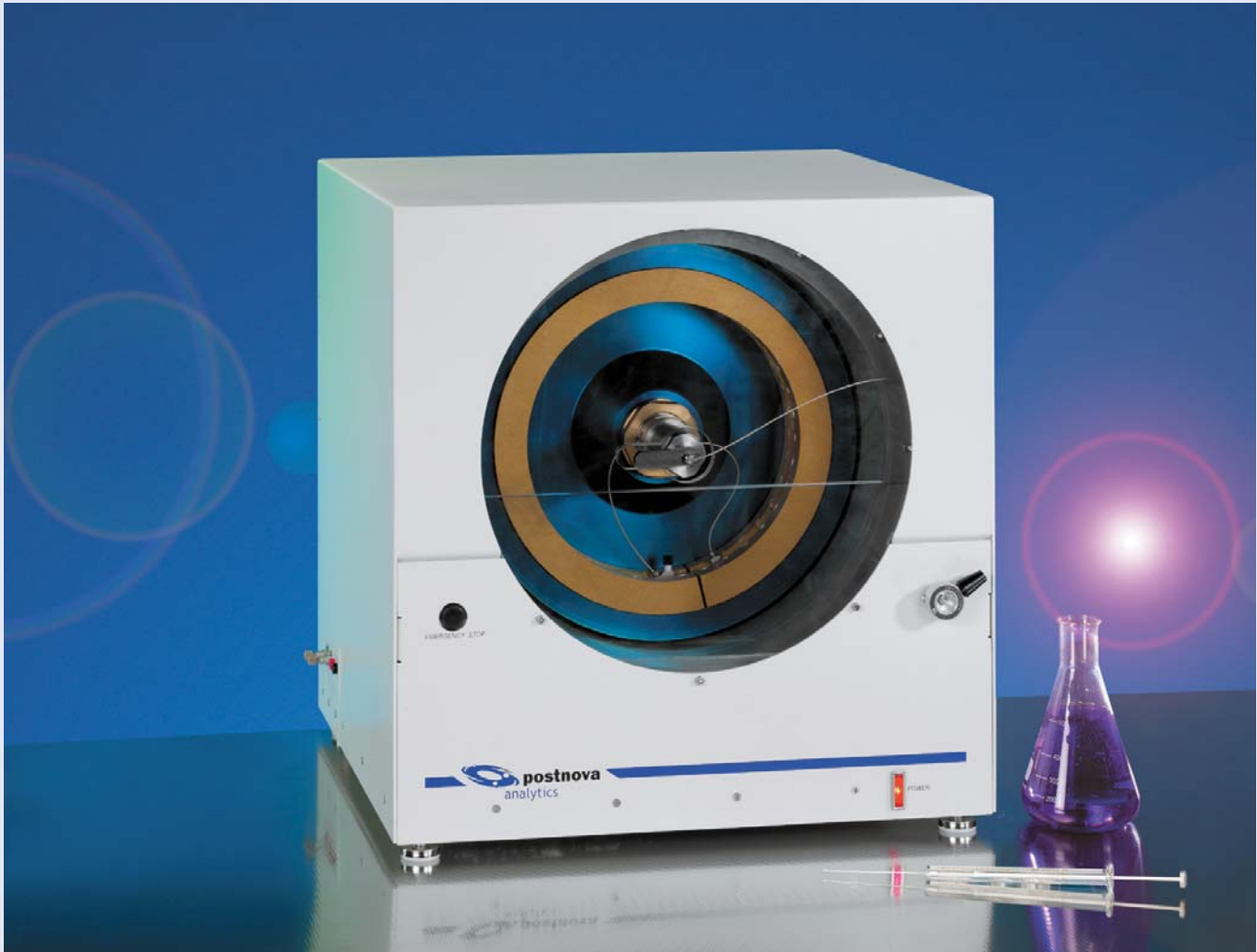


# S101 Series

## Sedimentation Field-Flow Fractionation



High Resolution Separation of  
Nanoparticles, Emulsions  
and Liposomes !

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# Specifications

## General Set-Up:

- 1) High resolution nanoparticle separation system for emulsions, liposomes, environmental colloids, biopolymers using aqueous solvents.
- 2) Includes solvent degasser PN7705 with LED signals at front plate for display of operation status. Degassing efficiency 0.4 ppm oxygen.
- 3) Includes dual piston pump PN1122 for generation of lowest pulsation channel flow with PEEK pump head and RS232 control.
- 4) Pump flow rate of 0,01 to 3,00 mL/min
- 5) Sedimentation FFF channel and precision made centrifuge system with lowest tolerances for use with up to 2.500 rpm with hydraulic system and valve for automated stop-flow relaxation.
- 6) Basic manual injection valve system: Rheodyne 7725i.
- 7) Multi I/O data acquisition A/D card with driver software and cables with PC included NovaFFF control and FFF analysis software.

## Measurement Range:

Particles: 50 nm to 100 µm

## Analysis Time:

Typically 10 to 100 min

## Channel Dimensions:

Volume : between 2.5 - 4.5 mL  
Size : 890 x 20 mm  
Thickness: 254 µm

## Radius of Rotation:

15.1 cm

## Field Strength:

2500 rpm (approx. 1000 g) maximum  
< 50 rpm, 0.5 g minimum speed

## Detectors:

UV, RI, MALS, and more possible.

## Channel Flow Range:

0.01 - 3 mL/min

## Pressure Limit:

5 bar

## PC Requirements:

Win 2000 or XP

## System Software:

NovaFFF Control/FFFanalysis

## Injected sample mass:

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

## Injection method:

Via manual injection valve.

# S101 Series Sedimentation FFF

is a innovative new technology for high resolution nanoparticle separation of emulsions, liposomes, environmental colloids, biopolymers, etc. using aqueous solvents in a gentle way. The S101 Sedimentation FFF series is a unique technology available only from postnova analytics. The system is designed to provide highest resolution in nanoparticle characterization studies, which cannot be obtained from conventional type particle sizers. The high resolution separation occurs based on the diffusion coefficient in an open flow channel without using ANY stationary phase as is utilized in common chromatography technology.

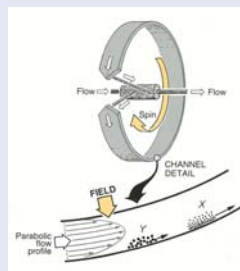
## Principles of Operation

All FFF techniques involve a superimposed physical separation field perpendicular to the main channel flow rate which is transporting the sample through the system. In Sedimentation FFF, the separation field is build up by the centrifugal force which is applied by fast spinning of the round belt-like channel. During the centrifugation, particles sediment towards the accumulation wall and equilibrate in zones of a characteristic thickness located in different areas of the laminar stream profile present inside the channel. The different size fractions thus elute with different speed out of the channel depending in what stream line they are located.

## Why choose Sedimentation FFF?

### Broad Range of Applications

The system has a large separation range and particles can be separated from submicron to supra-micron size. The lower limit of size depends on the particle density and typically is located around 50-80 nm for common material and down to 10 nm for high density material as gold particles and sols. The upper limit is reached around 100 µm and also depends on the material characteristics.



### Highest Resolution

Sedimentation FFF provides the highest possible resolution for particle size separation and analysis, comparable to analytical ultracentrifugation. Sedimentation FFF separates particles by mass (which is related to size) and can resolve 5% differences in particles size.

### Flexible Operation

Using one system it is possible to easily alter experimental conditions to increase resolution and shorten analysis times. Eluent solutions with varying pH, ionic strength or surfactant concentration can be used to achieve optimal sample suspension or viability for biological samples.

### Direct Distribution Determination

Sedimentation FFF physically separates the different particle size fractions. In combination with a postnova MALS (Multi-angle Light Scattering Detector) this provides direct particle size distributions, which are not based on assumptions related to distribution shape (e.g. Gaussian, Poisson, etc.)

### Fraction Collection

FFF-type fractionation results in size fractions which can be collected for further on-line and/or off-line characterization. The size-classed fractions produced with each analysis can be investigated with several techniques, such as microscopy, ICP-MS, GC, MALS, DLS and many more.

For further information and application data, please contact postnova at any time!



## Postnova Analytics GmbH

Max-Planck-Str. 14  
86899 Landsberg am Lech/Germany  
Tel. : +49.8191.428-181  
Fax : +49.8191.428-175

## Postnova Analytics Inc.

230 South, 500 East, Suite # 120  
84102 Salt Lake City, UT/USA  
Tel. : +1.801.521-2004  
Fax : +1.801.521-2884

email : [info@postnova.com](mailto:info@postnova.com)  
web : [www.postnova.com](http://www.postnova.com)