

IC-3028E

Ion Chromatography



EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

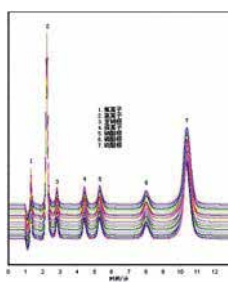
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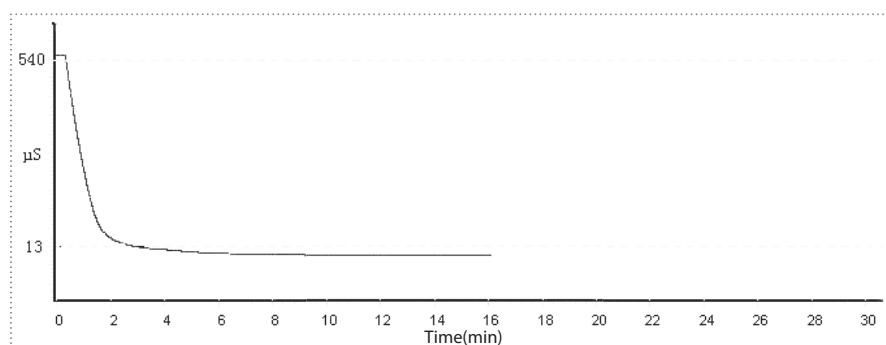
www.analyticalgroup.net

Features:

The electrochemical suppressor is specifically designed to be continuously self-regenerating. Since the eluent has high background conductivity, chemical inhibition must be done so that signals from analytes can be detected. The inhibition of background conductivity is achieved through the reaction of CO_3^{2-} and HCO_3^- in the eluent with H^+ produced by electrolysis to generate H_2CO_3 of low conductivity during anion analysis and the reaction of H^+ in the eluent with OH^- produced by electrolysis to generate H_2O . H^+ or OH^- ions are produced by electrolysis without addition of extra eluent to realize automatic regeneration of ion exchange membrane.



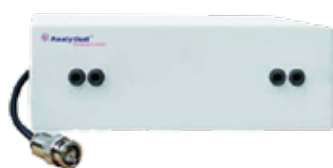
Repeatability of 20 Consecutive Analyses



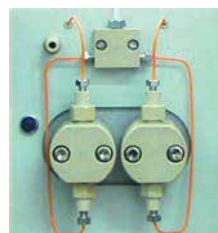
Equilibrium Curve of Suppressor

Ultra-High Performance Liquid Chromatography System:

Self-regenerative electrochemical suppressors for anions and cations are provided with the features of large inhibition capacity, low background conductivity (ppb level), low dead volume, rapid equilibrium, good repeatability, simple operation, easy maintenance etc.



Suppressor (/Anion/Cation)



Pump Head (PEEK)

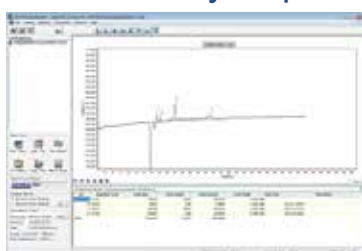
- Full PEEK double plungers and low pulsation infusion pump with wide range of flow rates, stable operation and low maintenance costs.
- Full PEEK flow system for protection from metal pollution, high pressure, acids and alkalis and compatibility with organic solvents.
- High-speed data transmission and processing capabilities and automatic identification, control and real-time monitoring of the operating state of instrument components to ensure continuous and stable analysis.

- Advanced digital thermal conductivity detector with high sensitivity, high stability to ensure accurate and reliable results.
- Optional eluent generator to achieve automated eluent preparation

• Advanced Software System

- All instrument parameters are controlled through software and are displayed in the interface.

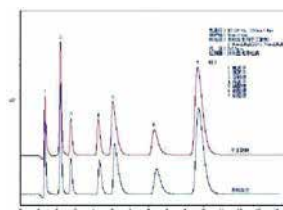
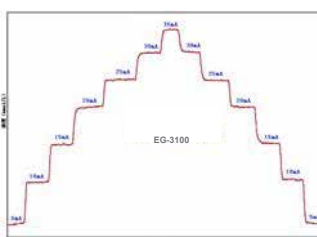
The Ace chromatography software is powerful and easy to understand. The instrument can also be operated through the front panel. The real-time status of each component can be monitored during the entire analysis process.



ACE Software

EG-3100 Eluent Generator - Ion Chromatography's Helping Hand

Operators often need to change eluents of different concentrations and different types during analysis, which creates heavy workload and is inevitable to cause human errors. To solve this problem, It has launched a unique and automated eluent generator without an additional degassing unit.



- Scientific and reasonable structure design and no additional degassing unit to ensure reliable generation of eluent.
- Only one pump is needed to achieve concentration gradient elution. Both OH^- , CO_3^{2-} / HCO_3^-
- eluent for anion analysis and methanesulfonic acid eluent for cation analysis are generated automatically.
- Simple operation and control. Concentration of eluents can be set by software or through the front panel.

- High purity eluents are generated automatically without manual preparation to save operator's time. Eliminate errors due to manual eluent preparation and long term storage to greatly improve the reproducibility of analysis results.
- Further reduce the background conductivity and noise and therefore improve the detection sensitivity.
- Reduce the time of the user's exposure to chemical agents to create a safer working environment.
- Can be independently controlled via the front panel and used with any ion chromatograph.

Technical Specifications:

Analysis	
Detectable Ions	Anions: F ⁻ , Cl ⁻ , NO ₂ ⁻ , Br ⁻ , BrO ₃ ⁻ , NO ₃ ⁻ , HPO ₄ ²⁻ , SO ₃ ²⁻ , S ₂ O ₃ ²⁻ , SO ₄ ²⁻ , HCOO ⁻ , acetic acid, oxalic acid, outgrowth of sterilized tap-water Cations: Li ⁺ , Na ⁺ , NH ₄ ⁺ , K ⁺ , Mg ²⁺ , Ca ²⁺
Detection Range	ppb~ppm
Dynamic Range	10 ³
Linear Related Coefficient	0.9998 (for Cl ⁻ and Li ⁺)
Baseline Noise	≤ 0.5%FS
Baseline Drifting	±1.5%FS /30 min

Fluid Pump	
Type	Parallel dual piston pump, pulse and motion controlled by microprocessor, speed adjustable.
Construction	Chemically inert, Non-metallic PEEK materials for the pump head and flow system
pH	0-14
Control	By Ace software or front panel, Automatic shutdown upon reaching pressure limits
Operating Pressure	Max 35 MPa (5000 psi)
Flow Rate Range	0.001-15.0 mL/min, 0.001 increments
Flow Precision	≤ 0.1% RSD
Flow Accuracy	±0.1%
Piston Valve Cleaning	Double piston continuous cleaning
Over Pressure Protection	Upper limit 0-35 MPa, with 1 unit incremental, lower limit: 1 unit lower than upper limit. Pump stops working if upper limit is reached
Online degassing	2-channels, automatic online
Flow Reproducibility	± 0.1 %

Temperature Controlled Conductivity Detector(Metal Free)	
Type	Microprocessor controlled, digital signal and Variable temperature co-efficient and leak sensor for analysis of anions and cations
Cell Frequency	10 kHz
Range of detection	0-15000 μ S
Resolution	0.0275 nS/cm
Cell Temperature Range	Room temperature ~ 60°C, User adjustable
Temperature Stability	≤ 0.005 °C
Cell Construction	PEEK
Cell Volume	< 1 μ L
Detector	suitable to give results up to ppm level

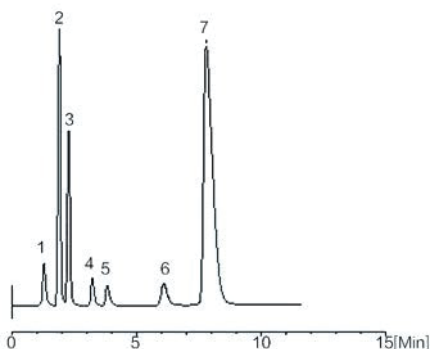
Column Oven	
Temperature Range	Room temperature +5°C - 60 °C
Temperature Accuracy	± 0.5 °C
Temperature Stability	≤ 0.1 °C

Suppressor		
Suppression Type	Automated self-regeneration recirculation	
Suppression Capacity	Anion 100 mmol /L NaOH	Cation 100 mmol /L MSA
Dead Volume	< 50 μ L	
Equilibrium time	< 15 min	
Anion Suppressor Current	0-200 mA, in 1 mA increments	
Cation Suppressor Current	0-300 mA, in 1 mA increments	
Suppressor	Chemical suppressor shall eliminate background conductivity & increase the signal to noise ratio and with continuous regeneration/automatic regeneration technology delivering the same result.with Suppressor Automatic and able to withstand high backpressure and high loading .	

Eluent Generator	
Eluent Concentration range	0.1 - 50 mmol/L
Eluent Type	OH ⁻ , CO ₃ ²⁻ /HCO ₃ ⁻ , MSA
Concentration Increment	0.1 mmol/L
Flow Rate Range	0.5 - 3.0 mL/min
Operating Temperature	Room temperature -40 °C
Operating Humidity	5%-85% relative humidity, no-condensation
Dimensions (L× W × H)	586 mm × 300 mm × 171 mm
Weight	5 kg

Autosampler	
Sample Positions	120 samples (1.8mL vials)
Repeatability	< 0.3%RSD
Residue/Cross Contamination	CV < 0.01%
Sample Volume	0.1 - 100 µL
Injection Probe Cleaning	Repetitive cleaning, no time limit
Dimensions (L × W × H)	505 mm × 300 mm × 230 mm
Power	220V±10 V, 50/60 Hz

Other Specifications	
Power	220 V±10 V, 50/60 Hz
Environment Temperature	5°C - 40°C
Environment Humidity	5% - 85% relative humidity, no-condensation
Communication Interface	RS485 (USB Optional)
Dimensions (L × W × H)	586 mm × 300 mm × 350 mm
Weight	34 kg
Power	150 W



Separation of Inorganic Anions

- | | |
|---------------------------------------|---|
| 1. F ⁻ 1 ppm | 5. NO ₃ ⁻ 4 ppm |
| 2. Cl ⁻ 8 ppm | 6. PO ₄ ³⁻ 10 ppm |
| 3. NO ₂ ⁻ 4 ppm | 7. SO ₄ ²⁻ 20 ppm |
| 4. Br ⁻ 4 ppm | |

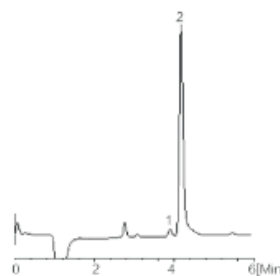
Column: Anion column 250 mm x 4.6 mm

Eluent: 1.8 mM Na₂CO₃ + 1.7 mM NaHCO₃

Flow rate: 2.0 mL / min

Column temperature: room temperature

Detector: Suppressed conductivity detector



Separation of Bromate and Chloride

- | | |
|---|---|
| 1. Li ⁺ 0.5 ppm | 1. Li ⁺ 0.5 ppm |
| 2. Na ⁺ 2.0 ppm | 2. Na ⁺ 2.0 ppm |
| 3. NH ₄ ⁺ 1.0 ppm | 3. NH ₄ ⁺ 1.0 ppm |

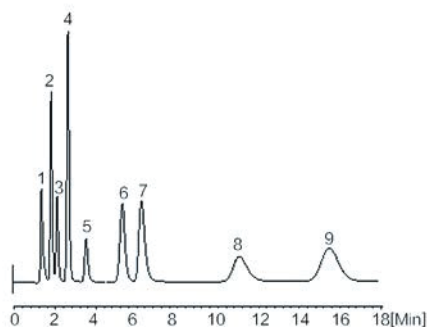
Column: Cation column 150mm x 4.6mm

Eluent: 16mM MSA

Flow rate: 1.0 mL / min

Column temperature: room temperature

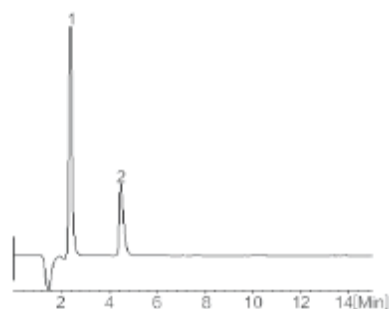
Detector: Suppressed conductivity detector



Simultaneous Separation of 9 Anions

- | | |
|--|---|
| 1. F ⁻ 0.5 ppm | 6. Br ⁻ 6 ppm |
| 2. ClO ₂ ⁻ 1.5 ppm | 7. NO ₃ ⁻ 6 ppm |
| 3. BrO ₃ ⁻ 1 ppm | 8. PO ₄ ³⁻ 10 ppm |
| 4. Cl ⁻ 6 ppm | 9. SO ₄ ²⁻ 10 ppm |
| 5. NO ₂ ⁻ 4 ppm | |

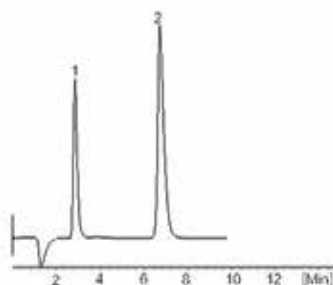
Column: Anion column 250 mm x 4.6 mm
 Eluent: 18 mM Na₂CO₃ + 1.7 mM NaHCO₃
 Flow rate: 2.0 mL / min
 Column temperature: room temperature
 Detector: Suppressed conductivity detector



Detection of Halogen Ions in Electronic Products by Oxygen Combustion –IC Method

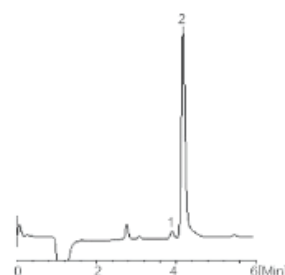
- | | |
|----------------------------|---------------------------|
| 1. Cl ⁻ 376 ppm | 2. Br ⁻ 94 ppm |
|----------------------------|---------------------------|

Column: Anion column 250 mm x 4.6 mm
 Eluent: 18 mM Na₂CO₃ + 1.7 mM NaHCO₃
 Flow rate: 2.0 mL / min
 Column temperature: room temperature
 Detector: Suppressed conductivity detector



Analysis of Acetic Acid and Hydrochloric Acid in Electrolyte

1. Acetic acid 2. Hydrochloric acid
 Column: Anion column 250 mm x 4.6 mm
 Eluent: 14 mmol / L NaOH
 Flow rate: 2.0 mL / min
 Column temperature: room temperature
 Injection volume: 20 µL
 Detector: Suppressed conductivity detector



Separation of Bromate and Chloride

1. Bromate 10ppb 2. Chloride 10 ppm
 Column: Anion column 250 mm x 4.6 mm
 Eluent: 0.9 mM Na₂CO₃ + 0.85 mM NaHCO₃
 Flow rate: 2.0 mL / min
 Column temperature: room temperature
 Detector: Suppressed conductivity detector



Analysis of Bromate

1. 1.0 ppb
 2. 5.0 ppb
 3. 10.0 ppb
 Column: Anion column 250 mm x 4.6 mm
 Eluent: 1.2 mmol / L NaOH
 Flow rate: 1.6 mL / min
 Column temperature: room temperature
 Injection volume: 100 µL
 Detector: Suppressed conductivity detector

Analysis of Sulfur Speciation

1. SO₃ 10 ppm
 2. SO₄ 20 ppm
 3. S₂O₃²⁻ 15 ppm
 Column: Anion column 250 mm x 4.6 mm
 Eluent: 3.6 mM Na₂CO₃ + 1.7 mM NaHCO₃
 Flow rate: 2.0 mL / min
 Column temperature: room temperature
 Detector: Suppressed conductivity detector

Injector Port System

6 port injector port (Metal-free, PEEK) with fast response and software controlled.

IC Column:

The IC System with (including column and guard column) shall be self-sustaining and capable of analysing the following anions and cations:

Anions- Nitrate, Nitrite, Fluoride, Chloride, Sulphate, Bromide, Bromate, Phosphate, Perchlorate, Chlorate, Acetate, Formate etc.

Cations- Lithium, Sodium, Potassium, Calcium, Ammonium, Barium etc

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HPLC Servicing :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

Trainings :We also take up preventive Maintenance to reduce downtime of HPLC's Trainings.

AMC's/CMC :AMC's/CMC :We offer user training both in-House and at customer sites on HPLC principles, operations, trouble-shooting.

Validations :Validations :We have protocols for carrying out periodic Validations as per GLP/GMP/USFDA norms.

Instruments :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.



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GCMS



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Fully Automated
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2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

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