广东金徕科技有限公司

Guang Dong Jin Lai Technology Co.,Ltd

真空等离子清洗机

Vacuum plasma

JL-V系列 小型真空清等离子清洗机

JL-VXX Small vacuum plasma

JL-VM系列 真空清等离子清洗机

JL-VXX RF Vacuum plasma

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www.jl-gd.cn

什么是等离子

What is plasma

等离子体（Plasma）是一种由自由电子和带电离子为主要成分的物质形态，广泛存在于宇宙中，常被视为是物质的第四态，被称为等离子态，或者“超气态”，也称“电浆体”。等离子体具有很高的电导率，与电磁场存在极强的耦合作用。等离子体是由克鲁克斯在1879年发现的，1928年美国科学家欧文·朗缪尔和汤克斯（Tonks）首次将“等离子体”（plasma）一词引入物理学，用来描述气体放电管里的物质形态。严格来说，等离子体是具有高位能动能的气体团，等离子体的总带电量仍是中性，借由电场或磁场的高动能将外层的电子击出，结果电子已不再被束缚于原子核，而成为高位能高动能的自由电子。

等离子体是不同于固体、液体和气体的物质第四态。物质由分子构成，分子由原子构成，原子由带正电的原子核和围绕它的、带负电的电子构成。当被加热到足够高的温度或其他原因，外层电子摆脱原子核的束缚成为自由电子，就像下课后的学生跑到操场上随意玩耍一样。电子离开原子核，这个过程就叫做“电离”。这时，物质就变成了由带正电的原子核和带负电的电子组成的、一团均匀的“浆糊”，因此人们戏称它为离子浆，这些离子浆中正负电荷总量相等，因此它是近似电中性的，所以就叫等离子体。

Plasma is a form of matter composed mainly of free electrons and charged ions. It exists widely in the universe and is often regarded as the fourth state of matter, which is called plasma state, or “Supergas", also known as “plasma". Plasma has high conductivity and strong coupling effect with electromagnetic field. Plasmas were discovered by Krooks in 1879, and in 1928 American scientists Irving Langmuir and Thomas Tonks first introduced the term "plasma" to physics to describe the form of matter in gas discharge tubes. Strictly speaking, a plasma is a gas cluster with high energy and kinetic energy. The total charge of the plasma is still neutral. By high energy of electric field or magnetic field, the electrons in the outer layer are shot out.

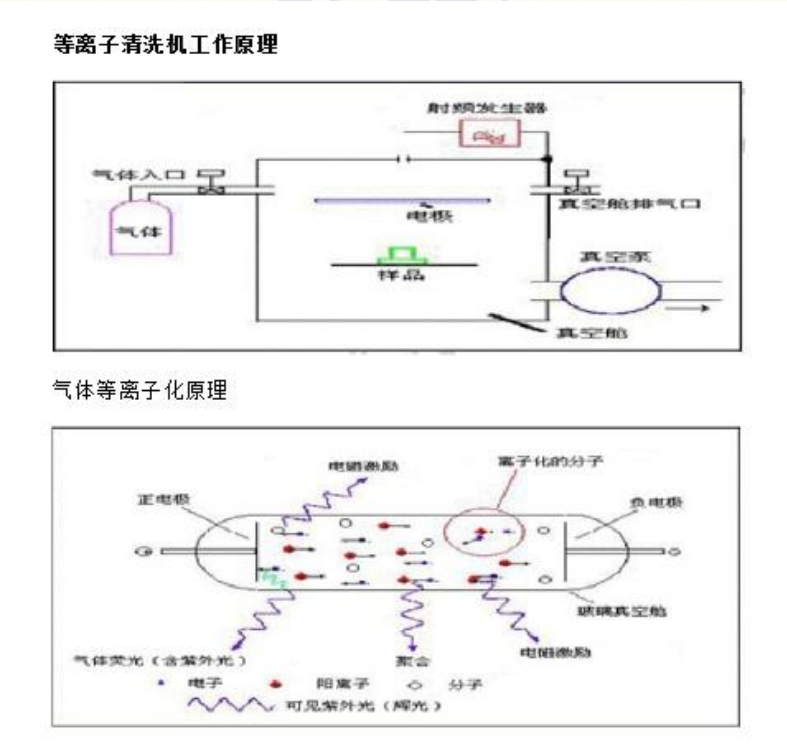
plasma is a fourth state of matter different from solids, liquids and gases. Matter is made up of molecules, which are made up of atoms, which are made up of a positively charged nucleus and the negatively charged electrons surrounding it. When heated to a high enough temperature or for other reasons, the outer electrons break free from the nucleus and become free electrons, just like a student running to the playground after class. The electrons leave the nucleus, a process called ionization. At this time, the matter will become a positive nucleus and negative electrons composed of a uniform "paste", so people jokingly called it plasma, plasma, the total amount of positive and negative charges in the plasma is equal, so it is approximately neutral, so called plasma.

真空等离子原理:

Principle of vacuum plasma

气体分子在接近真空的环境中放电产生的等离子体。在密闲的容器中设置二个电极形成电磁场，用真空泵实现一定的真空度，随着气体越来越稀薄，分子间距及分子或离子的自由运动距离也越来越长，受磁场作用，发生碰撞形成等离子体，同时会发生辉光。等离子体在电磁场内空间运动，并轰击被处理物表面，从面达到表面处理，清洗和刻蚀效果。

Plasma produced when gas molecules are discharged in a near-vacuum environment.Two electrodes are set in a dense container to form an electromagnetic field, and a vacuum pump is used to achieve a certain degree of vacuum. As the gas becomes thinner and thinner, the molecular spacing and the free movement distance of molecules or ions become longer and longer. Under the action of magnetic field, collisions occur to form a plasma, and a glow will occur at the same time.The plasma moves spatially in the electromagnetic field and bombards the surface of the treated object to achieve the effect of surface treatment, cleaning and etching.



真空等离子原理图

金徕真空等离子 清洗机特 点
Jin Lai vacuum plasma features

★可以对各种高分子、金属、玻璃、橡胶、等材料进行表面处理；

Can be used for surface treatment of various polymer, metal, glass ,rubber and other materials;

★提高塑料件粘接强度，例如PP材料处理后可提升数倍，大部分塑料件处理后使表面能量达到60达因以上；

Improve the adhesive strength of plastic parts, for example PP material could be improved several times after processing, and the surface energy of most of plastic parts reaches 60 dyne above after processing;

★等离子体处理后表面性能持久稳定，保持时间长；

After processing, the surface properties of plasma are steady and sustained, and they maintain a long time;

★干式方法处理无污染，无废水，符合环保要求；

The method of dry processing has no pollution and waste water, and meets environmental requirements;

★高稳定性，适合连续大规生产；

High stability, suitable for continuous production.

★通用性强，适用于各种产品.

Strong versatility, suitable for all kinds of products.

★可按照客户要求定制设备腔体容量和层数，满足客户要求;

The cavity capacity and the number of layers can be customized according to customer requirements to meet customer requirements;

小型真空等离子清洗机选型:
Small vacuum plasma selection

型号	JL-V02	JL-V05	JL-V10
腔体材质 material	SUS316	SUS316	SUS316
容量 volume	2L	5L	10L
外形尺寸 layout	660*700*600	660*700*600	660*700*600
腔尺寸 cavity size	D100*270	D150*270	D200*270
电源频率 Power frequency	40KHz	40KHz	40KHz
真空度 vacuum	30~100Pa	30~100Pa	30~100Pa
气体流量 Gas flow	60~600ML/MIN	60~600ML/MIN	60~600ML/MIN
清洗时间 Plasma time	1~100分钟可调	1~100分钟可调	1~100分钟可调
冷却方式 Cooling mode	风冷 Air Cooling	风冷 Ai Cooling	风冷 Air Cooling
气体通道 Gas channels	二路 Two-way working gas	二路 Two-way working gas	二路 Two-way working gas
真空泵 Vacuum pump	油泵 oil pump	油泵 oil pump	油泵 .oil pump

注：以上参数为标准配置，若有特殊需要均可根据客户要求改进定制；技术参数若有改变，恕不另行通知。

Note: The above parameters are standard configuration, and can be customized according to customers' requirements if there are special needs; Technical parameters are subject to change without prior notice.

真空等离子清洗机选型:
RF Vacuum plasma selection

型号	JL-VM-060	JL-VM-110	JL-VM-150	JL-VM-200
腔体材质 material	SUS316	SUS316	SUS316	SUS316
容量 volume	60L	110L	150L	200L
外形尺寸MM layout	950*1000*1800	1050*1000*1800	1100*1100*1800	1300*1200*1800
腔尺寸 MM cavity size	400*450*400	500*450*500	500*500*600	500*600*700
电源频率 frequency	13.56MHz	13.56MHz	13.56MHz	13.56MHz/40KHz
真空度 vacuum	5~100Pa	5~100Pa	5~100Pa	5~100Pa
气体流量 Gas flow	0~500SCCM	0~500SCCM	0~500SCCM	0~500SCCM
清洗时间 Plasma time	0~100分钟可调	0~100分钟可调	0~100分钟可调	0~100分钟可调
冷却方式 Cooling mode	风冷 Air Cooling	风冷 Ai Cooling	风冷 Air Cooling	风冷/水冷 Air Cooling/Water Cooling
气体通道 Gas channels	二路 Two-way working gas	二路 Two-way working gas	二路 Two-way working gas	二路 Two-way working gas
真空泵 Vacuum pump	油泵+罗茨 Oil &roots pump	油泵+罗茨 Oil &roots pump	油泵+罗茨 Oil &roots pump	油泵+罗茨 Oil &roots pump

注：以上参数为标准配置，若有特殊需要均可根据客户要求改进定制；技术参数若有改变，恕不另行通知。

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