

Capillary electrophoresis

Capillary electrophoresis (CE) is a separation and analytical method of which the differential migration rates of sample components is caused by an applied electrical field within a capillary, small-diameter polyimide coated fused silica capillary tube usually. "On-column" UV spectrometric or fluorescence analysis is usually used for detection of sample components through a "window" in the capillary. 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) nanomaterial analysis.



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, or voltage. Separated solutes are quantitatively detected at the capillary outlet by high sensitive optical system based on UV-Vis absorbance.

Features and Benefits

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

Powerful software package

- Increased flexibility in performing analyses of various complexity
- Any kind of complex runs are 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

Analytical characteristics

- Power voltage range**
 - Adjustable 1 to 20 kV high voltage power supply
 - Operation under constant voltage
 - Show current (μA)
- Autosampler**
 - A 16-position carousel.
 - All vials are randomly accessible from electrodes end of capillary.

Detectors

- CE 1000 is equipped with variable wavelength UV-detector
- Wavelength range 200 - 1100 nm.

Light source

- Halogen lamp (Visible and near IR)
- Deuterium lamp (UV light)

Vials

- Standard 1.5 ml
- Minimum sample volume 500 μl .

Injection modes

- Controlled pressure profile injection with variable peak pressure, programmable peak pressure range being 20 - 100 mbar
- Electrokinetic (1-5kV)
- Programmable injection time

Pressure system

- Programmable with 20-100 mbar for injection, washing and flushing with maximum 1 bar.

Analysis

- Voltage range settable from 1 to 20 kV
- Current from 0 to 500 μA

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

Disabling high voltage function:

- Over current limit
- Earth detection system
- Arc detection system
- Safety sensors at cover

Areas of application

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

