



在线燃烧离子色谱系统

ON-LINE COMBUSTION ION CHROMATOGRAPHY SYSTEM

测定复杂样品中的卤素和硫

DETERMINATION OF HALOGENS AND SULFUR IN COMPLEX SAMPLES



因为专业，因为执着，在离子色谱的路上不断前行

Because professional and persistent, we are on the way of ion chromatography forward.

你是否已经厌倦了清洗氧弹？

Are you tired of oxygen bombs?

你是否已经恐惧了热酸热碱？

Do you have a fear of hot acid hot base?

你是否已经害怕了回收率低？

Are you already afraid of low recycling rates?

那么，你想要的解决方案来了！

So here's your solution!

在线燃烧离子色谱系统集成了燃烧炉单元、气体吸收单元、离子色谱分析单元，将前处理和检测过程完美结合，为固体、液体等样品中卤素和硫的同时、在线检测提供了一种简单、可靠的方式，极大的拓宽了离子色谱仪的应用领域。

The on-line combustion ion chromatography system integrates the gas absorption unit, combustion furnace unit and the ion chromatography analysis unit, perfectly combining the pretreatment and detection process, providing a simple and reliable way for the simultaneous on-line detection of halogen and sulfur in solid and liquid samples, greatly expanding the application field of the ion chromatograph.

在线燃烧离子色谱系统克服了传统离线裂解方法的不足,样品均可经在线燃烧系统自动进入离子色谱进行定性定量分析,大大提高了样品的分析通量;整个燃烧过程和吸收模块由软件控制自动完成,中间不需任何人工干预,无需引入内标,简化了样品分析过程,避免了污染的引入,保证了分析结果的准确性和稳定性。

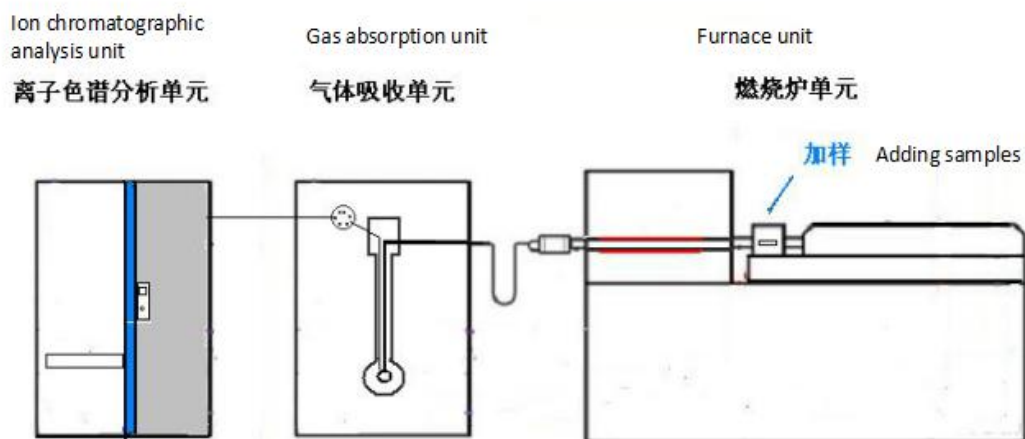
The on-line combustion ion chromatography system overcomes the shortcomings of the traditional offline pyrolysis method, and the samples can be automatically entered into the ion chromatography through the on-line combustion system for qualitative and quantitative analysis, greatly improving the analytical flux of the samples. The whole combustion process and absorption module are automatically controlled by the software, without any manual intervention in the middle, without the introduction of internal standard, which simplifies the sample analysis process, avoids the introduction of pollution, and ensures the accuracy and stability of the analysis results.

在线燃烧原理

PRINCIPLE OF ON-LINE COMBUSTION

在线燃烧系统的检测过程中,样品首先在燃烧单元的低氧环境中热分解,随后在富氧环境中燃烧,燃烧产物经气体带入吸收单元吸收后直接到离子色谱进样分析,可完成对多类型卤素和硫的精确分析。

In the detection process of the online combustion system, the samples are first pyrolyzed in the low-oxygen environment of the combustion unit, and then burned in the oxygen-rich environment. The combustion products are led by the gas into the absorption unit and then directly analyzed by ion chromatography, which can complete the accurate analysis of multi-type halogens and sulfur.



应用领域

APPLICATION FIELDS

1 电路板、废塑料，树脂材料，电缆、绝缘材料

Circuit board, Waste Plastics, Resin Materials, Cable, Insulation Materials

2 矿石、土壤。矿产原料、石油、煤炭、水泥

Ore, Soil, Mineral Raw Material, Petroleum, Coal, Cement

3 玻璃，活性炭、石墨材料

Glass, Activated Carbon, Graphite Material

4 医药原料，中间产物，成品

Pharmaceutical Raw Materials, Intermediate Products, Finished Products

5 可吸附有机卤素（废水）

Adsorbable Organic Halogen (Wastewater)

6 食品添加剂、纤维素、调味料。

Food additive, cellulose, seasoning

复杂样品

COMPLEX SAMPLES

无与伦比的优势

UNPARALLELED ADVANTAGES

A. 同时完成可燃样品中多种卤素及硫的定性定量分析

At the same time, the qualitative and quantitative analysis of various halogens and sulfur in combustible samples was completed.

B. 智能化程序控制，一键启动，即可自助完成样品分析

Intelligent program control, a key start, you can complete the sample analysis

C. 精准的液路、气路控制模块，保证样品燃烧充分及良好的方法重现性

Precise liquid and air path control module ensures sufficient sample combustion and good method reproducibility.

D. 内置存储模块，可为客户量身打造专用样品程序升级包，与仪器软件无缝对接

Built-in storage module, can be tailored for customers to create a special sample program upgrade package, seamless docking with the instrument software.

E. 独具匠心的裂解水预热设计及特别的石英燃烧管，保证裂解充分及持久，安全体验

Unique pyrolysis water preheating design and special quartz combustion tube ensure sufficient and lasting pyrolysis and safe experience.

F. 模块化的离子色谱，结合盛瀚自主研发技术及国外工艺于一身，保证结果可靠性

Modular ion chromatography, combined with Shenghan independent research and development technology and foreign technology in one, ensure the reliability of the results.

四大组成模块

FOUR MAJOR MODULES

燃烧炉单元

FURNACE UNIT

样品放入燃烧炉的样品舟后，样品舟在电机推动下缓慢进入燃烧室，完成燃烧后自动退出。整个燃烧过程由内部 PLC 的程序自动控制完成。

After the sample being put into the sample boat of the combustion furnace, the sample boat slowly enters the combustion chamber under the drive of the motor and automatically exits after combustion. The whole combustion process is automatically controlled by the internal PLC program.

- 一键启动，即可完成整个样品的处理；

One key start, the entire sample processing can be completed

- 多达 5 个温区，样品经过不同的温区可选择不同的进样速度和停留时间，以达到样品优化处理方案的目的；

There are as many as 5 temperature zones, and different sample injection speed and residence time can be selected after entering into different temperature zones, so as to achieve the purpose of optimized sample treatment scheme.

- 程序可以进行保存，使得同一类样品采用同一程序进行测试；

The program can be saved so that the same type of sample is tested using the same program.

- 独特的裂解水预热设计，使水以高压喷雾形式进入燃烧炉，汽化后与载气混合更充分，显著减轻 HX(HF)对燃烧管的腐蚀。

Unique pyrolysis water preheating design enables water to enter the combustion furnace in the form of high-pressure spray. After vaporization, it is more fully mixed with carrier gas, which significantly reduces corrosion of combustion tube caused by HX(HF).

气体吸收单位

GAS ABSORPTION UNIT

样品在燃烧炉模块完成燃烧后，所产生的气体物质在载气的推动下，到达气体吸收单元进行吸收。此处吸收管内装有离子色谱作为淋洗液用的碱溶液，可以吸收燃烧产生的一系列气体。

After the sample is burned in the combustion furnace module, the gas produced by the sample will reach the gas absorption unit for absorption under the promotion of carrier gas. Here, the absorption tube is equipped with ion chromatography as

the alkaline solution for eluent, which can absorb a series of gases generated by combustion.

- 样品收集功能，测试完后可选择样品收集，以方便验证及做其他测试；

Sample collection function. After test, you can select sample collection for verification and other tests.

- 气体吸收单元的十通阀加六通阀设计，不仅可以完成燃烧炉燃烧的样品的测试，同时还可以作为自动进样器实现对外置 10 个样品的测试；

The ten-way valve and six-way valve design of the gas absorption unit can not only test the combustion samples of the combustion furnace, but also test the external 10 samples as an autosampler.

- 气体吸收单元具有自动加吸收液、和自动冲洗管路的功能；

The gas absorption unit has the functions of automatically adding absorption fluid and automatically flushing pipeline.

- Led 指示灯及报警器，提示使用人员试验运行状态，避免操作者进行误操作。

LED Indicator light and alarm prompt the user to test the running state to avoid the operator to operate by mistake.

离子色谱分析单元

ION CHROMATOGRAPHIC ANALYSIS UNIT

离子色谱分析单元采用盛瀚 CIC-D160 型离子色谱仪，这是一款全新模块化设计的高稳定离子色谱仪，结合盛瀚自主研发核心技术产品和国外优秀机械加工工艺于一身，不仅在泵系统内集成了在线气液分离器，柱温箱采用变频循环立体风加热方式，确保分析结果的准确性和可靠性。

Ion chromatographic analysis unit adopts ShengHan CIC - D160 ion chromatograph, this is a new modular design of high stability of ion chromatograph, combining ShengHan independent research and development core technology products and foreign excellent mechanical processing technology, not only in the pump system integrated with online gas-liquid separator, column temperature box adopts frequency conversion circulation three-dimensional wind heating mode, to ensure the veracity and reliability of the results of the analysis.

- 内置循环式立体恒温技术；

Built-in circulating stereo thermostat technology.

- 全塑化流路系统，配套独有的在线脱气和气液分离技术；

Fully plasticized flow system, supporting the unique online degassing and gas-liquid separation technology.

- 一体化主机，模块化设计，即插即用，自动识别；

Integrated host, modular design, plug and play, automatic identification.

- 连续自再生微膜抑制器，无需手动加酸再生，平衡快，抗污染。

Continuous self - regeneration micro film suppressor, no manual acid regeneration, fast balance, anti - pollution.

智能操作软件

INTELLIGENT OPERATING SOFTWARE

系统的工作参数通过电脑进行控制，离子色谱仪测的数据通过工作站软件进行显示及后续处理。国内领先的离子色谱控制软件系统显示所有仪器参数。

The working parameters of the system are controlled by the computer, and the data measured by the ion chromatograph are displayed and subsequently processed by the workstation software. Leading domestic ion chromatography control software system display all instrument parameters.

- 在线燃烧系统与离子色谱控制软件集成于一体，使用方便；

The on-line combustion system and ion chromatography control software are

integrated in one, which is convenient to use.

- 适合不同国家通用的英文界面，操作设置简洁明了；

Suitable for all countries common English interface, simple and clear operation

Settings.

- 实时显示运行状态，可监测仪器正在运行至程序的哪一个步骤；

Real-time display of operation status, it is possible to monitor the instrument

running to which step of the program.

- 具有手动和自动两种控制模式，方便用户开发及仪器维护。

With manual and automatic control mode, which is convenient for user

development and instrument maintenance.



P.S.: English version is also available for control panel.

数据验证准确性

DATA VERIFICATION ACCURACY

有机物标准品 (Cl) 经燃烧炉直接裂解吸收，测得样品回收率：

The sample recovery was obtained by direct pyrolysis absorption of the organic reference material (Cl) .

		样品量 (mg) Sample Amount	mg/kg	回收率 Recovery
对氯苯氧乙酸(Cl) p-chlorophenoxyacetic acid	1	19.7	193.5	102.2
	2	20	188.2	99.4
	3	19.4	193.1	102.0
	4	19.9	188.1	99.4
	5	17.6	190.8	100.7
		平均值 Average Value	190.7	100.7
		标准偏差 Standard Deviation	2.6	1.4
		RSD%	1.4	1.4