

# TF2000 Series

## Thermal Field-Flow Fractionation



Postnova Analytics Field-Flow Fractionation technology is protected by several national and international patents. Please inquire for a detailed list of patents in case of doubt, further technical questions or patent related issues.

# Advanced Characterization of Polymers and Microgels

[www.postnova.com](http://www.postnova.com)

# Specifications

## General Sample Size and Molar Mass Range:

Polymers: 10 kDa-100 MDa  
Particles: 10 nm-1000 nm

## Analysis Time:

Typical 10-120 min, no software limitation

## Channel Dimensions:

Volume: 1.14 mL  
Length: 456 mm  
Breath: 20 mm  
Thickness: 130  $\mu$ m

## Channel Flow Rates:

Typically 0.01-2.0 mL/min  
(For different flow rates ask Postnova)

## Carrier Liquids:

Compatible with most organic solvent systems  
(For aqueous solvents ask Postnova)

## Detectors:

UV, RI, laser light scattering, fluorescence detection and more; multiple detectors in-line possible  
(For details ask Postnova)

## Thermal-Field Strength:

Maximum  $\Delta T$  up to 120°C  
Hot wall maximum: 180°C  
Cold wall maximum: 60°C  
(THF, 220 V, coolant water at 20°C, 12 L/min)

## Temperature Control:

PC controlled for accurate, constant and programmed field options

## Channel Pressure:

Up to 250 psi (approx. 14 bar) to pressurize the channel for any analysis at higher temperatures

## System Requirements:

220-230 V, 50/60 Hz; 12 A for basic set-up  
max. power consumption 3.5 kW  
Coolantwater at 20°C, 12 L/min, max. 2 bar  
PC will be supplied by Postnova, Windows English  
(For details ask Postnova)

## System Software:

NovaFFF TF2000

## Maintenance:

Rugged reuseable channel with no special maintenance required

## Injection Volume:

1-1000  $\mu$ L  
Standard 20  $\mu$ L  
optional > 1000  $\mu$ L

## Injected Sample Mass:

Up to 500  $\mu$ g and more; depending on sample characteristics; Typical injection mass 20-100  $\mu$ g

## Injection Method:

Via Rheodyne<sup>®</sup> manual injections valve or autosampler with different options



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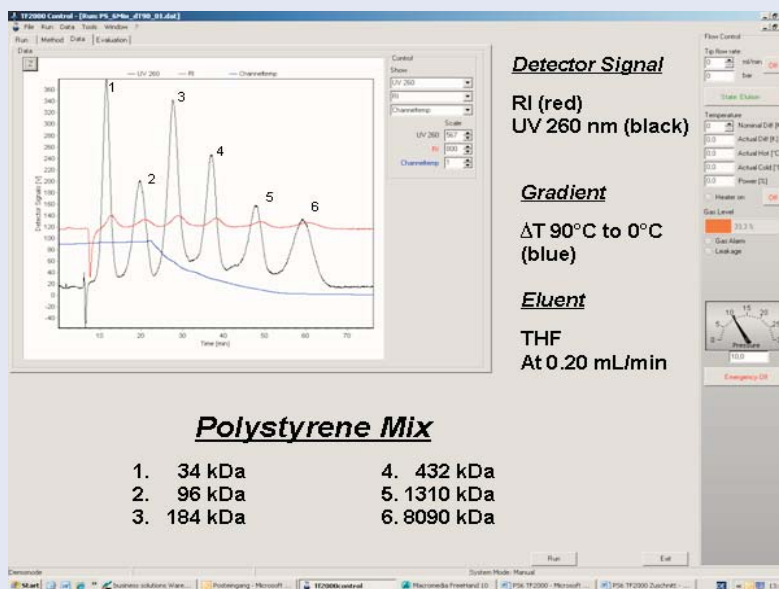
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# TF2000 Thermal Field-Flow Fractionation

The TF2000 system is a new and efficient analysis method to separate and characterize polymers and particles. The system is able to separate polymers and particles at the same time without the limitations associated with GPC/SEC. The separation takes place according to molecular weight AND chemical composition, thus making the TF2000 Series the ideal choice for co-polymer separation. The system can be coupled with different standard detectors such as Light Scattering, RI, UV, etc.

The system has a large separation range and can fractionate polymers as low as 10 kDa up to 100 MDa including microgels and nanoparticles. The separation itself is very gentle and ruled by thermal diffusion and Brownian motion in a laminar flow channel without using any stationary phase as in chromatography.



## Polystyrene Mix

- |            |             |
|------------|-------------|
| 1. 34 kDa  | 4. 432 kDa  |
| 2. 96 kDa  | 5. 1310 kDa |
| 3. 184 kDa | 6. 8090 kDa |

## Software:

Unique Software platform for the TF2000 and detectors.  
Setting and programming flow and temperature profile.  
Data acquisition and calculation of molar masses and sizes of sample are based upon the static light scattering (SLS).  
Optional Software available for branching calculation with MALS.

## Applications:

Latex coatings, nanoparticles and high-tech materials, technical/industrial polymers, starches, paints.  
Polymers and particles from approx. 10 kDa up to 100 MDa and more in organic/aqueous solvents.

## Extended Safety Features:

PC controlled for accurate, constant and programmed field option. Temperature safety shut-offs included. Temperature limits for hot and cold wall programmable. Redundant mechanical shut-off for cold wall at 60°C.  
Leak sensor and alarm for the cooling system.  
Gas sensor and alarm for organic and flammable vapors.  
Automatic emergency pressure shut-down.

## Top 12 Reasons for the TF2000 FOCUS

1. Advanced channel design, sample introduction method and new cooling system provide 30-50 % superior resolution and faster separation time.
2. Direct sample injection, no sample preparation steps necessary.
3. Flexible and gentle separation conditions, organic and aqueous solvents.
4. Large and easily accessible molar mass and size range.
5. Low shear forces during separation protect sample integrity.
6. Professional and integrated system from one manufacturer.
7. Completely automated system by using an autosampler. Total system control using the NovaFFF windows software.
8. Various additional Postnova Analytics modules and components available: autosamplers, degassers, pumps etc.
9. Dynamic (DLS) and static (SLS) laser light scattering detectors available.
10. Special safety features for temperature, pressure and leakage.
11. Software for characterization and calculation of polymer branching with MALS.
12. Made and supported by the people who invented Field-Flow Fractionation.