

AF2000 FOCUS

Asymmetric
Flow Field-Flow Fractionation



System covered by national and international patents: DE 197.09.250/DE 198.08.992/US 6.109.119/US 6.109.119/US 6.192.764B1.

Technical specifications are subject to change without further notice.

Advanced Characterization
of Proteins, Polymers
and Nanoparticles

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Specifications

Principle Measurement Range:

Particles: 1 nm to 100 μ m
Polymers: 500 Da to 10^{12} Da

Analysis Time:

Typically 15 - 20 min, upto 120 min

Channel Dimensions:

Volume : between 0,5 - 2,5 mL
Size : 335 x 60 x 40 mm
Thickness: 250 μ m (other sizes available on request)

Carrier Liquids:

Aqueous : any aqueous liquid, pH from 2 - 11,
ionic strength from d.i.water to saline
Organic : THF, MeOH, etc.

Membranes:

Broad range of membranes available: reg. cellulose, polycarbonate, PES
Molar Mass: 0,3; 1; 2; 4; 5; 10; 30; 100 kDa
Size cut-off: 10; 30; 50 nm

Detectors:

UV, RI, laser light scattering, viscosimetry, fluorescence detection, and more; multiple detectors in line possible.

Channel Flow Range:

0 - 10 mL/min

Cross Flow Range:

0 - 8 mL/min

Pressure Limit:

0 - 35 bar

Power Requirements:

110V or 240V, 50/60 Hz; 2,5 A for basic set-up

PC Requirements:

Windows, min. 64 MB RAM, 2 RS232 ports

System Software:

NovaFFF AF2000 Control, NovaFFF Analysis

Maintenance Parts:

Consumables: pistons and piston seals, inline filters, membranes

Injection volume:

1 - 1000 μ L
Standard 20 μ L
optional > 1000 μ L

Injected sample mass:

Up to 500 μ g and more; depending on sample characteristics and channel version (thickness); Typical injection mass 20 - 100 μ g

Injection method:

Via manual injection valve or automated via PN5200 autosampler with different options, e.g. to cool samples (standard vial, microwell plates and other sizes are available).



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AF2000 FOCUS Series State-of-Art Asymmetric Flow FFF

Asymmetric Flow Field-Flow Fractionation, also called AF4, is an innovative new separation method for the efficient separation and characterization of proteins, polymers and nanoparticles in a fast and gentle way. The AF2000 FOCUS from postnova analytics is the most advanced AF4 system on the market today and is the benchmark for the industry, indicating the maximum possible performance. The instrument shows a higher resolving power and a more advanced software system than every other device available. It is the most integrated system and the only one with the channel inside the housing. The system has a large, nearly universal separation range. Nanoparticles can be separated from 1nm to 100 μ m and proteins, peptides, polymers from 10^3 to 10^{12} Da. The fast & gentle separation occurs based on the diffusion coefficient in an open flow channel without using ANY stationary phase as is utilized in the outdated technology of SEC/GPC.

UNIQUE FEATURES

Patented Channel Cartridge Design

The AF2000, as all other postnova AF4 systems as well, is equipped with a special patented flow channel using a channel cartridge and a channel holder for fast and easy exchange of membrane and system cleaning procedure. Depending on the application, the cartridge can be replaced by different other cartridges, which are available, analog to different HPLC columns in a chromatography system.

Complete Bio-Compatible System

The AF2000 FOCUS is the only system which can be delivered as a completely inert bio-compatible and metal-free system with a ceramic frit instead of a stainless steel frit, PEEK pumps, PEEK/PMMA channel and PEEK autosampler.

Totally Integrated One-Box-System

Completely integrated system with all important parts located inside the system housing, including flow channel. Professional one-box system for use in laboratories with high-level expectations concerning system handling and user-friendliness.

Patented Cross-Flow Control

Special patented cross-flow control, using a unique dual syringe pump module with non-pulsing cross-flow delivery for most precise separation conditions. Completely inert, metal-free cross flow path made of glass, PEEK and teflon/PVDF. Instant cross-flow adjustment without time-delay or hysteresis (flow over and under adjustments) known from other commonly used cross-flow control valves. Rugged cross-flow control insensitive to plugging without the need for fragile and corrosion sensitive valve needles. Superior cross flow range from 5 μ L/min (with 100 μ L syringe) up to 16 mL/min (with 2 mL syringe) for lowest and highest possible cross-flows of all FFF systems. Different syringes available, which can be exchanged to extend flow rate range.

Data Evaluation Software - NovaFFF Analysis

Postnova offers a special data evaluation software with unique features. Data files from different postnova FFF system/techniques can be processed. Software allows to perform absolute size calculation based on FFF theory and size calculation based on calibration with particle size standards. Possibility to calculate size of small particles by using a concentration detector (UV / RI) when light scattering is poor/not showing a sufficient signal. NovaFFF Analysis is an additional validation tool providing particle sizes of aggregates which can be directly compared with particles sizes from light scattering.

Integrated Method Wizard Expert System

Postnova offers a special NovaFFF control software with integrated Expert System. Method Wizard for accelerated and automated method generation by simply entering in the approximate size of the analyte. Advanced Simulation Module which is also directly integrated in the control software and where the user can run a complete method in a simulation first. Run Parameter Optimisation Tool to optimize run conditions in terms of run time, maximum resolution, etc..

Patented FOCUS Technology

The AF2000 uses postnova's patented FOCUS technology which assures constant and continuous flow through the detectors all the time. That's why the system has a higher recovery, higher resolution and greater flexibility than other systems. Now AF4 can be coupled to flow sensitive viscometers and RI detectors successfully.

APPLICATIONS OF AF2000 FOCUS

Biotechnology : Viruses, Aggregates, Cell Organelles, Bioparticles.
Pharma : Proteins, Antibodies, Liposomes, Drug Delivery, Micelles.
Environment : Humic and Fulvic Acid, Environmental Colloids, Clay Particles.
Material Science : Latex Beads, Nanoparticle, High-Tech Nano Materials.
Polymers : Biopolymers, Starches, Polyelectrolytes, Technical Polymers.

Contact the People who Invented & Introduced Field-Flow Fractionation!