离子种类较多
Ability to run with more kinds of ions

完备的污染防护
Perfect shield for better metal and particle performance

主要技术指标 Main Parameters

能量 Energy	5-200keV (For In 160keV)
晶圆尺寸 Wafer Size	12/8 inch
注入元素 Ion Species	B、P、As、In、H、He、O
剂量范围 Dose Range	1E14 - 3E17 ions/cm2
剂量均匀性 Uniformity	离子能量 Energy >10 keV: 1σ <1.0%
离子能量 Energy	<10keV: 1σ < 1.5%
剂量重复性 Repeatability	离子能量 (Energy) >10keV: 1σ < 0.7%
离子能量 Energy	<10keV: 1σ < 1.0%
最大流强 Current	20mA (B , P, As) , 50mA (H, He) , 100mA (O)
产品应用 Applications	Power Device, SOI (SMARTCUT, SIMOX)

PServices

服务支持



设备翻新
Refurbishment

可及时、准确的获得半导体二手设备信息、提供离子注入机翻新服务。

The second-hand semiconductor equipment information can be obtained in timely and accurately, and the ion implanter renovation service can be provided.

产品系列
Product series

Varian&司离子注入机系列

Varian implanter series

350D、DF4、120XP、EHP200、EHP500、E1000、VIISTA810……

Axcelis/Eaton公司离子注入机系列

Axcelis/Eaton implanter series

3204、3206、NV10-80、NV10-160、GSD200……

AG&司快速退火炉系列

Rapid Thermal Annealing series

AG4100、AC8108……



PServices

服务支持

备品备件供应与维护

Spare Parts And Maintenance

可提供全面的离子注入机备品备件；
可提供离子注入机年度维修服务以及FAB移机服务；

The ion implanter spare parts can be provided comprehensive.
The ion implanter annual maintenance service and FAB transfer service can be provided.



技术服务
Technical Service

备品备件

技术支持

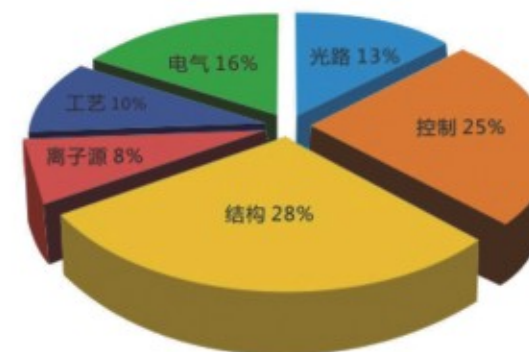
备件翻新

节能环保

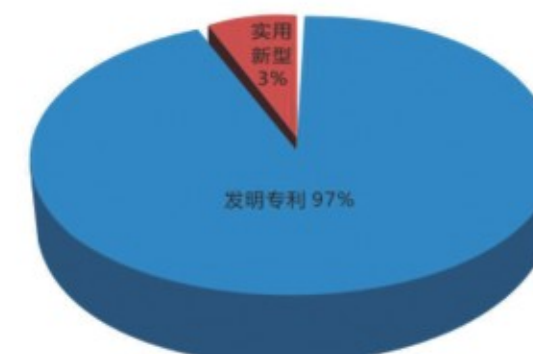
零件维修

Patents

专利成果



已申请专利395项
Applied Patents

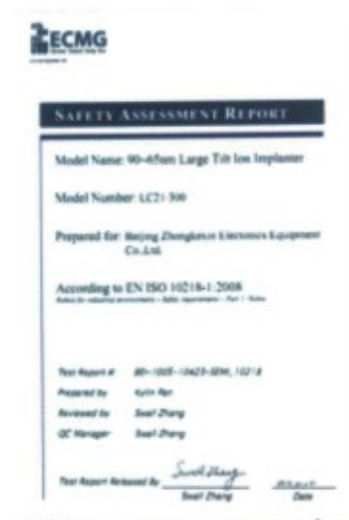
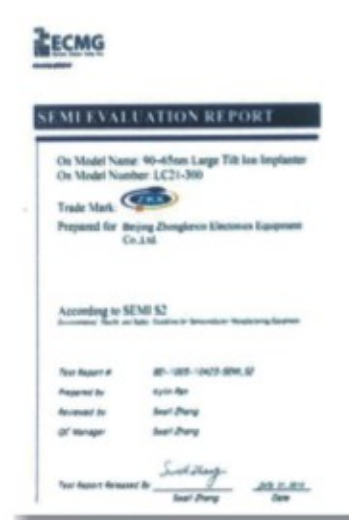


已授权专利68项
Authorized Patents

北京烁科中科信公司在国内申请的离子注入机专利涉及靶室传片系统、控制系统、离子源技术、离子光学技术、工艺与污染控制技术，形成了自己的离子注入机技术保护体系。

SEMICORE ZKX's patents include target chamber transmission system, control system, ion source technology, ion optics technology, process and pollution control technology, etc. All these patents has formed our own ion implantation machine protection system.





质量管理体系
Quality Management System
OSHMSI 8001、ISO9001、ISO14001
光伏产品 PV
TUV、UL
半导体产品
Semiconductor Products
SEMI-S2

