

Capillary Electrophoresis

Principle of operation

Capillary electrophoresis (CE) is a family of related separation techniques that use narrow-bore fused silica capillaries to separate a complex array of large and small molecules. High voltages are used to separate molecules based on differences in charge, size and hydrophobicity. Injection into the capillary is accomplished by immersing the end of the capillary into a sample vial and applying pressure, vacuum or voltage. Separated solutes are quantitatively detected at the capillary outlet by high sensitive optical a system based on direct or indirect UV absorbance.

CE is a powerful technique having a wide range of applications including; analysis of proteins, peptides, chiral compounds, pharmaceuticals, inorganic ions, and specially sizing and characterization of nanomaterials.

Fnm's Capillary electrophoresis (CE) is designed based on its minimal sample and solvent requirements, rapid analysis time and high efficiency and resolution useful in many laboratories. It covers a broad range of applications in a wide variety of industries. Some of its main application fields include: i) food analysis, ii) pharmaceutical analysis, iii) bioanalysis, iv) environmental pollutants analysis, and v) nonmaterial analysis.

The CEP 1000 is a fully automated capillary electrophoresis system produced by Fnm co. This system lets researchers reprogram parameters, such as injection time, run time, sample voltage, and run voltage for each sample. The unit features both automatic hydrostatic and electromigration sample injection modes, a low-noise ultraviolet / visible detector, and an interchangeable high-voltage power supply. The sample chamber has a septumless seal to control evaporation and contamination of samples and electrolytes. To improve accuracy, the CEP 1000 offers an "Autopurge" the feature that automatically cleans the capillaries after each run. After each run, the unit can collect fractions for further analyses.

Some of the advantages of the CEP 1000 include:

1. high separation efficiency
2. short analysis time
3. low sample and electrolyte consumption
4. low waste generation
5. ease of operation

FEATURES AND BENEFITS

- High separation efficiency
- Short analysis time
- Low sample and electrolyte consumption
- Low waste generation
- User friendliness: Complete control of the instrument from a PC

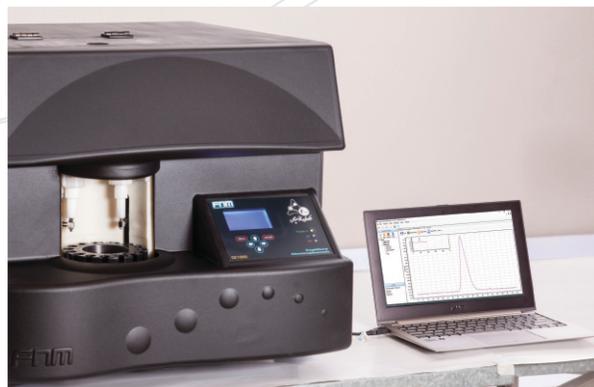
Powerful software package

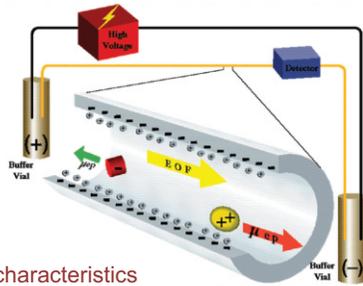
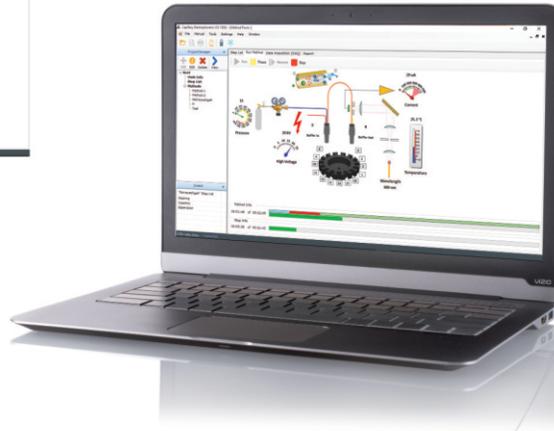
- Increased flexibility in performing analyses of various complexity
- Any kind of complex runs is possible including those with pre-programming of changes in analysis conditions
- Customized report, data export to other programs

Extended instrumental options

- Spectra scanning facilitates peak identification
- Broad range of controlled pressure injection permits analysis of viscous samples

Capillary electrophoresis (CE) is relatively new separation technique compared to the traditional techniques such as high pressure liquid chromatography (HPLC) or gas chromatography (GC). It provides very attractive features which make it both competitive and a good alternative. One of the major advantages of CE over other separation technique is the ability to separate both charged and non-charged molecules.





Analytical characteristics

Power voltage range

- Settable 0 to 25 kV supply (operation under constant voltage)

Autosampler

- 16-position carousel. All vials are randomly accessible from electrodes end of capillary.

Detectors

- CEP 1000 is equipped with variable wavelength UV-detector, the wavelength ranges 200 - 1100 nm.

Light source

- Halogen/Deuterium lamps

Vials

- Standard 1.5 ml, minimal sample volume 0.5 ml.

Injection modes

- Controlled pressure profile injection with variable peak pressure, programmable peak pressure range being 0 - 100 mbar
- Electrokinetic (1-25kV)
- Programmable injection time

Pressure system

- Programmable with 0-100 mbar for injection, washing and flushing with maximum 1 bar.

Analysis

- Voltage range settable from 1 to 25 kV
- Current from 0 to 500 μ A

Software features

- Real time electropherogram visualization
- Electropherogram data processing
- Computation of electrophoresis system parameters
- Customized report output (hard copy and file), data exchanges with worksheets, databases and word processors
- Wave scan

Safety features

- Low current limit, safety sensors at doors and cover disabling high voltage diagnostic function

Areas of application

- Food analysis
- Environmental pollutants analysis
- Chemical industry
- Pharmaceutical analysis
- Bioanalysis

Warranty

- The CEP 1000 equipment is covered by a 12-months warranty.

services

Upon request installation and commissioning of CEP 1000 systems can be carried out on Customer's site by our service engineers. Consultations and initial training of attendance personnel with due account of Customer's specific needs are performed. Spare parts are delivered and repair is made upon Customer's request (free within the warranty period).