NovaSheet

Technology: AF4-MALS

Application: Characterization of Virus and Aggregates

Analysis Conditions / System Set-up

Solvent	: 10 mM Tris buffer, pH 8,3;	Injection volume	: 20 µL Loop
Sample Concentr.	: 1 mg/mL	Membrane	: NovaPC 10 nm Cut-off
Cross flow	: 0.55 ml/min	Channel Flow Out	: 1.4 ml/min
FFF System	: postnova AF2000 FOCUS Series - Asymmetric Flow Field-Flow Fractionation		
LS Detector	: Multi-Angle Static Laser Light Scattering Detector MALS		

Field-flow Fractionation (FFF) is a powerful tool for the separation and characterization of biopolymers and nanoparticles over a broad molar mass and size range. Especially Asymmetrical Flow FFF (AF4) can be used for the fast and gentle characterization of viruses and for detecting and quantifying their aggregates in virus-based pharmaceuticals. The following example shows the potential of AF4 for this special application. The measurements were done using a postnova AF2000 FOCUS system coupled with a Multi-Angle Laser Light Scattering detector (MALS). Figure 1 shows that AF4 was able to separate the sample into the virus monomer peak, the dimer peak and a third fraction containing higher aggregates of the virus particle. The size calculation using MALS yielded 30 nm for monomer peak and sizes increasing from 30 up to 80 nm for the following fractions. The size values show the monodispers character of the primary virus peak followed by more heterogeneous higher aggregate fractions with the increasing sizes.

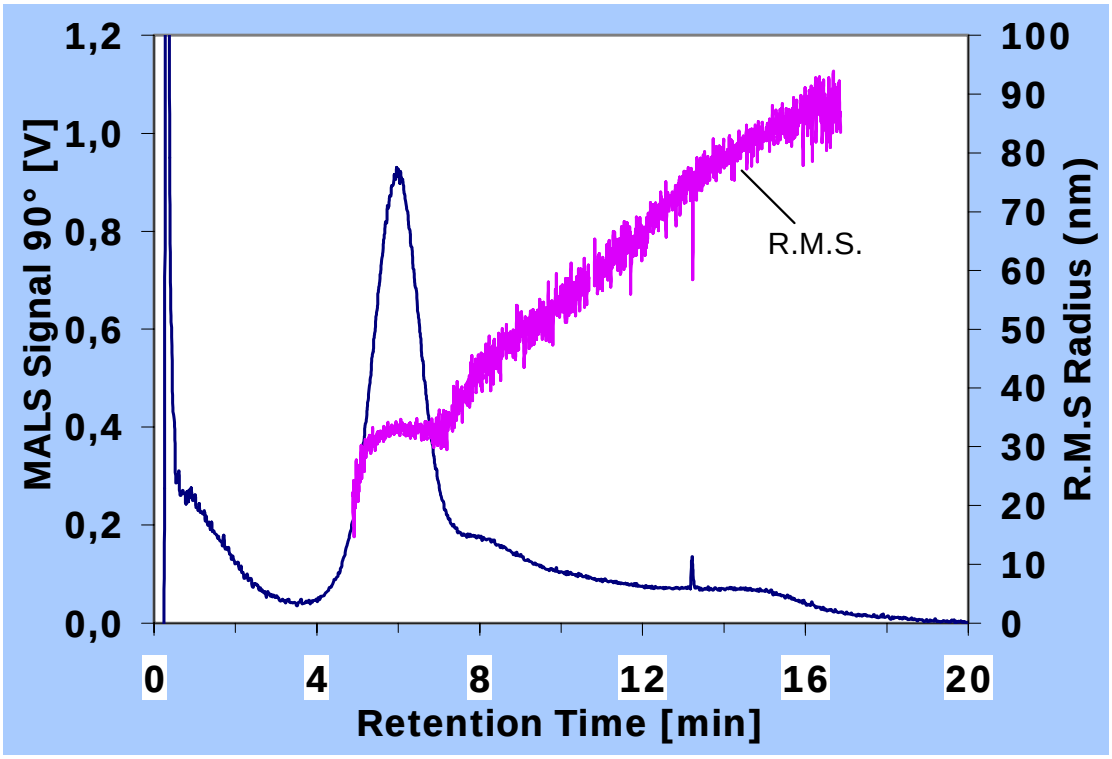

Figure 1: AF4 Fractogram of Virus and higher Aggregates with MALS (90°) Signal and Radius.

The results show that AF4 can be used for the fast (ca. 20 min) and high resolution characterization of viruses and their aggregates. This makes the technology an important standard tool in modern pharmaceutical/biotechnology sciences.

Why use AF4-MALS for Virus and Aggregate Characterization?

- ► Fast, gentle and nearly interaction free separation without stationary phase.
- ► High resolution separation of viruses and aggregates over a broad size range.
- ► Separation of complex mixtures without intensive sample preparation, filtering or centrifugation.
- ► Easy coupling with many other analytical detection systems as MALS, UV, RI, DLS, FT-IR, MS, etc..

For further information about the characterization of viruses by AF4 please contact us at: info@postnova.com